The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2014-2015 academic year, including the Summer Semester 2014, the Fall Semester 2014 and the Winter Semester 2015.

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

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Revision Information:

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Disclaimer

University of Guelph 2014

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2014-2015 academic year, including the Summer Semester 2014, the Fall Semester 2014 and the Winter Semester 2015.

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
Introduction

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 Registrarial Services Departmental Policy on the Release of Student Information. For details on the use and disclosure of this information call the Office of Registrarial Services at the University at (519) 824-4120 or see http://www.uoguelph.ca/registrar/registrar/index.cfm?index.

Statistics Canada - Notification of Disclosure

For further information, please see Statistics Canada's web site at http://www.statcan.ca and Section XIV Statistics Canada.

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.

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Last Revision: October 14, 2014

2014-2015 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

Equates - 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 overlap 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*2220 Financial Accounting F,W (3-0) [0.50]

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

Offering(s): Also offered through Distance Education format.
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*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): 1 of ACCT*2220, AGEC*2220, BUS*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 (3-0) [0.50]

In this course students will learn 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 through a semester-long business simulation. Additionally, students will develop the skills necessary for assessing an organization’s system of internal control and financial analysis.

Prerequisite(s): ACCT*2220 or BUS*2220
Equate(s): BUS*2240
Department(s): Department of Management

ACCT*3230 Intermediate Management Accounting S,W (3-0) [0.50]

This course continues the managerial decision making focus of ACCT*2230. Topics include process costing, transfer pricing, the decision making process, variances and performance measurement.

Prerequisite(s): 1 of ACCT*2230, AGEC*2230, BUS*2230
Equate(s): BUS*3230
Restriction(s): Enrolment may be restricted to particular degrees or programs. See department for more information.
Department(s): Department of Management

ACCT*3280 Auditing I F,W (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 or BUS*3330
Equate(s): BUS*3280
Restriction(s): BUS*4280
Department(s): Department of Management

ACCT*3330 Intermediate Financial Accounting I 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.

Prerequisite(s): 1 of ACCT*2220, AGEC*2220, BUS*2220
Equate(s): AGEC*3330, BUS*3330
Department(s): Department of Management

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

This course will build on the foundation in financial accounting concepts and principles gained in ACCT*3330. The focus is 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 or BUS*3330
Equate(s): BUS*3340
Department(s): Department of Management

ACCT*3350 Taxation F,W (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): (BUS*3320 or MGM*3320), (ACCT*3330 or BUS*3330)
Equate(s): BUS*3350
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 - BUS*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

ACCT*4290 Auditing III W (3-0) [0.50]

This course introduces the student to the field of auditing within the field of Electronic Data Processing (EDP).

Prerequisite(s): ACCT*4270 or BUS*4270
Equate(s): BUS*4290
Department(s): Department of Management

ACCT*4340 Accounting Theory W (3-0) [0.50]

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*4220
Restriction(s): ACCT*4240
Department(s): Department of Management
<table>
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<th>Course Code</th>
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| ACCT*4350 | Income Taxation II F (3-0) [0.50] | 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*3350 or BUS*3350  
Equate(s): BUS*4350  
Department(s): Department of Management |
| ACCT*4440 | Integrated Cases in Accounting W (3-0) [0.50] | 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*4220  
Restriction(s): ACCT*4240  
Department(s): Department of Management |
AGR*1100 Introduction to the Agrifood Systems F (6-0) [1.00]
This introductory course provides an overview of Canadian and global agrifood 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 agrifood system by tracing consumer end-products back to primary production. Modern, industrial agrifood systems as well as subsistence farming will be discussed. The course incorporates an experiential learning component in which students will explore a new agrifood opportunity for Ontario by designing and assessing the value chain.

Restriction(s): AGR*1120. BSC(AGR) Minor in Agriculture
Department(s): Department of Plant Agriculture, Department of Animal and Poultry Science
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*2100).
Restriction(s): Registered in BBRM.QM
Department(s): Dean's Office, Ontario Agricultural College
Location(s): Kemptville

AGR*2050 Agroecology W (3-0) [0.50]
Agroecology uses ecological theory to study, design, manage and evaluate agricultural systems. 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): (BIOL*1050 or BIOL*1070) CHEM*1040
Restriction(s): CROP*2110
Department(s): Department of Plant Agriculture, Department of Animal and Poultry Science

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): CHEM*1040, MATH*1080, (BIOL*1050 or BIOL*1070), BIOL*1090
Restriction(s): ENVS*2060
Restriction(s): SOIL*2100
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 grocery store and working back to the primary producer. Companion and exotic animals will also be covered. Topics include food, health and wellness (domestic animals and human), nutrition, housing, genetics, reproduction, husbandry practices and processing. Laboratories include product taste testing and evaluation, and animal production unit tours (including visits to major animal housing units generally on the second Saturday of the semester).

Prerequisite(s): BIOL*1030 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090)
Department(s): Dean's Office, Ontario Agricultural College

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): 1 of BIOL*1030, BIOL*1050, 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 subtropical 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 1 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, Department of Animal and Poultry Science

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 and Poultry Science

AGR*3500 Experiential Education 1 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 and Poultry Science

### 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 Plant Agriculture, Department of Animal and Poultry Science

### AGR*4450 Research Project I S,F,W (0-12) [1.00]

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 S,F,W (0-12) [1.00]

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*4500 Agrifood Industry Problem-Solving W (3-0) [0.50]

This course will provide senior level students in agricultural and related sciences with experience in working as a team to propose solutions to agrifood industry problems. The perspective of the best solution will be the agrifood system rather than any individual stakeholder group. Attention will be given to integrating material from different disciplines, further refining skills in problem-solving, and communication. Students and faculty will meet prior to the conclusion of the preceding semester to identify industry projects, student expertise, and to develop a preliminary strategy.

**Offering(s):** Last offering - Winter 2015  
**Prerequisite(s):** 3.50 credits at the 3000 level or 1.50 credits at the 4000 level in any agricultural science area or agricultural business area.  
**Department(s):** Dean's Office, Ontario Agricultural College

### AGR*4600 Agriculture and Food Issues Problem Solving W (3-0) [1.00]

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.

**Offering(s):** First offering - Winter 2016  
**Prerequisite(s):** 12.50 credits  
**Restriction(s):** Registration in BSC(AGR), BBRM, BCOMM.FAB, B.COMM.FAB:C or BA.FARE program.  
**Department(s):** Dean's Office, Ontario Agricultural College
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 and Poultry Science

ANSC*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 attempt to regulate it.
Prerequisite(s): BIOL*1050
Restriction(s): ANSC*3210.
Department(s): Department of Animal and Poultry Science

ANSC*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 confinement 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 and Poultry Science

ANSC*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 and Poultry Science

ANSC*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 finfish 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*2090
Department(s): Department of Animal and Poultry Science

ANSC*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): BIOL*2580 or EQN*2040
Restriction(s): Registration in BSC(Agr), BSC.ABIO or BBRM.EQM, Minor in Agriculture.
Department(s): Department of Animal and Poultry Science

ANSC*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.
Prerequisite(s): NUTR*3210
Restriction(s): Registration in BSC(Agr) or BSC.ABIO
Department(s): Department of Animal and Poultry Science

ANSC*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, omnivores.
Offering(s): Offered in even-numbered years.
Prerequisite(s): NUTR*3210
Department(s): Department of Animal and Poultry Science

ANSC*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 and Poultry Science

ANSC*4020 Genetics of Companion Animals F (3-0) [0.50]
This course includes theoretical and applied aspects of practical breeding programs for performance, pleasure and hobby animal populations leading to genetic improvement and population stability. Quantitative genetics and biotechnology are integrated using case studies to develop practical and sustainable breeding programs for horses, dogs, cats, rabbits and hobby livestock. Legislative requirements governing animal registration and breed development are also explored.
Prerequisite(s): MBG*3060
Department(s): Department of Animal and Poultry Science

ANSC*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*2000 or MCB*2050
Department(s): Department of Animal and Poultry Science

ANSC*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, ontology 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 and Poultry Science

ANSC*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 and Poultry Science

ANSC*4230 Challenges and Opportunities in Animal Production F (6-0) [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 and Poultry Science

ANSC*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 and Poultry Science

ANSC*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 and Poultry Science

ANSC*4280 Poultry Nutrition F (3-0) [0.50]
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.
Prerequisite(s): ANSC*3120
Department(s): Department of Animal and Poultry Science
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<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Description</th>
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<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>
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<tr>
<td>ANSC*4350</td>
<td>Experiments in Animal Biology W (0-6) [0.50]</td>
<td>This course provides an opportunity for hands-on projects involving live animals and laboratory techniques. Projects will be provided by APS faculty within their broad fields of study, for example animal behaviour and welfare, environmental physiology, endocrinology, and reproduction. Approval of the ABIO Faculty Advisor must be obtained before course selection.</td>
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<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>
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<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>
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<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>
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<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>
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<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>
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<tr>
<td>ANSC*4700</td>
<td>Research in Animal Biology I S,F,W (0-6) [0.50]</td>
<td>This course is an opportunity for those students potentially interested in postgraduate studies to work with a committed faculty advisor to research a problem, analyse data and/or design experiment(s) that address a solution. Evaluation of the course requires a substantive literature review and/or data analysis. Selection of a faculty supervisor and approval from course coordinator must be obtained before course selection.</td>
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<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>
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</tbody>
</table>
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 hominid evolution, contemporary human diversity, nutrition and diet, and an introduction to 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]
This course will cover basic concepts that contribute to various anthropological approaches to the study of culture and society, such as the case study method and participant observation. The development of theory and methods will be examined through reading selected classic and contemporary ethnographies.

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 areas 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. Focus may be given to such areas as Latin America, Sub-Saharan Africa, Asia, or Oceania.

Prerequisite(s): ANTH*1150

Restriction(s): ANTH*4230

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 ANTH*2230, ANTH*2230, 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 History of Anthropological Thought F (3-0) [0.50]
This course offers a historical survey of the main trends in anthropological theory from the 19th century to the present.

Prerequisite(s): ANTH*2160, ANTH*2230, SOAN*2120

Department(s): Department of Sociology and Anthropology

ANTH*3770 Kinship and Social Organization W (3-0) [0.50]
This course will deal with the theoretical implications of the study of kinship systems for an analysis of human society in general, including a comparative study of the social organization of kinship-based societies.

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 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 including ANTH*2160, SOAN*2120

Department(s): Department of Sociology and Anthropology

ANTH*3850 Seminar in Anthropology 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 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]
Current issues and future trends in the discipline of socio-cultural anthropology will provide the subject matter of this variable content course. This course is meant to provide an opportunity for socio-cultural anthropology majors to consider the latest developments in the sub-discipline. Course topics will be announced and course outlines will be available at course selection time.

Prerequisite(s): 12.50 credits including ANTH*3690, SOAN*3070

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
### XII. Course Descriptions, Anthropology

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<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>ANTH*4540</td>
<td>Seminar in Anthropology F,W (3-0) [0.50]</td>
<td>12.50</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, 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 F (3-0) [0.50]</td>
<td>12.50</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 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>ANTH*4640</td>
<td>Seminar in Anthropology F,W (3-0) [0.50]</td>
<td>12.50</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, SOC</em>3310, SOAN*3070 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>ANTH*4700</td>
<td>Issues in Contemporary Anthropological Theory W (3-0) [0.50]</td>
<td>12.50</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 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>ANTH*4740</td>
<td>Seminar in Anthropology F,W (3-0) [0.50]</td>
<td>12.50</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, SOC</em>3310, SOAN*3070 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>ANTH*4840</td>
<td>Seminar in Anthropology F,W (3-0) [0.50]</td>
<td>12.50</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, SOC</em>3310, SOAN*3070 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>ANTH*4880</td>
<td>Special Projects in Anthropology S,F,W (3-0) [0.50]</td>
<td>1.00</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 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</td>
</tr>
<tr>
<td>ANTH*4900</td>
<td>Honours Anthropology Thesis I S,F,W (3-0) [0.50]</td>
<td>15.00</td>
<td>Development and design of an honours thesis proposal conducted under the supervision of a faculty member. Recommended to honours major students. Prerequisite(s): 15.00 credits including ANTH<em>3690, (SOC</em>3070 or SOC*3120) Restriction(s): Instructor consent required. As well as a cumulative average of 70% in all Sociology and Anthropology courses. Department(s): Department of Sociology and Anthropology</td>
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<tr>
<td>ANTH*4910</td>
<td>Honours Anthropology Thesis II S,F,W (3-0) [0.50]</td>
<td>12.50</td>
<td>Completion and presentation of honours thesis. Prerequisite(s): ANTH*4900 Restriction(s): Instructor consent required. Department(s): Department of Sociology and Anthropology</td>
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Last Revision: October 14, 2014

2014-2015 Undergraduate Calendar
### Art History

**School of Fine Art and Music**

Students with a special interest in particular courses in Art History should consult the School concerning prerequisites.

1. Some Art History lecture courses at the 2000- and 3000-level are offered on alternate years only and many Art History seminars have variable content. For course offerings and course descriptions please see the home page for the School of Fine Arts & Music www.uoguelph.ca/sofam/.

2. Many Art History lecture courses are reading-intensive while seminar courses are writing and presentation-intensive.

3. Honours majors in Art History are required to take two 4000-level seminars (excluding ARTH*4620), preferably in their 7th and 8th semesters. Please see the individual course descriptions for pre-requisites and restrictions for these courses.

#### ARTH*1220 The Visual Arts Today F (3-0) [0.50]

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.

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

#### 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.

**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.

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

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

This course is an exploration of Latin American art in the context of cultural, social and political experience, with emphasis on the work of the painter Frida Kahlo, the Mexican muralists, performance artist Guillermo Gomez-Pena and Coco Fusco, and other important contemporary artists who have represented identity, culture, and political experience as complex and multifaceted because they have lived between nations and cultures.

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

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, ARTH*1520

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

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

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, ethnocentrism, and aboriginal viewpoints.

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, 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.

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, 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.

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, ARTH*1520

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

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

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).

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, ARTH*1520

**Equate(s):** CLAS*2150

**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):** 1 of ARTH*1220, ARTH*1510, ARTH*1520

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

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

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):** 1 of ARTH*1220, ARTH*1510, 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.

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, ARTH*1520

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

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

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 great variety of different cultural origins.

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, 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”.

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, 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 myths and realities of the Renaissance in the visual arts. The artists to be studied will include Giotto, Duccio, Ghiriberti, Donatello, Alberti, the Bellini, Verrocchio and Michelangelo. Their careers will be placed against the theoretical beginnings of art writing and the intricate relationships of the emerging city-states of Siena, Florence, Milan, and the republic of Venice.

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, ARTH*1520

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

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

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

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

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, 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.

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, ARTH*1520

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

#### ARTH*2950 Baroque Art W (3-0) [0.50]

The visual arts in an age of religious crisis and the growth of great trading empires will be examined.

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

**Prerequisite(s):** 1 of ARTH*1220, ARTH*1510, ARTH*1520

**Department(s):** School of Fine Art and Music
<table>
<thead>
<tr>
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<td>ARTH*3100</td>
<td>Perspectives: Structure &amp; Space in Western Art F (3-0) [0.50]</td>
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<td>ARTH*3150</td>
<td>Space: Roman Art and Urbanism W (3-0) [0.50]</td>
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<td>ARTH*3200</td>
<td>Colour: Practice &amp; Meanings in Western Art W (3-0) [0.50]</td>
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<td>ARTH*3210</td>
<td>Critical Issues in Art History W (3-0) [0.50]</td>
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<td>Nationalism &amp; Identity in Art F (3-0) [0.50]</td>
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<td>ARTH*3310</td>
<td>Image: Pictures &amp; Their Power W (3-0) [0.50]</td>
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<td>Lives: Aspects of Western Art W (3-0) [0.50]</td>
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<td>ARTH*3330</td>
<td>Display: Visual Culture in Western Europe W (3-0) [0.50]</td>
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<td>ARTH*3340</td>
<td>The Art Object &amp; Material Culture F (3-0) [0.50]</td>
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<td>ARTH*3370</td>
<td>Gender and Art W (3-0) [0.50]</td>
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<td>Topics in Art &amp; Visual Culture II F (3-0) [1.00]</td>
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### ARTH*3100 Contemporary Canadian Art W (3-0) [0.50]

The wide range of contemporary Canadian visual arts, from painting to new technological media, from 'high' culture to punk, will be examined in the context of specifically Canadian social and historical conditions during the modern and post-modern periods.

Prerequisite(s): 10.00 credits including 2.00 credits in Art History.

Department(s): School of Fine Art and Music

### ARTH*3060 Public Art W (3-0) [0.50]

This course investigates what constitutes the "public" and the "private" domain in the arenas of art and visual culture. Provocative iconography, matters of race, nationality, sexuality, language, and identity in artistic practice, issues of censorship, controversial shows and exhibitions, the ethics of propriety and impropriety will be considered. Artists such as Linda Montano, Andres Serrano, Keith Haring, Annie Sprinkle, Robert Maplethorpe and others will be discussed.

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

Prerequisite(s): 10.00 credits including 2.00 credits in Art History.

Department(s): School of Fine Art and Music

### ARTH*3100 Perspectives: Structure & Space in Western Art F (3-0) [0.50]

This course investigates the visual arts in Europe with special emphasis on issues of illusionism, mimesis, and the representation of space.

Offering(s): Offered in even-numbered years.

Prerequisite(s): 10.00 credits including 2.00 credits in Art History.

Department(s): School of Fine Art and Music

### ARTH*3150 Space: Roman Art and Urbanism W (3-0) [0.50]

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 in 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 CLAS*3150).

Offering(s): Offered in even-numbered years.

Equate(s): CLAS*3150

Restriction(s): ARTH*3530, ARTH*4500

Department(s): School of Fine Art and Music

### ARTH*3200 Colour: Practice & Meanings in Western Art W (3-0) [0.50]

This course explores the role colour has played in the work of selected artists and periods.

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

Prerequisite(s): 10.00 credits including 2.00 credits in Art History.

Department(s): School of Fine Art and Music

### ARTH*3210 Critical Issues in Art History W (3-0) [0.50]

This course will provide an in-depth examination of recent developments in art history and critical theory.

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

Prerequisite(s): 10.00 credits including 2.00 credits in Art History, including ARTH*2480.

Department(s): School of Fine Art and Music

### ARTH*3320 Nationalism & Identity in Art F (3-0) [0.50]

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 the political, social, economic, gendered, and aesthetic meanings of works of art.

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

Prerequisite(s): 10.00 credits including 2.00 credits in Art History.

Department(s): School of Fine Art and Music

### ARTH*3330 Display: Visual Culture in Western Europe W (3-0) [0.50]

This course examines the politics of visual representation in various contexts and how it shapes the meaning of artworks. An interpretation of culture through liturgical display, museums, cabinets of curiosities, tourist art, World’s Fairs and shopping mall will be considered.

Offering(s): Offered in even-numbered years.

Prerequisite(s): 10.00 credits including 2.00 credits in Art History.

Equate(s): ARTH*3570

Department(s): School of Fine Art and Music

### ARTH*3340 The Art Object & Material Culture F (3-0) [0.50]

This course considers selected topics in the visual arts in Italy, Spain and France, with attention to questions of the political, social, economic, gendered, and aesthetic meanings of works of art.

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

Prerequisite(s): 10.00 credits including 2.00 credits in Art History.

Equate(s): ARTH*3640

Department(s): School of Fine Art and Music

### ARTH*3340 English Art, 1750 to Present F (3-0) [0.50]

In conjunction with the London Semester, this course will survey the visual arts in England from the mid-18th century to the present. Visits to galleries, museums, libraries, studios, and other cultural institutions will supplement lectures and stress the experience of actual works of art.

Prerequisite(s): Admission to London Semester

Department(s): School of Fine Art and Music

### ARTH*3520 Idea: Art Since 1950 F (3-0) [0.50]

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.

Prerequisite(s): 10.00 credits including 2.00 credits in Art History

Department(s): School of Fine Art and Music

### ARTH*3780 Gender and Art W (3-0) [0.50]

This course considers how the practice and reception of the visual arts intersect with constructs of gender in contemporary and historical contexts.

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

Prerequisite(s): 10.00 credits including 2.00 credits in Art History.

Department(s): School of Fine Art and Music

### ARTH*4310 Topics in Art & Visual Culture I W (3-0) [1.00]

This seminar course is designed to explore one or more issues in Art and Visual Culture (the America’s) depending on the expertise of the instructor. Students should consult the department for specific offerings.

Prerequisite(s): A minimum of 14.00 credits including 2.50 credits in Art History

Restriction(s): ARTH*4050. Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all Art History and SART course attempts.

Department(s): School of Fine Art and Music

### ARTH*4330 Topics in Art & Visual Culture II F (3-0) [1.00]

This seminar course is designed to explore one or more issues in Art and Visual Culture (the America’s) depending on the expertise of the instructor. Students should consult the department for specific offerings.

Prerequisite(s): A minimum of 14.00 credits including 2.50 credits in Art History

Restriction(s): ARTH*4060. Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all Art History and SART course attempts.

Department(s): School of Fine Art and Music
### ARTH*4330 Topics in Art & Visual Culture III W (3-0) [1.00]

This seminar course is designed to explore one or more issues in Art and Visual Culture (Western Art) depending on the expertise of the instructor. Students should consult the department for specific offerings.

**Prerequisite(s):** A minimum of 14.00 credits including 2.50 credits in Art History.

**Restriction(s):**
- ARTH*4150
- Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all Art History and SART course attempts.

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

### ARTH*4340 Topics in Art & Visual Culture IV F (3-0) [1.00]

This seminar course is designed to explore one or more issues in Art and Visual Culture (Western Art) depending on the expertise of the instructor. Students should consult the department for specific offerings.

**Prerequisite(s):** A minimum of 14.00 credits including 2.50 credits in Art History.

**Restriction(s):**
- ARTH*4160 Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all Art History and SART course attempts.

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

### ARTH*4350 Topics in Art & Visual Culture V F (3-0) [1.00]

This seminar course is designed to explore one or more issues in Art and Visual Culture (Questions in Criticism) depending on the expertise of the instructor. Students should consult the department for specific offerings.

**Prerequisite(s):**
- A minimum of 14.00 credits including 2.50 credits in Art History.
- ARTH*4550 Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all Art History and SART course attempts.

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

### ARTH*4600 Individual Study - Art History S,F,W (3-0) [0.50]

Each student establishes, in consultation with the faculty member who has agreed to supervise the course, the content of this special study within the area of expertise of that instructor. Students should plan their project and submit their proposal to the Director of the School (or designate) by the last day of classes in the semester prior to the one which they plan to enroll in ARTH*4600.

**Prerequisite(s):**
- 14.00 credits, including 6 credits in Art History.
- Instructor consent required.

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

### ARTH*4620 Museum Studies F (3-0) [0.50]

This seminar course will be offered in conjunction with the staff and facilities of the Macdonald Stewart Art Centre and will deal with historical matters relating to the role of the art museum in western life and the critical day-to-day management of a contemporary one. Students will participate, when possible, in the preparation of a current or forthcoming exhibition in the Centre.

**Prerequisite(s):**
- A minimum of 9.50 credits including 2.00 credits in Art History.

**Restriction(s):**
- Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all Art History course attempts.

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

### ARTH*4800 Experiential Learning F.W (3-0) [0.50]

This course provides an opportunity for independent study based on Art History related voluntary or paid experience. Evaluation will be based on the student’s performance on related work assignments at the host institution as well as any assignments determined by the relevant instructor. Written proposals/rationales, signed by the appropriate instructor, must be submitted to the Director of the School for approval by the last day of course selection in the Fall (for Winter) or Winter (for the following Fall semester).

**Prerequisite(s):**
- A minimum of 14.00 credits including 2.50 credits in Art History.

**Restriction(s):**
- 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.

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

### ARTH*4850 Honours Thesis I S,F,W (0-9) [0.50]

Under the guidance of a faculty member over two semesters (ARTH*4850 in the first semester and ARTH*4860 in the second semester), the honours student will research and complete a major independent project in art history or criticism for final approval by a faculty member. Recommended for all honours students.

**Prerequisite(s):**
- ARTH*4850

**Restriction(s):**
- Instructor consent required. Approval of the Director required.

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

### ARTH*4860 Honours Thesis II S,F,W (0-9) [0.50]

Under the guidance of a faculty member over two semesters (ARTH*4850 in the first semester and ARTH*4860 in the second semester), the honours student will research and complete a major independent project in art history or criticism for final approval by a faculty member. Recommended for all honours students.

**Prerequisite(s):**
- ARTH*4850

**Restriction(s):**
- Instructor consent required. Approval of the Director required.

**Department(s):** School of Fine Art and Music
<table>
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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
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<tbody>
<tr>
<td>ASCI*1000</td>
<td>Society and Science I: Historical Perspectives F (3-0) [0.50]</td>
<td>This course explores historically the complex interrelations between science and society. It focuses on the ways in which science has both shaped, and been shaped by, its larger social and cultural contexts.</td>
<td>HIST*1250 Registration in the BAS degree program.</td>
<td>Registration in the BAS degree program.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*1010</td>
<td>Society and Science II: Current Issues W (3-0) [0.50]</td>
<td>This interdisciplinary course examines scientific and technological activities in modern society, including a number of current controversies. Case studies and debates will be used to examine the multiplicity of impacts and reactions to these activities.</td>
<td>ASCI*1000</td>
<td>Registration in the BAS degree program.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*2000</td>
<td>Modes of Inquiry and Communication Across Disciplines F (3-0) [0.50]</td>
<td>This course considers the process of inquiry and quest for knowledge in the natural and applied sciences, and the social sciences and humanities as they are constituted as disciplines within the modern university. The course will consider the social forces that shape inquiry, including funding for research, and consider the communication of findings, both inside and outside the academy.</td>
<td>ASCI*1000</td>
<td>Registration in the BAS degree program.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*3000</td>
<td>Arts and Sciences Community Project F (3-0) [0.50]</td>
<td>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.)</td>
<td>ASCI*2000</td>
<td>Registration in the BAS degree program.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*3100</td>
<td>Case Studies in Arts and Sciences Research W (3-0) [0.50]</td>
<td>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.</td>
<td>ASCI*2000</td>
<td>Registration in the BAS degree program.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*3200</td>
<td>Issues in Public Health S (3-0) [0.50]</td>
<td>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.</td>
<td>Offered through Distance Education format only.</td>
<td>8.50 credits</td>
<td>Dean's Office, College of Arts</td>
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<td>ASCI*3700</td>
<td>Independent Studies in Arts/Sciences S,F,W (3-0) [0.50]</td>
<td>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.</td>
<td>ASCI*2000; cumulative average of 75%</td>
<td>Registration in the BAS degree program.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*4010</td>
<td>Arts and Sciences Honours Research Seminar W (3-0) [1.00]</td>
<td>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%.</td>
<td>12.00 credits, including (1 of ASCI<em>3000, ASCI</em>3100, ASCI<em>3200, ASCI</em>3700); cumulative average of 75%</td>
<td>Registration in the BAS degree program.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*4200</td>
<td>Topics in Arts and Sciences Research F,W (3-0) [0.50]</td>
<td>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.)</td>
<td>12.00 credits including ASCI*2000</td>
<td>Registration in the BAS degree program.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*4300</td>
<td>Topics in Arts and Sciences Research F,W (3-0) [0.50]</td>
<td>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.)</td>
<td>12.00 credits including ASCI*2000</td>
<td>Registration in the BAS degree program.</td>
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<tr>
<td>ASCI*4700</td>
<td>Independent Studies in Arts/Sciences S,F,W (3-0) [0.50]</td>
<td>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.</td>
<td>A minimum of 14.00 credits.</td>
<td>Registration in the BAS degree program. Instructor consent required.</td>
<td>Dean's Office, College of Arts</td>
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<tr>
<td>ASCI*4710</td>
<td>Independent Studies in Arts/Sciences S,F,W (3-0) [0.50]</td>
<td>This course continues work undertaken in ASCI<em>4700, and will normally be planned in concert with planning for ASCI</em>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.</td>
<td>ASCI*4700</td>
<td>Registration in the BAS degree program. Instructor consent required.</td>
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### Biochemistry

**Department of Molecular and Cellular Biology**

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<tr>
<th>Course Code</th>
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<tr>
<td>BIOC*2580</td>
<td>Introduction to Biochemistry</td>
<td>S,F,W</td>
<td>3-3</td>
<td>CHEM<em>1050 or CHEM</em>2300</td>
<td>Department of Molecular and Cellular Biology</td>
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<tr>
<td>BIOC*3560</td>
<td>Structure and Function in Biochemistry</td>
<td>F,W</td>
<td>3-0</td>
<td>BIOC*2580</td>
<td>Department of Molecular and Cellular Biology</td>
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<tr>
<td>BIOC*3570</td>
<td>Analytical Biochemistry</td>
<td>S,F</td>
<td>3-4</td>
<td>(CHEM<em>2400 or CHEM</em>2480), BIOC*2580</td>
<td>Department of Molecular and Cellular Biology</td>
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<tr>
<td>BIOC*4520</td>
<td>Metabolic Processes</td>
<td>F</td>
<td>3-0</td>
<td>BIOC<em>3560 or BIOC</em>3570</td>
<td>Department of Molecular and Cellular Biology</td>
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<tr>
<td>BIOC*4540</td>
<td>Enzymology</td>
<td>W</td>
<td>3-3</td>
<td>BIOC<em>3560 (may be taken concurrently), BIOC</em>3570</td>
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<tr>
<td>BIOC*4580</td>
<td>Membrane Biochemistry</td>
<td>W</td>
<td>3-0</td>
<td>BIOC<em>3560 or BIOC</em>3570</td>
<td>Department of Molecular and Cellular Biology</td>
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XII. Course Descriptions, Biology

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

BIOL*1020 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*1030, BIOL*1040, BIOL*1070, BIOL*1080, BIOL*1090
Department(s): Department of Integrative Biology

BIOL*1050 Biology of Plants & Animals in Managed Ecosystems F (3-2) [0.50]
In this course students will investigate the biology of plants and animals in the context of agroecosystems and other managed ecosystems. Students will learn about the form and function of plants and animals and interactions between organisms and their environments. The 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.

Restriction(s): BIOL*1030 BIOL*1040
Department(s): Department of Plant Agriculture, Department of Animal and Poultry Science
Location(s): Kemptville, Ridgetown, Guelph

BIOL*1070 Discovering Biodiversity F,W (3-0) [0.50]
This course strongly emphasizes the development of learning and reasoning skills, an understanding of the nature of biological inquiry, and key concepts in evolution, ecology, and organismal biology. These include the meaning and significance of biodiversity and current issues surrounding it, the evolutionary processes through which biological diversity originates and is interrelated, the complexity of organisms and the importance of physical organization and regulatory processes, and the nature of interactions among organisms and between organisms and their biotic and abiotic environments. Students lacking Grade 12 or 4U Biology should consult with their program counsellor prior to taking BIOL*1070 in first semester.

Restriction(s): BIOL*1030 , BIOL*1040
Department(s): Department of Integrative Biology

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.

Restriction(s): BIOL*1030 , BIOL*1040
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.

Restriction(s): BIOL*1030, BIOL*1040
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.

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 biodiversity 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.

Restriction(s): BIOL*1040 or (BIOL*1070, BIOL*1090)
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.

Restriction(s): BIOL*2060, (STAT*2040 or STAT*2230)
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.

Restriction(s): MBG*2000 or 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.

Restriction(s): BIOL*2400
Department(s): Department of Integrative Biology

BIOL*3110 Population Ecology F,W (3-1) [0.50]
This course will explore the structure and dynamics of animal and plant populations. The first part of the course will focus on demographic characteristics of populations and simple models of population growth and natural regulation. The second part of the course will concentrate on a variety of population processes, including predator-prey interactions, spatial dynamics, and disease-host interactions, and consider how these processes affect population dynamics. A quantitative approach emphasizing the use of mathematical models, graphical analysis, and statistics will provide the basic conceptual framework, which will be illustrated by selected case studies.

Restriction(s): BIOL*2060, (MATH*1080 or MATH*1200), (STAT*2040 or STAT*2230)
Department(s): Department of Integrative Biology
BIOL*3120 Community Ecology W (3-1) [0.50]
This course will examine the structure and dynamics of communities, and will deal with both theoretical and applied aspects of community ecology. Emphasis is on the modern quantitative view of community ecology and on the development of problem-solving skills.
Prerequisite(s): BIOL*2060 or BIOL*3110
Department(s): Department of Integrative Biology

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): ( MG*2020 or MG*2040), STAT*2040
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*1040 or BIOL*1070), CHEM*1050, ZOO*2700 is strongly recommended
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.
Prerequisite(s): ZOO*3210
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, (BIOL*3110 or BIOL*3120), (STAT*2040 or STAT*2230)
Department(s): Department of Integrative Biology

BIOL*4120 Evolutionary Ecology W (4-4) [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*3110, (1of BIOL*2400, BIOL*3400 , ZOO*3300 )
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): BIOL*3110 or 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 Algomaquin 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, or 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 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): ( MG*2020 or MG*2040), STAT*2040
Department(s): Department of Plant Agriculture

BIOL*4500 Natural Resource Policy Analysis W (3-0) [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*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 enrolment 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*3100, BIOM*3200, HK*3940, ZOO*3200, ZOO*3210 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*3100, BIOM*3200, HK*3940, PHYS*2030, PSYC*2410, ZOO*3200

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 Comparative Mammalian Anatomy F (2-3) [0.50]

This lecture and laboratory course examines the anatomy of mammals including humans. This course emphasizes the similarities of the basic mammalian plan. Evolutionary patterns, structure-function relationships and functional differences are considered.

Prerequisite(s): BIOL*1040 or (BIOL*1070, BIOL*1080)

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*1040 or (BIOL*1070, BIOL*1090) ], (1 of BIOM*3100, BIOM*3200, 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): BIOC*2580, (1 of BIOM*3110, BIOM*3200, HK*3940, ZOO*3200)

Department(s): Department of Biomedical Sciences

BIOM*3200 Mammalian 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

Equate(s): BIOM*3110

Restriction(s): BIOM*3100, HK*3940

Department(s): Department of Biomedical Sciences

BIOM*4030 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*3100, BIOM*3200, HK*3940, (ZOO*3200, ZOO*3210)]

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 physiological 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*3100, BIOM*3200, 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): (1 of BIOL*2210, MCB*2210, MCB*2050), (1 of ANSC*3080, BIOM*3110, BIOM*3200, HK*3940)

Restriction(s): BIOM*3030, 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 micro anatomy of the female and male reproductive systems. Placentation, 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*3110, BIOM*3200, HK*3940, ZOO*3210), (1 of BIOM*3030, BIOM*4070, ZOO*3000) Note: ZOO*3000 can be taken as a co-requisite.

Department(s): Department of Biomedical Sciences
Biom*3150 Cancer Biology W (S, F, W) [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): BIOM*3040, ( MBC*2020 or MBC*2040), ( MCB*2210 or MCB*2050), (1 of BIOM*3030, BIOM*4070, ZOO*3000)
Department(s): Department of Biomedical Sciences

Biom*4180 Cardiology W (S, F, W) [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*3110, BIOM*3200, 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*4210 Critical Thinking in Health Sciences Research F (S, F, W) [0.50]

This course will explore a variety of issues related to the scientific ideals and practical realities of health sciences research. 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): 14.00 credits
Restriction(s): HK*4410 Enrolment restricted to BSC.BIOM majors.
Department(s): Department of Biomedical Sciences

Biom*4220 Current Health Science Research F (S, W) [0.50]

In this course, students will explore various medical research initiatives by attending seminars, meeting with the investigators, and formulating and answering meaningful scientific questions. Students will be exposed to a variety of research seminar styles, develop scientific communication skills and gain experience in the peer-review process.

Co-requisite(s): BIOM*4210
Restriction(s): Enrolment restricted to BSC.BIOM majors. Instructor consent required.
Department(s): Department of Biomedical Sciences

Biom*4300 Biomedical Communications F (S, W) [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*4420 Research Modules W (S, F, W) [0.50]

This course is taught as a series of hands-on modules on various research topics, techniques and approaches that are current in health science laboratories. This course is primarily aimed at students in the Neurosciences, Biomedical Sciences, Human Kinetics and Nutritional and Nutraceutical Sciences programs, who prefer a more structured approach to their research experience.

Prerequisite(s): 14.00 credits (1 of BIOM*3110, BIOM*3200, HK*3940)
Recommended: BIOM*4210 or HK*4410
Equatre(s): HK*4420
Restriction(s): BIOM*4510, BIOM*4521/2, HK*4360, HK*4371/2 Instructor consent required.
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 (S, W) [1.00]

This is the first part of the two-semester course. See 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*4521/2 Research in Biomedical Sciences F-W [2.00]

In this course, students will conduct an extensive 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. Students should make arrangements to find their own faculty advisor well in advance of course selection. A departmental registration form must be obtained from the course coordinator and signed by the faculty advisor before students can be admitted into the course.

This is a two-semester course offered over consecutive semesters. When you select it you must select BIOM*4521 in the first semester and BIOM*4522 in the second semester. A grade will not be assigned in BIOM*4521 until BIOM*4522 has been completed.

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 W (0-12) [1.00]

This is the second part of the two-semester course. See BIOM*4521/2 for the complete course description.

Prerequisite(s): BIOM*4521
Department(s): Department of Biomedical Sciences
**Botany**

**Department of Integrative Biology**

**Department of Molecular and Cellular Biology**

**Department of Plant Agriculture**

Additional course listings may be found in the course descriptions for Biology and Plant Biology.

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**BOT*1200 Plants and Human Use W (3-0) [0.50]**

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 or students in the B.A.S. Program.

*Restriction(s):* BIOL*1030, BIOL*1040

*Department(s):* Department of Plant Agriculture

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**BOT*2000 Plants, Biology and People W (3-0) [0.50]**

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):* 1 of BIOL*1040, BIOL*1050, BIOL*1070

*Restriction(s):* BOT*1200

*Department(s):* Department of Plant Agriculture

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**BOT*2100 Life Strategies of Plants F,W (3-3) [0.50]**

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):* BIOL*1040 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090)

*Department(s):* Department of Molecular and Cellular Biology

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**BOT*3050 Plant Functional Ecology F (3-3) [0.50]**

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*1040 or BIOL*1070)

*Department(s):* Department of Integrative Biology

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**BOT*3310 Plant Growth and Development W (3-3) [0.50]**

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 "hands-on" laboratories. Specific topics include plant 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):* BIOL*1040 or ([BIOL*1090, BIOL*1070 or BIOL*1080])

*Department(s):* Department of Molecular and Cellular Biology

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**BOT*3410 Plant Anatomy F (3-3) [0.50]**

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 microscopical methods used to study them. The lab emphasizes interpretation of plant structure as it relates to function.

*Prerequisite(s):* BIOL*1040 or (2 of BIOL*1070, BIOL*1080, BIOL*1090)

*Department(s):* Department of Molecular and Cellular Biology

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**BOT*3710 Plant Diversity and Evolution W (3-3) [0.50]**

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*1040 or BIOL*1090), BIOC*2580

*Department(s):* Department of Molecular and Cellular Biology

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**BOT*4380 Metabolism in the Whole Life of Plants W (3-0) [0.50]**

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*1040 or BIOL*1090), BIOC*2580

*Department(s):* Department of Molecular and Cellular Biology
### Business

#### BUS*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.)

**Restriction(s):** BUS*4000, HROB*2100, HROB*4000, PSYC*3080

**Department(s):** Department of Management

#### BUS*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. Last offering - Winter 2015

**Prerequisite(s):** 1 of ACCT*2220, BUS*2090, BUS*2220, HTM*2030

**Equate(s):** HTM*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

#### BUS*4550 Applied Business Project I S,F,W (3-0) [0.50]

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.

**Prerequisite(s):** 10.00 credits

**Restriction(s):** AGEC*4550, FARE*4550 Instructor consent required.

**Department(s):** Department of Management

#### BUS*4560 Applied Business Project II S,F,W (3-0) [0.50]

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.

**Prerequisite(s):** BUS*4550

**Restriction(s):** AGEC*4560, FARE*4560 Instructor consent required.

**Department(s):** Department of Management
Chemistry

Department of Chemistry

CHEM*1040 General Chemistry I F,W (3-3) [0.50]
This course introduces concepts of chemistry, the central link between the physical and biological sciences. Principles discussed include chemical bonding, simple reactions and stoichiometry, chemical equilibria and solution equilibria (acids, bases, and buffers), and introductory organic chemistry.
Prerequisite(s): 4U Chemistry, (or equivalent) or CHEM*1060
Department(s): Department of Chemistry

CHEM*1050 General Chemistry II F,W (3-3) [0.50]
This course provides an introductory study of the fundamental principles governing chemical transformations: thermodynamics (energy, enthalpy, and entropy); kinetics (the study of rates of reactions); and redox/electrochemistry.
Prerequisite(s): CHEM*1040
Department(s): Department of Chemistry

CHEM*1060 Introductory Chemistry F (3-0) [0.50]
This course stresses fundamental principles of chemistry and is designed for students without Grade 12 or 4U Chemistry or equivalent. Topics include: atomic theory, the periodic table, stoichiometry, properties of gases and liquids, acid-base concepts and chemical equilibria. This course is intended only for students who require the equivalent of Grade 12 or 4U Chemistry in order to proceed to CHEM*1040.
Offering(s): Offered through Distance Education format only.
Department(s): Department of Chemistry

CHEM*1100 Chemistry Today W (3-0) [0.50]
This chemistry course for non-scientists will outline the involvement of chemistry in our daily lives and will provide an appreciation of chemistry from atoms to important complex molecules. Topics will include energy sources, air and water pollution, natural and synthetic polymers, household chemicals, foods, drugs and biochemcials.
Offering(s): Offered through Distance Education format only.
Restriction(s): CHEM*1040
Department(s): Department of Chemistry

CHEM*2060 Structure and Bonding F (3-1.5) [0.50]
This course covers the applications of symmetry, simple crystal structures and principles of bonding. Molecular orbital theory is used to explain the fundamental relationship between electronic and molecular structure. This course provides the elementary quantum background for an understanding of the electronic structures of atoms and molecules.
Prerequisite(s): CHEM*1050, [IPS*1510,(MATH*1210, PHYS*1010)]
Department(s): Department of Chemistry

CHEM*2070 Structure and Spectroscopy S,W (3-1.5) [0.50]
This course provides an introduction to spectroscopy and its relationship to molecular structure and dynamics. Rotational, vibrational, electronic and magnetic resonance spectroscopies will be studied. Concepts introduced in CHEM*2060 will be applied to chemical and biochemical problems through spectroscopic techniques. Central to this course is the use of spectroscopy for the determination of molecular structures and the investigation of molecular motions.
Prerequisite(s): CHEM*2060
Department(s): Department of Chemistry

CHEM*2400 Analytical Chemistry I S,F,W (3-6) [0.75]
This course provides instruction in quantitative analysis of important inorganic species in solution by volumetric, gravimetric and spectrophotometric techniques. The students will utilize spreadsheet applications to study solution equilibria and data analysis. This course is intended to build the foundations of good analytical laboratory practice.
Prerequisite(s): CHEM*1050
Restriction(s): CHEM*2480
Department(s): Department of Chemistry

CHEM*2480 Analytical Chemistry I S,F,W (3-3) [0.50]
This course consists of a lecture portion that is the same as CHEM*2400 and a 3 hour laboratory component.
Prerequisite(s): CHEM*1050
Restriction(s): CHEM*2400 This is a Priority Access Course. 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 website for more information.
Department(s): Department of Chemistry

CHEM*2700 Organic Chemistry I S,W (3-3) [0.50]
This course provides an introduction to organic chemistry through the discussion of stereochemistry and major reaction mechanisms such as nucleophilic substitution and elimination, electrophilic addition, free radical reactions, electrophilic aromatic substitution, nucleophilic addition and nucleophilic acyl substitution.
Prerequisite(s): CHEM*1060
Restriction(s): CHEM*2300 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*2820 Thermodynamics and Kinetics F (3-3) [0.50]
This course examines the laws and applications of chemical thermodynamics and chemical kinetics.
Prerequisite(s): CHEM*1050, (1 of IPS*1510, MATH*1210, MATH*2080)
Restriction(s): CHEM*2880
Department(s): Department of Chemistry

CHEM*2880 Physical Chemistry F (3-1.5) [0.50]
This course survey is intended for students who are not specializing in chemistry or chemical physics. Topics include basic thermodynamics, chemical equilibriurn, macromolecular binding, chemical kinetics, enzyme kinetics, transport processes, colligative properties and spectroscopy. This course describes macroscopic observable properties of matter in terms of molecular concepts.
Prerequisite(s): CHEM*1050, (1 of IPS*1500, MATH*1000, MATH*1080, MATH*1200)
Restriction(s): CHEM*2820
Department(s): Department of Chemistry

CHEM*3360 Environmental Chemistry and Toxicology S,W (3-0) [0.50]
This course examines the chemistry of the natural environment and the influence of pollutants upon the environment. Topics will include methods of introduction of pollutants to, and removal of pollutants from, the environment. (Also listed as TOX*3360.)
Offering(s): Also offered through Distance Education format.
Prerequisite(s): CHEM*1050
Restriction(s): TOX*3360
Department(s): Department of Chemistry

CHEM*3430 Analytical Chemistry III: Instrumental Analysis S (3-3) [0.50]
This course examines the methods for the separation, identification and quantification of substances in the solid, liquid and vapour states. Emphasis will be placed on modern instrumental methods and trace analysis.
Prerequisite(s): CHEM*2400 or CHEM*2480
Restriction(s): TOX*3360
Department(s): Department of Chemistry

CHEM*3440 Analytical Chemistry III: Analytical Instrumentation F (3-3) [0.50]
Analytical Instrumentation, data acquisition, processing and applications in Chemistry and Biological Chemistry.
Prerequisite(s): CHEM*3430
Department(s): Department of Chemistry

CHEM*3640 Chemistry of the Elements I F (3-3) [0.50]
A comprehensive introduction to concepts used by inorganic chemists to describe the structure, properties, and reactivity of compounds of the main group elements. The most important concepts covered are: Electronic Structure of Atoms, Symmetry, MO theory, Acids and Basis, Structure of Solids, Trends in the Periodic System.
Prerequisite(s): CHEM*2070
Restriction(s): CHEM*3640
Department(s): Department of Chemistry

CHEM*3650 Chemistry of the Elements II W (3-3) [0.50]
The chemistry and structure of transition metal compounds; electronic spectral and structural properties of transition metal complexes; mechanisms of their substitution and redox reactions. Introduction to organometallic chemistry.
Prerequisite(s): CHEM*3640
Department(s): Department of Chemistry
### XII. Course Descriptions, Chemistry

#### CHEM*3750 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  
**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 or CHEM*3450  
**Department(s):** Department of Chemistry

#### CHEM*4620 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  
**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  
**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 reaction, 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*4880 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*3870)  
**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
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Description</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
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<tbody>
<tr>
<td>CHIN*1200</td>
<td>Introductory Chinese I F (3-0) [0.50]</td>
<td>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.</td>
<td>Students with native or near-native ability in Chinese will not be admitted to this course. Instructor consent required. In order to verify student’s level.</td>
<td>School of Languages and Literatures</td>
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<tr>
<td>CHIN*1210</td>
<td>Introductory Chinese II W (3-0) [0.50]</td>
<td>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.</td>
<td>CHIN*1200</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>CHIN*1280</td>
<td>Conversational Chinese I F (3-0) [0.50]</td>
<td>The emphasis of this course is intensive practice of conversation and vocabulary acquisition in Mandarin Chinese.</td>
<td>This course is restricted to students who are not fluent in Mandarin Chinese.</td>
<td>School of Languages and Literatures</td>
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<tr>
<td>CHIN*1290</td>
<td>Conversational Chinese II W (3-0) [0.50]</td>
<td>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.</td>
<td>CHIN*1280</td>
<td>School of Languages and Literatures</td>
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<tr>
<td>CHIN*2010</td>
<td>Chinese Language and Culture F (3-5) [1.00]</td>
<td>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.</td>
<td>CHIN*1200 or equivalent</td>
<td>School of Languages and Literatures</td>
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<tr>
<td>CHIN*2200</td>
<td>Intermediate Chinese I F (3-0) [0.50]</td>
<td>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.</td>
<td>CHIN*1210</td>
<td>School of Languages and Literatures</td>
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<tr>
<td>CHIN*2210</td>
<td>Intermediate Chinese II W (3-0) [0.50]</td>
<td>This is a continuation of Intermediate Chinese I. Additional emphasis will be given to the study of Chinese characters and grammar.</td>
<td>CHIN*2200</td>
<td>School of Languages and Literatures</td>
</tr>
</tbody>
</table>
XII. Course Descriptions, Classical Studies

### Classical Studies

#### School of Languages and Literatures

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

#### CLAS*1000 Introduction to Classical Culture FW (3-0) [0.50]

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.

**Offering(s):** Winter semester offering in odd-numbered years.

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

#### CLAS*2000 Classical Mythology W (3-0) [0.50]

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.

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

#### CLAS*2150 Western Art: Greece F (3-0) [0.50]

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).

**Equate(s):** ARTH*2150

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

#### CLAS*2350 The Classical Tradition W (3-0) [0.50]

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.

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

**Prerequisite(s):** CLAS*1000 or CLAS*2000

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

#### CLAS*2360 The Classical Tradition (in Latin) W (6-0) [1.00]

This course augments CLAS*2350 for students of Latin through the reading and study in Latin of certain primary sources, in particular Cicero, Quintilian, Augustine.

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

#### CLAS*2360 The Classical Tradition (in Latin) W (6-0) [1.00]

This course augments CLAS*2350 for students of Latin through the reading and study in Latin of certain primary sources, in particular Cicero, Quintilian, Augustine.

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

#### CLAS*2370 The Classical Revolution F (3-0) [0.50]

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 the literature and thought of the period.

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

**Prerequisite(s):** 1 of CLAS*1000, CLAS*2000, HIST*2850

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

#### CLAS*3010 The Roman Revolution W (3-0) [0.50]

An examination of the collapse of the Roman Republic and the development of the Imperial government under Augustus. The paradox of the external power and inner instability of Rome.

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

**Prerequisite(s):** 1 of CLAS*1000, CLAS*2000, HIST*2850

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

#### CLAS*3020 History of the Hellenistic World F (3-0) [0.50]

The rise and fall of the Hellenistic states from the death of Alexander the Great until the Roman conquest, with political emphasis on the development of the monarchies and cultural emphasis on the Hellenization of the East.

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

**Prerequisite(s):** 1 of CLAS*1000, CLAS*2000, HIST*2850

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

#### CLAS*3030 Epic Heroes and Poems W (3-0) [0.50]

The nature and significance of the epic hero. Epic as code and as critique of tradition. Oral poetry, and critical problems raised by it. The central texts are The Iliad, The Odyssey, and Virgil's Aeneid; other poems are also studied.

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

**Prerequisite(s):** CLAS*1000 or CLAS*2000

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

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**Notes:**

The nature of tragedy, and the existential and moral questions raised by the plays of Aischylos, Sophokles, and Euripides. Comedy, fantasy, and society in Aristophanes.

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

**Prerequisite(s):** CLAS*1000 or CLAS*2000

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

This course augments CLAS*3000 for students of Greek through the reading and study in Greek of selected primary sources, such as Herodotus, Thucydides, and Plutarch.

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

**Prerequisite(s):** GREK*2020

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

This course augments CLAS*3010 for students of Latin through the reading and study in Latin of selected primary sources, notably Sallust, Cicero, Caesar, and Suetonius.

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

**Prerequisite(s):** LAT*2000

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

This course augments CLAS*3020 for students of Greek through the reading and study in Greek of selected books from the Iliad and/or Odyssey. The course will include close study of the epic dialect and features of its formulaic language.

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

**Prerequisite(s):** GREK*2020

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

This course augments CLAS*3030 for students of Greek through the reading and study in Greek of extant plays.

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

**Prerequisite(s):** GREK*2020

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

An examination of the varieties of religious experience and of religious activity in Greece and Rome, before the establishment of Christianity. Particular attention is paid both to the relations of religion to state and to the relations of the individual to gods.

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

**Prerequisite(s):** CLAS*1000 or CLAS*2000

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

This course augments CLAS*3100 for students of Latin through the reading and study of Latin primary sources.

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

**Prerequisite(s):** LAT*2000

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

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).

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

**Equate(s):** ARTH*3150

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

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Last Revision: October 14, 2014

2014-2015 Undergraduate Calendar
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>CLAS*3300</td>
<td>Directed Reading in Greek or Latin U</td>
<td>3-0 [0.50]</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. <strong>Prerequisite(s):</strong> [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)] <strong>Restriction(s):</strong> Instructor consent required. <strong>Department(s):</strong> School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*4000</td>
<td>Novel and Romance in Antiquity F</td>
<td>3-0 [0.50]</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. <strong>Offering(s):</strong> Offered in odd-numbered years. <strong>Prerequisite(s):</strong> CLAS<em>3030 or CLAS</em>3040 <strong>Department(s):</strong> School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*4010</td>
<td>Novel and Romance in Antiquity (in Latin)</td>
<td>6-0 [1.00]</td>
<td>This course augments CLAS<em>4000 for students of Latin through the reading and study in Latin of an extant novel. <strong>Offering(s):</strong> Offered in odd-numbered years. <strong>Prerequisite(s):</strong> LAT</em>2000 <strong>Department(s):</strong> School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*4150</td>
<td>Research Paper in Classics</td>
<td>3-0 [0.50]</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. <strong>Prerequisite(s):</strong> 1.50 credits in Classical Studies courses at the 3000 level <strong>Department(s):</strong> School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*4400</td>
<td>Seminar in Classics</td>
<td>3-0 [0.50]</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. <strong>Prerequisite(s):</strong> 1.50 credits in Classical Studies at the 3000 level <strong>Department(s):</strong> School of Languages and Literatures</td>
</tr>
</tbody>
</table>
Computing and Information Science

School of Computer Science

Note: Credit may be obtained for 1 of CIS*1000 or CIS*1200. Students who major or minor in Computing and Information Science may not receive credit for the following courses unless taken to satisfy the requirements of another program: MATH*1050.

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 contains an emphasis on application packages for personal and business use. Not recommended for students with previous computer science background. Cannot be taken for credit by students taking a major or minor in Computing and Information Science.

Offering(s): Also offered through Distance Education format.
Restriction(s): CIS*1200, Not available to students registered in B.A.Sc. Program (Applied Human Nutrition major)
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. For students who wish a balance between programming and the use of software packages. Cannot be taken for credit by students taking a major or minor in Computing and Information Science.

Offering(s): Also offered through Distance Education format.
Restriction(s): CIS*1000
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, 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): CIS*1650
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): CIS*1900
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.

Prerequisite(s): (CIS*1900 or CIS*1910), (CIS*2500 or CIS*2650)
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): CIS*3000 This course may not be taken for credit by 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 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): CIS*1200 or CIS*1500
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 the 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): CIS*1250, CIS*1500
Restriction(s): Restricted to Software Engineering majors.
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 programming and algorithm 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): CIS*2500
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 calibration and validation, and algebraic, probabilistic and simple queuing models of software and hardware operation.

Prerequisite(s): CIS*1500
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): CIS*1500
Equate(s): CIS*2650
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): CIS*2500, (CIS*1910 or ENGG*1500)
Department(s): School of Computer Science

CIS*2750 Software Systems Development and Integration W (3-2) [0.75]
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): CIS*2430, CIS*2520
Restriction(s): CIS*2450
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, combinatorics, discrete probability, and graph theory.

Prerequisite(s): CIS*1500, (CIS*1910 or ENGG*1500)
Restriction(s): CIS*1900
Department(s): School of Computer Science

Last Revision: October 14, 2014
2014-2015 Undergraduate Calendar
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 W (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 I W (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 involve 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 bounds, 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*3530 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 concurrency 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*3750 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 (3-0) [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
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*4210 Telecommunications W (3-1) [0.50]
This course covers the low-level and the hardware-oriented aspects of computer communications, specifically the physical, link, and network layers. It includes basic telecommunication technology, local area networks, low level protocols, switching technologies, wireless and mobile networking, data and stream compression, and error coding.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): CIS*3750 or CIS*3760
Restriction(s): CIS*4200
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*2210, (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 searchings, 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*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*4750
Department(s): School of Computer Science

CIS*4800 Computer Graphics W (3-1) [0.50]
This course is an introduction to computer graphics. Topics include graphics programming concepts, geometrical transformations, viewing 3-D projections, raster graphics, sculptured surfaces, visible surface determination, image processing and other special topics. Practical issues will be covered by assignment using currently available graphics equipment.
Offering(s): Offered in even-numbered years.
Prerequisite(s): CIS*3110, (CIS*3750 or CIS*3760)
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*3430 or CIS*3750)
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): 7.00 credits in CIS
Restriction(s): Instructor consent required.
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*XXX courses are limited to students registered in a co-operative education program.

**COOP*1000 Co-op Work Term I F,W,S (3-0) [0.00]**

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.

**Prerequisite(s):** COOP*1100

**Department(s):** Co-operative Education & Career Services

**COOP*1100 Introduction to Co-operative Education F,W (1-0) [0.00]**

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 "new" 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.

**Prerequisite(s):** 2.00 credits

**Restriction(s):** Enrolment in a co-operative education program

**Department(s):** Co-operative Education & Career Services

**COOP*2000 Co-op Work Term II F,W,S (3-0) [0.00]**

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.

**Prerequisite(s):** Completion of previous co-op work requirements in COOP*1000

**Department(s):** Co-operative Education & Career Services

**COOP*3000 Co-op Work Term III F,W,S (3-0) [0.00]**

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.

**Prerequisite(s):** Completion of previous co-op work requirements in COOP*2000

**Department(s):** Co-operative Education & Career Services

**COOP*4000 Co-op Work Term IV F,W,S (3-0) [0.00]**

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.

**Prerequisite(s):** Completion of previous co-op work requirements in COOP*3000

**Department(s):** Co-operative Education & Career Services

**COOP*5000 Co-op Work Term V F,W,S (3-0) [0.00]**

This is a semester long experience in a paid work setting. Co-op work semester 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.

**Prerequisite(s):** Completion of previous co-op work requirements in COOP*4000

**Department(s):** Co-operative Education & Career Services
## Crop Science

### 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.

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

**Offering(s):** Offered in odd-numbered years.
**Prerequisite(s):** 1 of AGR*2451/2, AGR*2470, CROP*2110
**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 crop enterprises; 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. Laboritories will include weed identification, weed control methods, and demonstrations of the effects of various herbicides.

**Prerequisite(s):** AGR*2451/2 or 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>Course Title</th>
<th>Credits</th>
<th>Department(s)</th>
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</thead>
<tbody>
<tr>
<td>ECON*1050</td>
<td>Introductory Microeconomics</td>
<td>S,F,W (3-0) [0.50]</td>
<td>Department of Economics and Finance</td>
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<tr>
<td>ECON*1100</td>
<td>Introductory Macroeconomics</td>
<td>S,F,W (3-0) [0.50]</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2100</td>
<td>Economic Problems in Canada</td>
<td>U (3-0) [0.50]</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2200</td>
<td>Industrial Relations</td>
<td>F (3-0) [0.50]</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2310</td>
<td>Intermediate Microeconomics</td>
<td>F,W (3-1) [0.50]</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2410</td>
<td>Intermediate Macroeconomics</td>
<td>F,W (3-1) [0.50]</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2420</td>
<td>Canadian Economic History</td>
<td>U (3-0) [0.50]</td>
<td>Department of Economics and Finance</td>
</tr>
</tbody>
</table>

### Course Descriptions

**ECON*1050 Introductory Microeconomics S,F,W (3-0) [0.50]**

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.

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

**Prerequisite(s):** ECON*1100, (1 of ECON*2310, MATH*1000, MATH*1030, MATH*1080, MATH*1200), (1 of ECON*2740, PSYC*1010, PSYC*1015), STAT*1000, STAT*1010, STAT*1020, STAT*1090, STAT*2000, STAT*2080, STAT*2090, STAT*2000, STAT*2100, STAT*2120

**Department(s):** Department of Economics and Finance

**ECON*1100 Introductory Macroeconomics S,F,W (3-0) [0.50]**

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.

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

**Prerequisite(s):** ECON*1050 or FARE*1040

**Department(s):** Department of Economics and Finance

**ECON*2100 Economic Problems in Canada U (3-0) [0.50]**

This course is a study of important socio-economic issues in Canada using the basic principles of macro and microeconomics. Topics may include population, poverty, foreign ownership, regional development, etc.

**Prerequisite(s):** ECON*1050, ECON*1100

**Department(s):** Department of Economics and Finance

**ECON*2200 Industrial Relations F (3-0) [0.50]**

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.

**Prerequisite(s):** ECON*1050

**Department(s):** Department of Economics and Finance

**ECON*2310 Intermediate Microeconomics S,F,W (3-1) [0.50]**

This course is an analysis of the behaviour of households and firms under alternative assumptions and market conditions.

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

**Prerequisite(s):** ECON*1100, (ECON*1050, or FARE*1040), (1 of MATH*1000, MATH*1030, MATH*1080, MATH*1200)

**Department(s):** Department of Economics and Finance

**ECON*2410 Intermediate Macroeconomics F,W (3-1) [0.50]**

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.

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

**Prerequisite(s):** ECON*1100, (1 of MATH*1000, MATH*1030, MATH*1080, MATH*1200)

**Department(s):** Department of Economics and Finance

**ECON*2420 Canadian Economic History U (3-0) [0.50]**

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.

**Prerequisite(s):** ECON*1050, (ECON*1100 or HIST*2450)

**Department(s):** Department of Economics and Finance

### Course Descriptions

**ECON*2560 Theory of Finance F,W (3-0) [0.50]**

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.

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

**Prerequisite(s):** ECON*1100, (1 of ECON*2310, MATH*1000, MATH*1030, MATH*1080, MATH*1200), (1 of ECON*2740, PSYC*1010, PSYC*1015), STAT*1000, STAT*1010, STAT*1020, STAT*1090, STAT*2000, STAT*2080, STAT*2090, STAT*2100, STAT*2120

**Restriction(s):** ECON*3460, ECON*3560

**Department(s):** Department of Economics and Finance

**ECON*2620 Introductory Development Economics F (3-0) [0.50]**

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.

**Prerequisite(s):** ECON*1050, ECON*1100

**Department(s):** Department of Economics and Finance

**ECON*2720 Business History W (3-0) [0.50]**

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.

**Prerequisite(s):** ECON*1050, (ECON*1100 or any 1.50 credits in history)

**Department(s):** Department of Economics and Finance

**ECON*2740 Economic Statistics F,W (3-3) [0.50]**

This course is designed to prepare students conceptually and mathematically for ECON*2560, Theory of Finance and ECON*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.

**Prerequisite(s):** ECON*1100, (ECON*1050, or FARE*1040), (1 of MATH*1000, MATH*1030, MATH*1050, MATH*1080, MATH*1200)

**Department(s):** Department of Economics and Finance

**ECON*2770 Introductory Mathematical Economics F (3-3) [0.50]**

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

**Prerequisite(s):** ECON*1100, (ECON*1050, or FARE*1040), (1 of MATH*1000, MATH*1030, MATH*1050, MATH*1080, MATH*1200)

**Department(s):** Department of Economics and Finance

**ECON*3100 Game Theory W (3-1) [0.50]**

The 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.

**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*2100, 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 change 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*2100, 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 labour market, wage determination and the relationship between wages, employment, and prices.

Prerequisite(s): ECON*2310, (1 of ECON*2740, PSYC*2100, 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 economics 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 F.W (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.W (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 use 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*3750 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*2410 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)
Equated(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)
Equated(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)
Equated(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*3860, 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
Equated(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*3600 or ECON*3810), 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 behavior 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
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<th>Course Code</th>
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<tr>
<td>ECON*4810</td>
<td>Advanced Topics in Macroeconomics W (3-0) [0.50]</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>
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<tr>
<td>ECON*4830</td>
<td>Economic Development U (3-0) [0.50]</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>
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<tr>
<td>ECON*4840</td>
<td>Applied Econometrics II W (3-0) [0.50]</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 U (3-0) [0.50]</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>
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<tr>
<td>ECON*4880</td>
<td>Topics in International Economics U (3-0) [0.50]</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>(ECON<em>3600 or ECON</em>3810), (ECON<em>3710 or ECON</em>3620)</td>
<td>Department of Economics and Finance</td>
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<tr>
<td>ECON*4890</td>
<td>History of Economic Thought U (3-0) [0.50]</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>
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<tr>
<td>ECON*4900</td>
<td>Special Study in Economics S,F,W (3-0) [0.50]</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>
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<tr>
<td>ECON*4910</td>
<td>Special Study in Economics S,F,W (3-0) [0.50]</td>
<td>Same description as for ECON*4900.</td>
<td>ECON<em>2310, ECON</em>2410</td>
<td>Department of Economics and Finance</td>
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<tr>
<td>ECON*4930</td>
<td>Environmental Economics U (3-0) [0.50]</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>
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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, REXT*4050
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 agro-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
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<tr>
<th><strong>Course Code</strong></th>
<th><strong>Course Title</strong></th>
<th><strong>Course Description</strong></th>
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<tbody>
<tr>
<td>EDRD*4500</td>
<td>Planning Industrial Ecology: Design for Sustainability W (3-0) [1.00]</td>
<td>To create ecologically informed and professionally skilled 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. Course requires a science background, minimum OAC Chemistry or Physics.</td>
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**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
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.
Prerequisite(s): 10.00 credits
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 and 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*2050 Emerging Energy Systems W (3-3) [0.75]
The basic principles and design of emerging energy systems are covered. The systems which form the basis of the course are solar thermal systems, solar photovoltaic systems, fuel cells, biofuels and wind energy technology. Mechanisms for storing energy generated from each of these systems are studied.
Offering(s): Last offering - Winter 2014
Prerequisite(s): ENGG*2030, PHYS*1010
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 multiphase materials (their equilibria and micro-structure) are examined as a basis for understanding the causes of material properties. Intervenous 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 similitude 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; alternate-current circuits and sinusoidal steady-state analysis with phasor methods; fundamentals of magnetically coupled circuits.
Prerequisite(s): ENGG*2400, (PHYS*1010 or PHYS*1130)
Department(s): School of Engineering
XII. Course Descriptions, Engineering

ENGG*2550 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

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*2600 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; biomedical, food, and bio-processing applications.
Prerequisite(s): ENGG*2400, MATH*2270, (1 of BIOL*1030, BIOL*1070, BIOL*1080, BIOL*1090, MICR*1020)
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*2640
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 costs.
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 minimum 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) [0.75]
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*3140 Mechanical Vibrations 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 Engineering 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*3240 Engineering Economics F (3-0) [0.50]
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.
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 (3-2) [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*2320, 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*260
Co-requisite(s): ENGG*3430
Department(s): School of Engineering

ENGG*3380 Computer Organization and Design W (3-2) [0.50]
This course will cover the principles of digital design of computer and system hardware. Topics include: computer architecture: instruction set design, addressing modes, operands; 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 though assignments emphasizing analytical analysis with potential application to engineering practice.
Co-requisite(s): ENGG*3430
Restriction(s): ENGG*3410
Department(s): School of Engineering

ENGG*3390 Signal Processing F (3-2) [0.50]
This course introduces the fundamentals of digital signal processing. Topics include: discrete signal analysis; hardware design and implementation; digital signal processing; and digital signal analysis. The course will also cover the mathematical tools (Fourier transform, etc.) used in signal analysis.
Prerequisite(s): ENGG*2410
Restriction(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*2360, 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 serves 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 though assignments emphasizing analytical analysis with potential application to engineering practice. 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
XII. Course Descriptions, 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, MICR*1020, MICR*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 combinatorics and optimization and discusses classical direct search-for-optimum methods for constrained optimization, including linear and quadratic programming, and others. Topics to be covered include: complexity theory, linear integer programming technique, constrained/unconstrained optimization and heuristic search techniques such as tabu search, genetic algorithms, particle swarm optimization, simulated annealing and GRASP.

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*4010 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*3070, ENGG*3120, ENGG*3510, ENGG*4460
Co-requisite(s): ENGG*4050, ENGG*4280
Department(s): School of Engineering

ENGG*4020 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.

Offering(s): First offering - Fall 2013
Prerequisite(s): MATH*1210, PHYS*1130
Restriction(s): Instructor consent required.
Department(s): School of Engineering

ENGG*4040 Bio-Process Engineering F (3-1) [0.50]
The basic techniques and regulations surrounding quality control in a generic manufacturing environment are covered. The topics covered include the statistics of sampling, sampling rates and measurements. Destructive and non-destructive methodologies of product examination are discussed. The student is exposed to relevant ISO and related regulations, and through case studies is given the opportunity to see how these regulations are implemented in local industries.

Prerequisite(s): STAT*2120
Department(s): School of Engineering

ENGG*4050 Quality Control 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.

Offering(s): First offering - Winter 2014
Prerequisite(s): ENGG*3390
Restriction(s): Instructor consent required.
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

Last Revision: October 14, 2014
2014-2015 Undergraduate Calendar
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 in a biological system or process. 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 are responsible for creating their own design group and securing a faculty advisor. Faculty advisors must hold a P.Eng. designation. A departmental application package must be submitted to the course coordinator for approval by the 40th class day of the previous semester. Approved applicants will be added to the course prior to the first day of classes.

Prerequisite(s): All 1000 and 2000 level core credits, ENGG*3100.
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 designee.
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 are responsible for creating their own design group and securing a faculty advisor. Faculty advisors must hold a P.Eng. designation. A departmental application package must be submitted to the course coordinator for approval by the 40th class day of the previous semester. Approved applicants will be added to the course prior to the first day of classes.

Prerequisite(s): All 1000 and 2000 level core credits, ENGG*3100.
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 designee.
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 are responsible for creating their own design group and securing a faculty advisor. Faculty advisors must hold a P.Eng. designation. A departmental application package must be submitted to the course coordinator for approval by the 40th class day of the previous semester. Approved applicants will be added to the course prior to the first day of classes.

Prerequisite(s): All 1000 and 2000 level core credits, ENGG*3100.
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 designee.
Department(s): School of Engineering

ENGG*4140 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 are responsible for creating their own design group and securing a faculty advisor. Faculty advisors must hold a P.Eng. designation. A departmental application package must be submitted to the course coordinator for approval by the 40th class day of the previous semester. Approved applicants will be added to the course prior to the first day of classes.

Prerequisite(s): All 1000 and 2000 level core credits and ENGG*3100
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 designee.
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 cost/price 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 are responsible for creating their own group design and securing a faculty advisor. Faculty advisors must hold a P.Eng. designation. A departmental application package must be submitted to the course coordinator for approval by the 40th class day of the previous semester. Approved applicants will be added to the course prior to the first day of classes.

Prerequisite(s): All 1000 and 2000 level core courses and ENGG*3100
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 are responsible for creating their own group design and securing a faculty advisor. Faculty advisors must hold a P.Eng. designation. A departmental application package must be submitted to the course coordinator for approval by the 40th class day of the previous semester. Approved applicants will be added to the course prior to the first day of classes.

Prerequisite(s): All 1000 and 2000 level core courses and ENGG*3100
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*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*4260 Water and Wastewater Treatment Design W (3-2) [0.75]
Application of design principles for a variety of water purification systems, including drinking water, municipal wastewater, industrial wastewater and agricultural wastewater. This involves the design of physical, chemical and biological 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 occupational health and safety for the workers and the public.

Prerequisite(s): ENGG*3100, ENGG*3590

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 control elements, computer control and the microprocessor.

Prerequisite(s): ENGG*3410

Department(s): School of Engineering

ENGG*4300 Food Processing Engineering Design F (3-2) [0.75]
Formulation of mathematical models to describe food processing operations and the response of foods to such operations. Process evaluation, development and computer-aided design of operations such as thermal processes and food freezing. The influence of water activity and structure on the enzymatic, cellular, organic and structural systems of foods. The properties of powders and particulate foods and mechanical operations with solid foods.

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

Department(s): School of Engineering

ENGG*4330 Air Pollution Control F (3-2) [0.75]
Analysis and design of atmospheric pollution control techniques. Techniques considered include both in-process solutions as well as conventional end-of-pipe treatments. Pollutants covered include gaseous, particulate, metals and trace organics.

Prerequisite(s): ENGG*3180, ENGG*3260

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 W (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 Biomedical Engineering Design F (3-2) [0.75]

This course covers concept development, design, modeling, manufacture and testing of biomedical 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*2340, MATH*2130, MATH*2270

Department(s): School of Engineering

ENGG*4480 Advanced Mechatronics 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; BICOMOS 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 CUPS; embedded architecture cores; system-on-chips 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 and 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 affect 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
English

School of English and Theatre Studies

1. ENGL*1080 and ENGL*2080 provide a strong foundation for English studies at the University level and are required courses for students intending to major or minor in English. These linked courses expose students not only to a broad range of texts from different countries and historical periods but also to some of the exciting developments in the discipline.

2. Honours major students are required to take the seminar courses ENGL*2120, ENGL*2130, ENGL*3940, ENGL*3960, preferably in their 3rd, 4th, 5th and 6th semesters. ENGL*1080 is a pre-requisite to ENGL*2120 and ENGL*2130; ENGL*2080 is a pre-requisite to ENGL*3940 and ENGL*3960.

3. Honours major students are required to take one 4000-level seminar, preferably in their 7th and 8th semesters. The prerequisites for the 4000-level seminars are ENGL*2800 plus one of ENGL*2120, ENGL*2130 plus one of ENGL*3940, ENGL*3960.

4. Honours minor students are required to take the seminar course ENGL*2120 and one of ENGL*2130, ENGL*3940, ENGL*3960, preferably in their 3rd to 6th semester.

5. Many English lecture courses are offered on alternate years only and many English seminars have variable content. For more information, students should consult the School’s home page at http://www.arts.uq.library.ca/sets/.

6. Many English lecture courses are reading-intensive while seminar courses are writing and presentation-intensive. Honours major students are advised to take two lectures and one seminar per semester beginning in their 3rd semester.

7. WRITING- AND PRESENTATION-INTENSIVE: Seminars emphasize written and oral work to help students develop the critical reading and writing skills essential to their learning throughout the curriculum.

8. READING-INTENSIVE: Lectures emphasize breadth of reading, contexts, and comparisons, to help students develop the knowledge base essential to their understanding of the field. In order to allow essay-writing to be concentrated in seminars, assignments in lecture courses will not predominantly take the traditional essay form but a range of other formats.

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 course explores the historical, national, and genre sweep of ENGL*1080 by conducting a range of specific, more 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

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, more 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

Restriction(s): Registration in the English major, minor or area of concentration.

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.

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

Prerequisite(s): 1 of ENGL*1080, ENGL*1200, ENGL*1410, WMST*1000

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

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>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL*2550</td>
<td>North American Native Literatures W (3-0) [0.50]</td>
<td>This course explores selected issues, perspectives, and voices within the study of Native literatures and their contexts in North America. One purpose of the course is to raise questions about the meaning of the U.S.-Canadian border for Native writers. Reading-intensive course. <strong>Prerequisite(s):</strong> 1 of ENGL<em>1080, ENGL</em>1200, ENGL*1410. <strong>Department(s):</strong> 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>This course will open up debates around emergent issues, perspectives, and voices in the literatures of minoritized cultures particularly within the North American context. Questions about the meanings of various borders for understanding Canadian negotiations of identity, community, and location will remain a consistent feature of this variable-content course. Reading-intensive course. <strong>Offering(s):</strong> Also offered through Distance Education format. <strong>Prerequisite(s):</strong> 1 of ENGL<em>1080, ENGL</em>1200, ENGL*1410. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*2740</td>
<td>Children’s Literature F,W (3-0) [0.50]</td>
<td>This course serves as an introduction to the critical study of children’s literature and culture. Focusing on selected genres of, issues in, or theoretical approaches to literature for children, this variable-content course explores shifting (and often conflicting) conceptions of childhood, in general, and of children as readers and cultural consumers. Reading-intensive course. <strong>Offering(s):</strong> Also offered through Distance Education format. <strong>Prerequisite(s):</strong> 1 of ENGL<em>1080, ENGL</em>1200, ENGL*1410. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*2880</td>
<td>Women in Literature W (3-0) [0.50]</td>
<td>This variable-content course will involve the study and discussion of poems, stories, novels and plays by and about women. Reading-intensive course. <strong>Prerequisite(s):</strong> 1 of ENGL<em>1080, ENGL</em>1200, ENGL<em>1410, WMST</em>1000. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*2920</td>
<td>Creative Writing: Fiction U (3-0) [0.50]</td>
<td>This course provides an introduction to creative writing through lectures on the craft of writing, analysis of significant pieces by 20th- and/or 21st-century writers, and practice in writing fiction. Students will learn to read literature from the perspective of a creative writer, and coursework will require a combination of creative writing and analysis. Where possible, the course will include interaction with practicing writers. This course will be offered annually in either Fall or Winter. <strong>Offering(s):</strong> Offered in odd-numbered years. <strong>Prerequisite(s):</strong> 1 of ENGL<em>1080, ENGL</em>1200, ENGL*1410. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*2940</td>
<td>Creative Writing: Poetry U (3-0) [0.50]</td>
<td>This course provides an introduction to creative writing through lectures on the craft of writing, analysis of significant pieces by 20th- and/or 21st-century writers, and practice in writing poetry. Students will learn to read literature from the perspective of a creative writer, and coursework will require a combination of creative writing and analysis. Where possible, the course will include interaction with practicing writers. This course will be offered annually in either Fall or Winter. <strong>Offering(s):</strong> Offered in odd-numbered years. <strong>Prerequisite(s):</strong> 1 of ENGL<em>1080, ENGL</em>1200, ENGL*1410. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*3020</td>
<td>Shakespearean Contexts F (3-0) [0.50]</td>
<td>This course explores a selection of Shakespeare's plays and poems in conjunction with a wide range of other texts. These may include, at the instructor's choice, 'source' narratives, subsequent adaptations, and plays and poems by predecessors or contemporaries, as well as other writings that shed light upon discursive contexts, performance practices, authorial and playwrightly revision, issues of gender and subjectivity, and the reception of these plays by early modern audiences and readers. Reading-intensive course. <strong>Offering(s):</strong> Offered in even-numbered years. <strong>Prerequisite(s):</strong> 1.00 credits in English or (THST<em>2010, THST</em>2120). <strong>Department(s):</strong> School of English and Theatre Studies.</td>
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<tr>
<td>ENGL*3070</td>
<td>Elizabethan Literary Culture: Chastity and Power W (3-0) [0.50]</td>
<td>This course explores the intimate connections between politics and Elizabethan Jacobean, and Civil War and Commonwealth literature. The texts to be studied may include plays and poems, as well as essays, political, historical, and theological writings, and works of prose fiction. <strong>Offering(s):</strong> Offered in odd-numbered years. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*3080</td>
<td>History of the English Language U (3-0) [0.50]</td>
<td>This course introduces the key historical developments of the English language and the primary tools for the study of language. Topics to be discussed may include: the origins of and precursors to the English language; the phonology, lexicon, and grammar of English; the persistence of language change; the historical factors that affect language change; the origins and implications of language variety; the formation of prestige dialects; and the current state of the English language in Canada and the world. Reading-intensive course. <strong>Prerequisite(s):</strong> 1.00 credits in English. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
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<tr>
<td>ENGL*3120</td>
<td>Shakespearean Receptions F (3-0) [0.50]</td>
<td>This course may be examined a selection of Shakespeare's plays and poems in the light of contemporary reassessments of his place in the canon. For purposes of comparison, plays by contemporaries of Shakespeare may also be studied along with adaptations of Shakespeare chosen from a number of different historical contexts. Close readings of these texts will be organized around such topics as Shakespearean adaptations, constructions of gender and subjectivity, Shakespeare and canon-formation, Shakespeare and critical theory, the politics of Shakespearean interpretation, Shakespeare in contemporary media culture, and changing performance practices. Reading-intensive course. <strong>Offering(s):</strong> Offered in odd-numbered years. <strong>Prerequisite(s):</strong> 1.00 credits in English or (THST<em>2010, THST</em>2120). <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*3170</td>
<td>Poetics and Politics in Early Modern England F (3-0) [0.50]</td>
<td>This course examines the literary culture associated with Elizabeth I. Issues, including gender and sexuality, power, and religion, will be explored through a wide range of sixteenth- and early-seventeenth century poems (these will be chosen from such writers as Skelton, Wyatt, Surrey, Mary Stuart, the Sidneys, Spenser, Marlowe, Shakespeare, Raleigh, Aemilia Lanyer, Mary Wroth, Elizabeth I, Jonson, Donne, and Herbert). Reading-intensive course. <strong>Offering(s):</strong> Offered in even-numbered years. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*3190</td>
<td>Representing Britain: 18th- &amp; 19th- Century Literature F (3-0) [0.50]</td>
<td>This course explores selected topics in the interpolation of literature and politics from the late seventeenth to the nineteenth century in Britain. Areas of focus may include: the literature of civil war, constitutionalism and revolution; satire and society; writings emerging from suffrage reform and agitation, the colonization of Ireland, the construction of political subjectivity, political paranoia, conspiracy and sedition. Reading-intensive course. <strong>Offering(s):</strong> Offered in odd-numbered years. <strong>Prerequisite(s):</strong> 1.00 credits in English. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
</tr>
<tr>
<td>ENGL*3200</td>
<td>Writing Gender &amp; Family: 18th- and 19th- Century Literature W (3-0) [0.50]</td>
<td>This course focuses on an English-language literature of a particular Latina/o community (e.g. Chicana/os, Cuban Americans, Puerto Ricans) in the United States. Students will be introduced to theoretical approaches and a wide range of genres, including narrative fiction, autobiography, literary journalism, and poetry. Reading-intensive course. <strong>Offering(s):</strong> Offered in odd-numbered years. <strong>Prerequisite(s):</strong> 1.00 credits in English. <strong>Department(s):</strong> School of English and Theatre Studies.</td>
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</table>
ENGL*3280 Old English Literature U (3-0) [0.50]
This course will focus on the language, literature, and culture of Anglo-Saxon England (7th to 11th centuries). In addition to acquiring the basics of Old English and engaging in translation exercises with passages from Anglo-Saxon texts, students will read a selection of texts in modern English translation; these may include Beowulf, "The Battle of Maldon", elegies such as "The Seafarer", riddling poems and religious poems.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3300 Restoration to Romanticism: Forging the Nation F (3-0) [0.50]
Drawing upon a range of literary texts from a variety of genres, this course will explore the politics of language and style in a series of cultural debates that shaped British national character from the late seventeenth to the late eighteenth centuries. Selected topics may include: literary representations of religious establishment and dissent; the division of power; the question of minority cultures; revolution and reaction; the problem of economic stability. 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*3320 Romanticism to Victorianism: Culture and Conformity F (3-0) [0.50]
This course explores the key texts in various genres of British cultural debates of the late eighteenth to the late nineteenth century. Focal points may include: literary representations of family and society; science and narrative; Britain's "others"; class and conflict; protest and power; the roots of modernism; European influences. 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*3340 British Imperial Culture F (3-0) [0.50]
This multi-genre course introduces students to the literature of British imperialism in the eighteenth and nineteenth centuries. The course will consider the changing relationship between nation, empire, and colony by examining literary representations of such topics as: orientalism; travel writing; the construction of race; the representation of trade; the popular literature of empire; children's literature; the question of the other. 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*3360 Scottish Literary Cultures F (3-0) [0.50]
This course explores selected issues and ideas within this national literature, from the sixteenth to the early twentieth centuries, but with a primary focus on literature of the eighteenth and nineteenth centuries. Special attention is given to issues relating to nationhood, identity, religion, colonialism, gender, and class in relation to selected examples from literary texts and folktales. Reading-intensive course. (Offered in even-numbered years.)
Offering(s): Also offered through Distance Education format. Offered in even-numbered years.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3380 Studies in the History of Literary Production W (3-0) [0.50]
This course will examine a range of issues arising from the materiality of book production and circulation. Topics may include serialization; mass production and circulation; patronage; reviewing; circulating libraries; licensing; censorship; children's literature; periodicals; gift books; letters; and other aspects of publishing and the public sphere. 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*3420 20th- & 21st-Century Drama W (3-0) [0.50]
This course offers a selective study of 20th- and/or 21st-century play-scripts written in English. Students are advised to consult the web-descriptions for the particular focus of the course's offering.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.00 credits in English or (THST*2010, THST*2120)
Department(s): School of English and Theatre Studies

ENGL*3460 Literature in London U (2-3) [0.50]
A study of British literature in its social and historical context. Reading of particular works will be supplemented by visits to sites of literary interest, the use of special library and museum collections, and attendance at public lectures and performances. For London Semester students only.
Prerequisite(s): Admission to the London Semester.
Department(s): School of English and Theatre Studies

ENGL*3470 Twentieth-Century British Literature I W (3-0) [0.50]
This multi-genre course explores aesthetic and socio-cultural movements (including modernism) in British literature from the turn of the century to mid-century. 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*3480 Twentieth-Century British Literature II F (3-0) [0.50]
This multi-genre course explores aesthetic and socio-cultural movements (including postmodernism) in British literature from mid-century to the present. 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*3540 Writing the United States W (3-0) [0.50]
This multi-genre course explores the relationship between literary production and political power from the emergence of U.S. culture through the long nineteenth century. Areas of focus may include national fantasy; the literatures of war, imperial expansion, captivity, and genocide; narratives of race and immigration; the cult of domesticity; and the rise of mass culture. 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*3550 Modern United States Literatures W (3-0) [0.50]
This multi-genre course explores powerful examples of modern United States literatures, from about the First World War to the present. The selection is wide, including both traditional and experimental forms; female and male writers from various ethnic and racial groups; and a range of cultural issues. 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*3560 Medieval Literature W (3-0) [0.50]
This course will introduce students to a range of medieval texts written in English and other languages and will explore the contexts of their composition and transmission. The texts to be studied may include: historical, allegorical, morality, miracle, mystery plays, morality plays, and morality plays. 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*3570 Chaucer in Context F (3-0) [0.50]
This course will introduce students to significant aspects of Chaucer's writing read in the context of works by Chaucer's predecessors and contemporaries. 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*3630 Writing Canada: Forging the Nation W (3-0) [0.50]
This multi-genre course focuses on Canadian literature to World War One, examining cultural contestation in the Canadian settler colony among the Canadian, U.S., British, and indigenous peoples. Topics may include: the rise of nationalist discourse, race and nation, landscape and the sublime, gothic, sentimental, and historical fiction; children's literature, slavery and resistance narratives, and captivity narratives. 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*3670 Twentieth-Century Canadian Literature and Criticism F (3-0) [0.50]
This multi-genre 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 aiming 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 metaphorics 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

Last Revision: October 14, 2014
2014-2015 Undergraduate Calendar
**ENGL*4200 Special Studies in English U (3-0) [1.00]**

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.

**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

**ENGL*4400 Postcolonial Literatures U (3-0) [1.00]**

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.

**Prerequisite(s):** ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)

**Restriction(s):** 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.

**Department(s):** School of English and Theatre Studies

**ENGL*4410 Modern & Contemporary Literatures U (3-0) [1.00]**

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.

**Prerequisite(s):** ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)

**Restriction(s):** 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.

**Department(s):** School of English and Theatre Studies

**ENGL*4420 Women's Writings U (3-0) [1.00]**

This course provides 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.

**Prerequisite(s):** ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)

**Restriction(s):** ENGL*4220 Restricted to students in the English and Women's Studies majors, 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*4500 Non-fiction Prose U (3-0) [1.00]**

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.

**Prerequisite(s):** ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)

**Restriction(s):** 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.

**Department(s):** School of English and Theatre Studies

**ENGL*4810 Directed Reading S,F,W (3-0) [0.50]**

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*4880 20th- & 21st-Century Poetry U (3-0) [1.00]**

This seminar provides opportunities to study English-language modern and contemporary poetry. 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*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*4880 Contemporary Literary Theory U (3-0) [1.00]**

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*4690 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 S,F,W (3-0) [0.50]**

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
Environmental Biology

Department of Plant Agriculture
School of Environmental Sciences

Additional course listings may be found in the course descriptions for Microbiology, Plant Biology, Toxicology and Zoology.

<table>
<thead>
<tr>
<th>ENVB*4070 Biological and Cultural Control of Plant Diseases W (3-0) [0.50]</th>
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<tr>
<td>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.</td>
</tr>
<tr>
<td>Prerequisite(s): 1 of BIOL<em>3050, ENVB</em>3210, ENVS<em>3210, MICR</em>3220</td>
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<td>Department(s): Department of Plant Agriculture</td>
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Last Revision: October 14, 2014
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>ENVM*1020</td>
<td>Introduction to Environmental Microbiology</td>
<td>(2-3) [0.50]</td>
<td>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.</td>
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<td><strong>Restriction(s):</strong> Registered in B.B.R.M. Environmental Management. Instructor consent required. <strong>Department(s):</strong> School of Environmental Sciences</td>
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<tr>
<td>ENVM*3500</td>
<td>Environmental Management Integrated Project</td>
<td>(5-0) [1.00]</td>
<td>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.</td>
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<td><strong>Prerequisite(s):</strong> 5.00 credits <strong>Restriction(s):</strong> ENVM*2500 Registered in BBRM:EM <strong>Department(s):</strong> School of Environmental Sciences</td>
</tr>
</tbody>
</table>
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):** Registration in the BSC(Env) program.
**Department(s):** School of Environmental Sciences

**ENVS*1050 Geology and the Environment F (2-3) [0.50]**

Geological materials, their origin, recognition and economic potential, use and location, oil and gas, coal, mineral deposits, aggregate resources, groundwater, Geological basis for environmental evaluation and land use. Emphasis on local and North American examples.

**Equate(s):** GEOL*1050
**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*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):** MATH*1080
**Equate(s):** MET*2030
**Department(s):** School of Environmental Sciences

**ENVS*2040 Plant Health and the Environment W (3-0) [0.50]**

This 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.

**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*2050 The Landscape of Scotland W (3-0) [0.50]**

This course enables you to explore the Scottish landscape and its natural resources through a major research project, on any topic from geology, through forestry, agriculture, parks and recreation, to modern tourism. You will consider the relationship between the land itself, its history, and the use made of that land today. The course will emphasize recognizing relationships between the natural environment and human society and considering how we manage that relationship.

**Offering(s):** Offered through Distance Education format only.
**Equate(s):** NRS*2050
**Department(s):** School of Environmental Sciences

**ENVS*2060 Soil Science S,F,W (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 I 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 ethic.

**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 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.

**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*2160 Glacial Geology W (3-0) [0.50]**

This course is designed to give students an introduction to the processes, landforms and deposits of glacial environments. This includes basic principles of glaciology, the landforms and deposits found in various glacial and periglacial environments, and the nature of past glaciations in Earth history. Ancient to recent glacial deposits from the Great Lakes region and other international locations will be examined. A field trip will be scheduled.

**Prerequisite(s):** 1 of AGR*2301, AGR*2320, ENVS*1050, ENVS*1060, ENVS*2060, GEOL*1050, GEOL*1100, GEOG*1300, SOIL*2010
**Equate(s):** GEOL*2160
**Restriction(s):** GEOL*2150, ENVS*2200 or GEOL*2200
**Department(s):** School of Environmental Sciences

**ENVS*2200 Glacial Geology W (3-0) [0.50]**

This course is designed to give students an introduction to the processes, landforms and deposits of glacial environments. This includes basic principles of glaciology, the landforms and deposits found in various glacial and periglacial environments, and the nature of past glaciations in Earth history. Ancient to recent glacial deposits from the Great Lakes region and other international locations will be examined. A field trip will be scheduled.

**Prerequisite(s):** 1 of AGR*2301, AGR*2320, ENVS*1050, ENVS*1060, ENVS*2060, GEOL*1050, GEOL*1100, GEOG*1300, SOIL*2010, SOIL*2200
**Equate(s):** GEOL*2200
**Restriction(s):** (ENVS*2160 or GEOL*2160), GEOL*2150
**Department(s):** School of Environmental Sciences

**ENVS*2210 Apiiculture 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. A variety of uses including agriculture, forestry, recreation, and urban development will be considered.

**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

Last Revision: October 14, 2014
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 ,
GEOG*1300, GEOG*1350
Equate(s): GEOL*2250
Department(s): School of Environmental Sciences

ENVS*2270 Impacts of Climate Change 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.
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 provides an introduction to aspects of environmental Earth science which
are critical to understanding issues that have direct social impacts. Students will gain a
basic understanding of disciplines that represent different compartments of the active
Earth, including geology, water and soil sciences, and atmospheric science. This
knowledge will be directed toward exploring the links between scientific and societal
perspectives. Examples of possible issues include climate change, resource extraction,
and water supply.
Prerequisite(s): (1 of ENVM*1000 , ENVM*1200, 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)]
Restriction(s): NRS*3000, NRS*3030
Department(s): School of Environmental Sciences

ENVS*2400 Sedimentary Environments F (3-3) [0.50]
This course provides an introduction to 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
global time. The course includes several field trips.
Offering(s): Offered in even-numbered years.
Prerequisite(s): ENVS*1050 or GEOL*1050
Restriction(s): GEOL*2020 , GEOL*4090
Department(s): School of Environmental Sciences

ENVS*3000 Nature Interpretation F,W (2-3) [0.50]
An exploration of communication and experiential learning theories and their application
to natural history interpretation and environmental education program design. Students
will develop and present interpretive materials and a program within the context of the
evening nature interpretation program at The Arboretum.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 1 of BIOL*2060, BIOL*3110
Equate(s): ENVB*3000
Department(s): School of Environmental Sciences

ENVS*3010 Climate Change Biology 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.
Prerequisite(s): ( BIOL*1040 or BIOL*1070), (1 of BIOL*2060, BIOL*3110,
BIOL*3200 ), CHEM*1050
Equate(s): ENVB*3010
Department(s): School of Environmental Sciences

ENVS*3020 Pesticides and the Environment W (3-0) [0.50]
This course examines the roles of pesticides by various facets of society and the
impact of these pesticides on biological activities in the environment. Preparation of a
research proposal is required for the course.
Offering(s): Offered through Distance Education format only.
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
fees will be calculated accordingly. There is an extra fee to partially cover field costs.
Prerequisite(s): NRS*3030
Restriction(s): Instructor consent required.
Department(s): School of Environmental Sciences

ENVS*3040 Natural Chemicals in the Environment F (3-3) [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*3070 Environmental Soil Chemistry F (3-2) [0.50]
The formation and properties of clay minerals and organic matter; ionic exchange, soil acidity, and alkalinity, oxidation and reduction potential, and dissolution and precipitation. Laboratory sessions will illustrate principles of soil chemistry.
Prerequisite(s): 1 of AGR*2301/2, AGR*2320, ENVS*2060, SOIL*2010
Equate(s): SOIL*3060
Department(s): School of Environmental Sciences

ENVS*3080 Soil and Water Conservation W (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*2320, 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. Labs 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*3110 Resource Planning Techniques W (2-2) [0.50]
This is an intermediate techniques course directed at the application of a systematic approach to problem solving in natural resource management. Major topics include procedures of ecological land classification, computer-assisted resource analysis and environmental impact assessment.
Prerequisite(s): ENVS*3120 or SOIL*3050
Equate(s): NRS*3100, SOIL*3100
Restriction(s): Instructor consent required.
Department(s): School of Environmental Sciences

ENVS*3120 Land Utilization F (3-1) [0.50]
Principles of land utilization and planning at the global, national, regional and local levels. Land characterization and classification using photo-interpreptive techniques and computerized soil survey interpretive programs. Land capability/suitability for agriculture, forestry and engineering purposes. Emphasis on specific land use issues in Canada.
Prerequisite(s): 1 of AGR*2301/2, AGR*2320, ENVS*2060, GEOG*1300, GEOL*1000, SOIL*2010
Equate(s): SOIL*3050
Department(s): School of Environmental Sciences

ENVS*3130 Lab and Field Methods in Groundwater F (0-3) [0.50]
The objective of this course is to provide a "hands-on" experience for students in common methods of measuring the physical properties of soil and geological materials in order to quantify the flow of water and solutes above and below the water table. Students will learn a variety of techniques and instruments through practical application in the field.
Prerequisite(s): ENVS*3060 or GEOL*3060
Restriction(s): SOIL*3070 Registration in BSC(Env) or BBRM programs.
Department(s): School of Environmental Sciences

ENVS*3140 Management of Turfgrass Diseases F (2-2) [0.50]
In this course 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*3160, ENVS*3230
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 surface 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*3190 Environmental Water Chemistry F (3-0) [0.50]
An examination of the chemical composition of both natural and contaminated waters at the earth's surface and the interaction of these waters with soils and sediments. The significance of these interactions will be studied with respect to the mobility of organic and metallic constituents in geochemical cycles and as contaminants in the environment.
Prerequisite(s): 1 of CHEM*1010, CHEM*1050, CHEM*1310
Equate(s): GEOL*3190
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*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*3260 Field Methods in Geosciences F (2-2) [0.50]
This course is designed to provide experience in field methods and applied aspects of Earth surface science. The field camp portion will focus on geological mapping skills, while the rest of the term will be spent on developing a consulting proposal for a field-based project. Other topics covered will be project design, proposal writing, oral communication skills and ethics of field-based research. Students are required to notify the designated departmental instructor of their intention to participate in this course during the previous Winter semester. There will be a fee to cover partial costs in this course; students in financial need should approach the Director of the School of Environmental Sciences.
Prerequisite(s): (ENVS*1050 or GEOL*1050), (ENVS*2150 or GEOG*2000), (1 of ENVS*2200, GEOL*2150, GEOL*2200)
Equate(s): GEOL*3250
Restriction(s): Instructor consent required.
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): (ENVS*2030 or ENVS*2330), (1 of BOT*2050, BIOL*2060, BIOL*3110)
Equate(s): ENVB*3270
Department(s): School of Environmental Sciences

ENVS*3280 Environmental Perspectives and Human Choices II W (3-0) [0.50]
The complexity and dimensions of key environmental issues introduced in (ENVS*2070 or UNIV*2050) are explored in greater detail. This will facilitate the student’s ability to critically evaluate socio-economic-environmental linkages between contemporary challenges such as sustainable resources, energy, human population, education and communication, and environmental ethics. Supplementary voluntary workshop.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): ENVS*2070 or UNIV*2050
Equate(s): UNIV*3250
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): BIOL*2580, (MBG*2000 or MBG*2040)
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*2320, ENVS*2060, SOIL*2010)
Equate(s): ENVS*3200, SOIL*3200
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): 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*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): Minimum of 10.00 credits. Minimum cumulative average of 70%.
Restriction(s): ENVS*3410, ENVS*3420 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 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): Minimum of 10.00 credits. Minimum cumulative average of 70%.
Restriction(s): ENVS*3510, ENVS*3520 Instructor consent required. Restricted to students in BBM: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.
Offering(s): First offering - Fall 2015
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.
Offering(s): First offering - Fall 2015 and Winter 2016
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.
Offering(s): First offering - Winter 2016
Prerequisite(s): ENVS*4001
Equate(s): ENVS*4012
Department(s): School of Environmental Sciences

ENVS*4011 Project in Environmental Sciences F (0-1) [0.00]
First part of the two-semester course ENVS*4011/2. Refer to ENVS*4011/2 for course description.
Offering(s): Last offering - Fall 2014
Prerequisite(s): Registration in semester 6 or 7 of the BSC(Env) degree program.
Department(s): School of Environmental Sciences

ENVS*4011/2 Project in Environmental Sciences F-W [0.50]
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. Students must be registered and attend preliminary organizational meetings scheduled in the Fall semester. This is a two-semester course offered over consecutive semesters. When you select it you must select ENVS*4011 in the Fall semester and ENVS*4012 in the Winter semester. A grade will not be assigned to ENVS*4011 until ENVS*4012 is completed.
Offering(s): Last offering - Fall 2014 and Winter 2015
Prerequisite(s): Registration in semester 6 or 7 of the BSC(Env) degree program.
Department(s): School of Environmental Sciences

ENVS*4012 Project in Environmental Sciences W (0-3) [0.50]
Second part of the two-semester course ENVS*4011/2. Refer to ENVS*4011/2 for course description.
Offering(s): Last offering - Winter 2015
Prerequisite(s): ENVS*4011
Department(s): School of Environmental Sciences

ENVS*4040 Behaviour of Insects W (4-0) [0.50]
This course investigates the behaviour of insects within an ecological and evolutionary framework. Topics range from basic behavioral principles to the complex behaviour exhibited by the social insects.
Prerequisite(s): 1 of BIOL*3110, ENVB*3090, ENVS*3090
Equate(s): ENVB*4040
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*4100 Integrated Management of Invasive Pest Pests W (3-3) [0.50]
This course explores the concept of integrated pest management as it applies to the mitigation of invasive pest insects associated with agricultural and forest ecosystems.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1 of CROP*3300, CROP*3310, ENVS*2040, ENVS*3090, ENVS*2040, ENVB*3090
Equate(s): ENVB*4100
Department(s): School of Environmental Sciences

ENVS*4110 Physical Meteorology W (3-0) [0.50]
This course introduces the principles of physical meteorology, including structure and composition of the atmosphere, radiative transfer, atmospheric energetics and cloud formation. All topics will be discussed in terms of global climate change.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): ENVS*3050 or MET*3050
Equate(s): MET*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 manage 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): ENVS*3040 or ENVS*3040
Equate(s): ENVB*4130
Department(s): School of Environmental Sciences

ENVS*4140 Topics in Earth Science F-W (3-0) [0.50]
Lecture-discussion or seminar on selected topics in Earth Science 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 specific semesters. Field trips will be scheduled as required.
Prerequisite(s): (1 of ENVS*1050, GEOG*1300, GEOL*1050), 0.50 credits at the 3000 level in a science appropriate to chosen topic
Equate(s): GEOL*4110
Restriction(s): Instructor consent required.
Department(s): School of Environmental Sciences

ENVS*4150 Natural Resources Management Field Camp F (0-6) [0.50]
This course investigates methods of collecting and processing land resource field data and includes practice in mapping information from air photographs and ground surveys, construction of inventory maps and integration of information. The course will consist of a one-week field camp prior to the fall semester, following which the students, working in groups, will prepare and present a comprehensive report in consultation with faculty. Students will be responsible for their living and transportation expenses for the field session, in addition to regular tuition fees. The course may be offered with different emphasis in content depending on student demand. Students are required to notify the designated departmental instructor of their intention to participate in the Field Camp during the previous Winter semester (or earlier if going on exchange programs).
Prerequisite(s): 1 of ENVS*2060, ENVS*3110, NRS*3100, SOIL*2010, SOIL*3100
Equate(s): NRS*4110, SOIL*4110
Restriction(s): Registration in BBM or BSC(Env). Instructor consent required.
Department(s): School of Environmental Sciences

Last Revision: October 14, 2014
2014-2015 Undergraduate Calendar
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 herbicides 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 Atmospheric Experimentation and Instrumentation W (3-0) [1.00]
This course covers the design and implementation of field experiments 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 prepare a proposal detailing an experimental design of their own.
Prerequisite(s): ENVS*3050 or MET*3050
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*4250 Soils in the Landscape F (3-3) [0.50]
This course has field, laboratory and classroom components. It focuses on soil spatial and temporal variability, evaluating soil properties in relation to controlling factors and processes, on local to global scales. Students are exposed to standard procedures for collecting soil data in the field and laboratory, highlighting sampling design and data extrapolation, as well as relevant applications of digital imaging of soil (micropedology) and landscapes. Principles of soil classification are discussed and several systems are introduced, emphasizing the Canadian System of Soil Classification; key concepts associated with the production of soil maps and reports, as well as the role of geographic information systems in archiving and interpreting soil information, are also examined. Students are required to notify the designated departmental instructor, of their intention to participate in this course, during the previous winter semester (or earlier, if going on exchange programs). This course has field camps which run during the week preceding the Fall semester. A fee is charged to cover some costs of field activities.
Prerequisite(s): 12.50 credits including (1 of AGR*2320, ENVS*2050, ENVS*2060, ENVS*2060, GEOG*1300, GEOL*1050, GEOL*1100, SOIL*2010)
Equate(s): SOIL*4250
Restriction(s): SOIL*3170 . SOIL*4170 . Instructor consent required.
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.
Offering(s): Last offering - Fall 2015
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*4280 Geomicrobiology F (3-0) [0.50]
This course focuses on understanding the role of microorganisms in shaping the solid surface of the Earth. This will include the major chemical and biochemical transformations by microorganisms in natural surface and subsurface environments. We will consider the contribution of microorganisms to crucial element cycles, including carbon, sulfur, and select metals, and ultimately to rock cycling. Aspects of early life on Earth, astrobiology, and environmental biotechnology will be included as appropriate.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): (1 BIOL*1040 or MICR*1020) or (2 of BIOL*1070, BIOL*1080, BIOL*1090), (ENVS*1050 or GEOL*1050) , 0.50 credits at the 3000 level in GEOL or MICR
Equate(s): GEOL*4240
Restriction(s): MICR*4280, MICR*4290.
Department(s): School of Environmental Sciences

ENVS*4300 Environmental Law & Regulation F (3-2) [0.50]
In this course, students will be asked to recruit their expertise in all of the basic and applied sciences to the task of understanding, participating in, and modifying where necessary the economic and legal systems of the world to deal with human exploitation of the earth. The course will include a discussion of the history of the success and failure of different economic and legal models and their impact on the sustainability of the earth's resources.
Offering(s): Last offering - Fall 2015
Prerequisite(s): 14.00 credits
Restriction(s): Registration in the BSC(Env) program; BCOMM:FAB,
Department(s): Department of Food, Agricultural and Resource Economics

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]
Principles of forest ecology with 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): ( ENVB*2030 or ENVS*2330), (1 of BOT*2050 , BIOL*2060, BIOL*3110)
Equate(s): ENVB*4780
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*4430 Advanced Independent Research S,F,W (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

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): 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, 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): 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, 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*4530. Instructor consent required. Restricted to students in the BBRM.EM, BSC(Agr), BSC(Env).
Department(s): School of Environmental Sciences
**Equine**

*Ontario Agricultural College, Department of Animal and Poultry Sciences*

**EQN*1010 Introduction to Equine Management F (2-6) [1.00]**

This course provides the basis for understanding the equine industry, both from a practical and a theoretical perspective. Students will participate in daily routine care and management procedures, and learn basic techniques such as horse handling, grooming, bandaging, blanketing, tack, tractor driving and fire safety. Horse-environment interactions will focus on equine behaviour. The relationship of horses with humans will be explored from ancient times through to modern times, including breeding for specific equestrian sports, prominent horsemen/women, and the variety of career options. Current issues will be explored including economic status and hot topics in the industry. Students may expect early morning and some weekend assignments. Students must provide their own grooming kit.

*Restriction(s):* ENVM*1090, EQN*1020, EQN*1030, EQN*1100

*Department(s):* Department of Animal and Poultry Science

*Location(s):* Kemptville

**EQN*1060 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 Equestrian Centre activities.

*Restriction(s):* Registration in BBRM.EQM

*Department(s):* Department of Animal and Poultry Science

*Location(s):* Kemptville

**EQN*1070 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 Equestrian Centre activities.

*Restriction(s):* EQN*1060

*Department(s):* Department of Animal and Poultry Science

*Location(s):* Kemptville

**EQN*2040 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.

*Restriction(s):* BIOL*1040 or BIOL*1050

*Department(s):* Department of Animal and Poultry Science

*Location(s):* Kemptville

**EQN*2050 Introduction to Equine Nutrition W (3-3) [0.50]**

This course introduces fundamental concepts of nutrition from a biochemical perspective. The biological roles of carbohydrates, lipids and proteins are studied, as well as the role of metabolic pathways in maintaining equine health at the cellular, organ, and whole body levels. Diagnosis, management, and prevention of equine nutritional diseases are discussed.

*Restriction(s):* BIOL*1040 or BIOL*1050

*Department(s):* Department of Animal and Poultry Science

*Location(s):* Kemptville

**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 and Poultry Science

*Location(s):* Kemptville

**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 and Poultry Science

*Location(s):* Kemptville

**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 and Poultry Science

*Location(s):* Kemptville, Guelph

**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 and Poultry Science

*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 the 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 and Poultry Science

*Location(s):* Kemptville

**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 and Poultry Science

*Location(s):* Kemptville

**EQN*3500 Equine Integrated Project W (0-6) [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 and Poultry Science

*Location(s):* Kemptville
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Course Description</th>
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<tbody>
<tr>
<td>EQN*4020</td>
<td>Feeding the Performance Horse W (3-0) [0.50]</td>
<td></td>
<td>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.</td>
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<td>Prerequisite(s): EQN<em>3050 or NUTR</em>3210</td>
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<td>Department(s): Department of Animal and Poultry Science</td>
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<td>Location(s): Guelph</td>
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<tr>
<td>EQN*4400</td>
<td>Equine Industry Trends and Issues II W (3-0) [0.50]</td>
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<td>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.</td>
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<tr>
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<td>Prerequisite(s): 16.00 credits including EQN*2200</td>
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<td>Restriction(s): Registration in BBRM.EQM</td>
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<td></td>
<td>Department(s): Department of Animal and Poultry Science</td>
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<td>Location(s): Guelph</td>
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### European Studies

**School of Languages and Literatures**

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>EURO*1050</td>
<td>The Emergence of a United Europe F (3-0) [0.50]</td>
<td>This interdisciplinary course will provide students with an understanding of the events and processes resulting in economic integration in Europe after 1945. Economic, historical and political aspects will be emphasized.</td>
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<tr>
<td>EURO*1200</td>
<td>European Culture from the Mid 18th to the Mid 19th Century W (4-0) [0.50]</td>
<td>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).</td>
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<tr>
<td>EURO*2200</td>
<td>European Culture from the Mid 19th Century to the 1920's F (3-0) [0.50]</td>
<td>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, Unamuno, Freud), avant-garde movement and innovation in the arts and letters (e.g. impressionism, futurism, expressionism, surrealism).</td>
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<tr>
<td>EURO*2300</td>
<td>European Culture since 1920 W (3-0) [0.50]</td>
<td>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), new trends in thought (e.g. existentialism, structuralism, post-modernism feminism) and the arts and letters (e.g. neorealism epic theatre, new wave cinema).</td>
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<tr>
<td>EURO*3150</td>
<td>Topics in European Film W (3-0) [0.50]</td>
<td>This course will examine representative French, German, Italian and Spanish films in a socio-political context. It will focus on the interaction between the films' aesthetics and the political and cultural conditions in Europe. The topics to be discussed in the course will centre on the relationship between the development of major movements in European film, such as Italian Neo-Realism and the French, German and Spanish New Waves, and filmmakers' ideological projects such as the construction or deconstruction of national, gender and ethnic identity.</td>
<td>Offered in even-numbered years.</td>
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<tr>
<td>EURO*4600</td>
<td>Honours Seminar in European Studies W (3-0) [0.50]</td>
<td>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.</td>
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<tr>
<td>EURO*4740</td>
<td>Research Project in European Studies F,W (3-0) [0.50]</td>
<td>An independent study course that requires a research project on an aspect of European Studies. The topic must be approved by the Coordinator of the European Studies Program. Research is undertaken with the guidance of a faculty advisor, and seminar presentations will be included. A final research paper must be written in the student's chosen core language. Note: In order to demonstrate language proficiency and complete the requirements of EURO<em>4740, students have another option. They may choose to spend their third year studying at a European university, in the country where their chosen core language is spoken. Those who can demonstrate that they have successfully written a major academic paper or exam in their chosen core language while registered in a course at a European university as part of their approved study year will be waived from EURO</em>4740. See the Coordinator for the European Studies program for more information.</td>
<td>Approval of the Coordinator for the European Studies Program.</td>
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</tbody>
</table>
### External Courses

All courses labeled XSEN*xxxx are Seneca College Courses. The corresponding Seneca College course numbers are provided. Detailed course profiles can be accessed through the Seneca College home page at [http://www.senecac.on.ca/](http://www.senecac.on.ca/). All XSEN*xxxx courses are available to students in the B.Sc.(Tech.) program or B.Sc. Biological and Pharmaceutical Chemistry.

#### XSEN*3020 Pharmaceutical Analysis F,W (2-4) [0.50]

The aim of this course is to simulate the pharmaceutical quality control laboratory. Students are introduced to pharmaceutical terms, definitions and forms, drug legislations, and regulatory agencies (FDA, TPP). Strong emphasis is placed on the navigation and interpretation of pharmacopeial compenda (USP, BP, EP). Practical aspects include physical, wet chemical and instrumental analyses of drug substances, in-process materials and finished products using official pharmacopeial methodologies. This course is taught at Seneca College.

- **Prerequisite(s):** BIOC*2580, CHEM*2400
- **Restriction(s):** Restricted to BSC(TECH), BSC.BPCH
- **External Course Code(s):** Seneca #PHA-333
- **Department(s):** Dean's Office, College of Physical and Engineering Science

#### 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 practicals 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 BSC(TECH), BSC.BPCH
- **External Course Code(s):** Seneca #PHT-533
- **Department(s):** 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 BSC(TECH), BSC.BPCH
- **External Course Code(s):** Seneca #OCC-433
- **Department(s):** 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 BSC(TECH), BSC.BPCH and BSC.BPCH:C.
- **External Course Code(s):** Seneca #PHA-533
- **Department(s):** Dean's Office, College of Physical and Engineering Science

#### XSEN*3070 Pharmaceutical Product Formulations F,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 BSC(TECH), BSC.BPCH
- **External Course Code(s):** Seneca #PFF-633
- **Department(s):** Dean's Office, College of Physical and Engineering Science

#### XSEN*3090 Biopharmaceuticals F,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 biologicals manufactured by genetic engineering processes. This course is taught at Seneca College.

- **Prerequisite(s):** BIOC*2580, CHEM*2700
- **Restriction(s):** XSEN*4050, Registration in BSC(TECH), BSC.BPCH major
- **External Course Code(s):** Seneca #BPB-633
- **Department(s):** 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 BSC(TECH), BSC.BPCH and BSC.BPCH:C.
- **External Course Code(s):** Seneca #PAC-633
- **Department(s):** 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 BSC.BPCH and BSC.BPCH:C.
- **External Course Code(s):** Seneca #IPM-472
- **Department(s):** Dean's Office, College of Physical and Engineering Science

#### XSEN*4010 Pharmaceutical Calculations W (3-0) [0.50]

This subject deals with computations relevant to pharmaceutical topics. Included are the representation of scientific and technical data, chemical kinetics and drug stability, osmo-lality and tonicity, pH and solubility, viscosity, phase rule and numerous pharmaceutical calculations (e.g. manufacturing formulas, dosage formulations, radiochemistry, concentration, alligation, HLB, etc.). This course is taught at Seneca College.

- **Prerequisite(s):** BIOC*3570, CHEM*2400
- **External Course Code(s):** Seneca #PHC-533
- **Department(s):** Dean's Office, College of Physical and Engineering Science
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.

FRHD*1010 Human Development W (3-0) [0.50]
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 & Family or Child, Youth & Family Co-op majors.
Department(s): Department of Family Relations and Applied Nutrition

FRHD*1020 Couple and Family Relationships W (3-0) [0.50]
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.
Equate(s): FRHD*2010
Department(s): Department of Family Relations and Applied Nutrition

FRHD*1100 Life: Health and Well-Being F (3-0) [0.50]
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

FRHD*2040 Principles of Program Design for Children W (3-0) [0.50]
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*2270 or PSYC*2450
Restriction(s): Restricted to students in B.A.Sc. Program (CYF, CYF-C majors).
Department(s): Department of Family Relations and Applied Nutrition

FRHD*2060 Adult Development and Aging F (3-0) [0.50]
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*1150, FRHD*1010, FRHD*1100, PSYC*1000, PSYC*1100, PSYC*1200, SOC*1100
Department(s): Department of Family Relations and Applied Nutrition

FRHD*2100 Development of Human Sexuality F (3-0) [0.50]
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

FRHD*2110 Exceptional Children and Youth W (3-0) [0.50]
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*1020, [2 of FRHD*2060, FRHD*2260, FRHD*2280, (FRHD*2270 or PSYC*2450)]
Department(s): Department of Family Relations and Applied Nutrition

FRHD*2260 Infant Development W (3-0) [0.50]
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*1150, FRHD*1010, FRHD*1100, PSYC*1000, PSYC*1100, PSYC*1200, SOC*1100
Department(s): Department of Family Relations and Applied Nutrition

FRHD*2270 Development in Early and Middle Childhood F (3-0) [0.50]
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*1150, FRHD*1010, FRHD*1100, PSYC*1000, PSYC*1100 , PSYC*1200 , SOC*1100
Restriction(s): PSYC*2450
Department(s): Department of Family Relations and Applied Nutrition

FRHD*2280 Adolescent Development W (3-0) [0.50]
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*1150, FRHD*1010, FRHD*1100, PSYC*1000, PSYC*1100 , PSYC*1200 , SOC*1100
Department(s): Department of Family Relations and Applied Nutrition

FRHD*2300 Principles of Program Design for Youth W (3-0) [0.50]
This course will examine the elements involved in planning and implementing effective prevention, 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*2280, (FRHD*2060 or FRHD*2270)
Restriction(s): Restricted to students in B.A.Sc. Program (CYF, CYF-C majors).
Department(s): Department of Family Relations and Applied Nutrition

FRHD*2350 Principles of Program Design in the Human Services W (3-0) [0.50]
This course will examine the elements involved in planning and implementing effective prevention, 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. Program (CYF, CYF-C majors).
Department(s): Department of Family Relations and Applied Nutrition

FRHD*3040 Parenting and Intergenerational Relationships W (3-0) [0.50]
This course is a study of research concerning parent-child relationships across the lifespan.
Prerequisite(s): 9.50 credits including FRHD*1020, (1 of FRHD*1100, FRHD*2060, FRHD*2260, FRHD*2270, FRHD*2280, PSYC*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

FRHD*3060 Principles of Social Gerontology F (3-0) [0.50]
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*1020 or SOAN*3100)
Department(s): Department of Family Relations and Applied Nutrition

FRHD*3070 Research Methods: Family Studies F (3-0) [0.50]
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

FRHD*3090 Poverty and Health F (3-0) [0.50]
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*1010 or FRHD*1100)
Department(s): Department of Family Relations and Applied Nutrition
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
Equate(s): CSTU*3170, FRHD*3170
Restriction(s): Registration in the B.A.Sc. program (Child, Youth and Family or 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,W (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 or 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 on-going 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:C, ADFW, ADFW: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). The complexities of professional practice with diverse populations are explored in depth. Legal aspects relevant to work in this area 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
XII. Course Descriptions, Food Science

**Food Science**

**FOOD*2010 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, MICR*1020, MICR*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, MICR*1020, MICR*2420
- **Restriction(s):** FOOD*3230, 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):** (BIOL*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 pigments, flavors, enzymes and processing additives.

- **Prerequisite(s):** BIOC*2580
- **Restriction(s):** Registration is limited to students registered in the BSCH.FOOD, FOOD:C or BASC.AHN 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. The course will discuss selected topics related to the chemistry (physical, organic and analytical) and physics of some minor components in food materials such as pigments, flavors, 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 the major components in food materials such as pigments, flavors, enzymes and processing additives. This course is the same as FOOD*3030, 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. The course will discuss selected topics related to the chemistry (physical, organic and analytical) and physics of some minor components in food materials such as pigments, flavors, 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*2100, 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): 1 of MICR*1020, MICR*2030, MICR*2420
Department(s): Department of Food Science

FOOD*3260 Industrial Microbiology W (3-3) [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): 1 of MICR*1020, MICR*2020, MICR*2030, MICR*2420
Restriction(s): Students must be of legal drinking age in the Province of Ontario.
Department(s): Department of Food Science

FOOD*3340 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 relation 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*4120 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
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
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
Restriction(s): Instructor consent required.
Department(s): Department of Food Science

FOOD*4260 Food Product Development I F (3-0) [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

FOOD*4270 Food Product Development II W (3-3) [0.50]
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.
Prerequisite(s): FOOD*4260
Restriction(s): MGMT*4020, MGMT*4030
Department(s): Department of Food Science

FOOD*4310 Food Safety Management Systems W (3-0) [0.50]
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.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): (FOOD*2010 or FOOD*2150), (FOOD*2410 or FOOD*3160), (FOOD*2420 or FOOD*3230)
Department(s): Department of Food Science

FOOD*4400 Dairy Processing W (3-3) [0.50]
The production, processing, chemistry, microbiology and marketing of milk and milk products, cheese, fermented dairy foods and butter are studied in this course.
Prerequisite(s): BIOC*2580, (FOOD*2150 or FOOD*3090), (MICR*2030 or MICR*2420)
Department(s): Department of Food Science
FOOD*4520 Utilization of Cereal Grains for Human Food F (3-3) [0.50]

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.

Prerequisite(s): BIOC*2580, (1 of BIOL*1040, BIOL*1070, BIOL*1080), (1 of AGR*2470, FOOD*2150, FOOD*3090, NUTR*3210)

Department(s): Department of Food Science
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. Guelph/Ridgetown offerings.
Restrictions: Registration in BA.EGOV, BBRM.EM, BSC.ENV, BSC.ENV.C.
Department(s): Department of Food, Agricultural and Resource Economics
Location(s): Guelph, Ridgetown

FARE*1100 Introduction to Business F (3-0) [0.50]
This course provides an overview as well as a foundation in the fundamentals of business management. The basic functions of business and management to be examined include: operations, human resources, marketing, finance, and strategic management. Small Business and entrepreneurship are also studied, along with other forms of business ownership, competition within a global economy, and the political and economic realities of business in Canada today. Students will develop basic competencies in business management through assignments and case studies requiring the practice of learned theory.
Equates: AGEC*1100 , BADM*1000
Restrictions: Registration in BBRM.
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 high 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 agrifood 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: AGR*2400
Department(s): Department of Food, Agricultural and Resource Economics

FARE*2410 Agrifood 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 agrifood trade policies, instruments and institutions. Economic analysis of contemporary issues in agrifood markets will be emphasized.
Prerequisites: AGR*2400 or FARE*1400
Co-requisites: 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 AGEC*2700 , FARE*2700, ECON*2100, ECON*2650
Equates: AGEC*3170
Department(s): Department of Food, Agricultural and Resource Economics

FARE*3250 Food, Nutrition & International Development F (3-0) [0.50]
This course aims to provide students with an economic perspective on issues in international development related to food and nutrition, exploring the ways in which economic analysis can enhance understanding of processes of international development in the contemporary world with a particular focus on food and nutrition. Students are encouraged to consider critically an economic approach to the analysis of development issues related to food and nutrition, alongside the perspectives of other social science disciplines. Throughout the course, food and nutrition as development issues are considered in the global context, especially related to trade.
Prerequisites: ECON*1050, (1 of AGEC*1300 , FARE*1300, ECON*1100)
Equates: AGEC*3250
Department(s): Department of Food, Agricultural and Resource Economics

FARE*3310 Operations Management F,W (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, operating, and controlling the production system will be examined.
Prerequisites: 1 of ACCT*2220, AGEC*2220 , BUS*2220
Equates: AGEC*3310
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 Agricultural and Food 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]
The aim of this course is to examine 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 effect on poverty, food security and economic development are conducted.
Prerequisites: 10.00 credits including ECON*1050 and ECON*1100
Equates: AGEC*4210
Department(s): Department of Food, Agricultural and Resource Economics

FARE*4220 Advanced Agribusiness Management W (2-3) [0.50]
This course is oriented towards 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 upon students' prior training in accounting, finance, mathematical analysis, computer applications, economics, agriculture and management.
Prerequisites: 1 of AGEC*2410, FARE*2410, AGEC*3320 , AGR*2402, BUS*3320
Equates: AGEC*4220
Department(s): Department of Food, Agricultural and Resource Economics

2014-2015 Undergraduate Calendar
Last Revision: October 14, 2014
FARE*4240 Futures and Options Markets W (3-0) [0.50]
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.
Prerequisite(s): 1 of AGEC*2410, AGEC*3320, AGR*2402, BUS*3320, ECON*3560, ECON*3660, ECON*3660, ENV*2070, FARE*2410, MGMT*3320, UNIV*2050
Equate(s): AGEC*4240
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 takings, soil erosion policy, farmland protection policy, endangered species policy and landfills and recycling.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1 of AGEC*2700, FARE*2700, ECON*2310
Equate(s): AGEC*4290
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): FARE*3170, (1 of AGEC*2700, FARE*2700, ECON*2310, ECON*2100)
Equate(s): AGEC*4310
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*4550 Independent Studies I 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*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

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
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*2030. 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>
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</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*2030</td>
</tr>
<tr>
<td>Not sure</td>
<td></td>
</tr>
</tbody>
</table>

Not sure: Contact the School of Languages and Literatures in order to arrange a placement test with a faculty advisor.

FREN*1000 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 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 F.W (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. FREN*1090 cannot be counted toward a specialization in French. 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.

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. FREN*1100 cannot be counted toward a specialization in French. 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.

Department(s): School of Languages and Literatures

FREN*1120 Basic French: Writing W (3-0) [0.50]

This basic course in French grammar will emphasize writing skills for students, who have up to Grade 11 French (or equivalent) but not above. FREN*1120 cannot be counted toward a specialization in French. 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.

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 Ontario Grade 11 French or equivalent but not above. FREN*1150 cannot be counted toward a specialization in French.

Restriction(s): Students with native or near-native ability in French, including Francophones and French immersion students, will not be admitted to this course.

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*2020 France: Literature and Society F,W (3-0) [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): FREN*1200 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*2030 French Language II F.W (3-1) [0.50]

This is a continuation of French Language I with further practice in written and oral French, grammar, vocabulary acquisition, translation, laboratory exercises and discussion groups.

Prerequisite(s): 1 of FREN*1200, Grade 12U, French Immersion or permission of the School.

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 (3-0) [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.

Prerequisite(s): FREN*1200 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*2500 French Translation I W (3-0) [0.50]

This course provides an introduction to the art and techniques of French-English translation.

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

Prerequisite(s): FREN*1200 or FREN*2030

Department(s): School of Languages and Literatures

FREN*2520 French Composition I F (3-0) [0.50]

This course provides student with opportunities to develop further their skills in textual analysis and in writing in French.

Prerequisite(s): 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*2540 Spoken French: Theory and Practice W (3-0) [0.50]

This course focuses on the differences between written and spoken French and is designed to help students function efficiently in an oral French context (comprehension and expression).

Prerequisite(s): FREN*2030

Restriction(s): Students with native ability in French will not be admitted to this course.

Department(s): School of Languages and Literatures

FREN*3000 Romanticism & Realism in France W (3-0) [0.50]

This course is a seminar on the 19th-century novel emphasizing themes and ideas which have contributed to contemporary literature and thought.

Prerequisite(s): FREN*2020

Department(s): School of Languages and Literatures

FREN*3010 Twentieth-Century French Novel W (3-0) [0.50]

This course explores a changing world as perceived by 20th-century writers in France. From Gide to post-modernism, the impact of renewed scientific perspectives on literature, and the questioning of modes of representation, signs and society will be covered.

Offering(s): Offered in even-numbered years.

Prerequisite(s): FREN*2020

Department(s): School of Languages and Literatures
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Description</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN*3080</td>
<td>Pre-Revolution French Literature</td>
<td>This course introduces students to the intellectual history of France, its society and institutions, through major works of literature published before the French Revolution.</td>
<td>FREN*2020</td>
<td></td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*3120</td>
<td>Contemporary Francophone Theatre</td>
<td>This course offers a selective study of recent play-scripts written in French. Students are advised to consult the web description for the particular focus of the current offering.</td>
<td>FREN<em>2020, FREN</em>2060</td>
<td>Admission to Nice Program.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*3200</td>
<td>Quebec Novel F</td>
<td>This seminar and lecture course is a survey of representative Quebec novels from World War II to the Quiet Revolution.</td>
<td>FREN*2060</td>
<td></td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*3230</td>
<td>The Structure of French</td>
<td>The course explores elements of the sound system, grammar and vocabulary of contemporary French.</td>
<td>FREN*2030</td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*3500</td>
<td>French Translation II F</td>
<td>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.</td>
<td>FREN*2500</td>
<td></td>
<td>School of Languages and Literatures</td>
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<tr>
<td>FREN*3520</td>
<td>French Composition II W</td>
<td>This is a continuation of FREN*2520 with special emphasis on stylistics.</td>
<td>FREN*2520</td>
<td></td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*3600</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
<td>1 of FREN<em>2020, FREN</em>2030, FREN*2060</td>
<td>Admission to Nice Program.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*3610</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
<td>1 of FREN<em>2020, FREN</em>2030, FREN*2060</td>
<td>Admission to Nice Program.</td>
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<tr>
<td>FREN*3620</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
<td>1 of FREN<em>2020, FREN</em>2030, FREN*2060</td>
<td>Admission to Nice Program.</td>
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<td>FREN*3630</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
<td>1 of FREN<em>2020, FREN</em>2030, FREN*2060</td>
<td>Admission to Nice Program.</td>
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</tr>
<tr>
<td>FREN*3650</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
<td>1 of FREN<em>2020, FREN</em>2030, FREN*2060</td>
<td>Admission to Nice Program.</td>
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</tr>
<tr>
<td>FREN*3660</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
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<td>Admission to Nice Program.</td>
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<tr>
<td>FREN*3670</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
<td>1 of FREN<em>2020, FREN</em>2030, FREN*2060</td>
<td>Admission to Nice Program.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*3680</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
<td>1 of FREN<em>2020, FREN</em>2030, FREN*2060</td>
<td>Admission to Nice Program.</td>
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</tr>
<tr>
<td>FREN*3690</td>
<td>Studies in French Literature and Culture</td>
<td>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.</td>
<td>1 of FREN<em>2020, FREN</em>2030, FREN*2060</td>
<td>Admission to Nice Program.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*4220</td>
<td>Recent Quebec Writing</td>
<td>This course analyzes representative contemporary Quebec novels, short stories, essays and poems from aesthetic, thematic and ideological points of view.</td>
<td>Offered in even-numbered years.</td>
<td>FREN<em>2060, FREN</em>3220</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>FREN*4290</td>
<td>Post-Colonial Francophone Fiction</td>
<td>This is a survey course of the works of 20th-century Francophone writers from Maghreb, Black Africa and the Caribbean.</td>
<td>Offered in even-numbered years.</td>
<td>FREN<em>2020, FREN</em>3290</td>
<td>School of Languages and Literatures</td>
</tr>
</tbody>
</table>
### FREN*4300 Symbolist and Surrealist Poetry F (3-0) [0.50]

The French Symbolists of the 19th century and the 20th century Surrealist poets' vision of the world will be discussed.

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

**Prerequisite(s):** FREN*2020, FREN*3520

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

### FREN*4500 The French Language in Canada W (3-0) [0.50]

This course is a descriptive, historical and socio-linguistic study of the varieties of French spoken in Canada, with particular emphasis on Quebec.

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

**Prerequisite(s):** FREN*3230

**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):** FREN*2020, FREN*2060, FREN*3520

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

### FREN*4610 Honours Seminar in French Studies F (3-0) [0.50]

This seminar focuses on literary genres, movements and themes.

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

**Prerequisite(s):** FREN*2020, FREN*2060, FREN*3520

**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):** FREN*2020, FREN*2060, FREN*3520

**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*4750 Creative Writing in French S,F,W (3-0) [0.50]

The development and revision of a major work of creative writing in French (fiction, poetry, or drama), under the supervision of a faculty member will be required.

**Prerequisite(s):** (FREN*2020 or FREN*2060), FREN*3520, FREN*4740. 70% average in all French Studies course attempts is required, although at least 75% is recommended.

**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*2020, FREN*2060, FREN*3520, 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

### FREN*4900 Applied Linguistics: French Studies W (3-0) [0.50]

This is a course specially designed for future teachers of French, in which the principles of linguistics are applied to the teaching of French.

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

**Prerequisite(s):** FREN*3230, LING*1000

**Department(s):** School of Languages and Literatures
XII. Course Descriptions, Geography

GEOG*1200 Society and Space F,W (3-0) [0.50]
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.

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

GEOG*1220 Human Impact on the Environment F,W (3-0) [0.50]
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.

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

GEOG*1300 Introduction to the Biophysical Environment F,W (3-2) [0.50]
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.

Department(s): Department of Geography

GEOG*1350 Earth: Hazards and Global Change F,W (3-0) [0.50]
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.

Department(s): Department of Geography

GEOG*2000 Geomorphology F (3-2) [0.50]
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.

Prerequisite(s): 1 of ENVS*1050, ENVS*1060, GEOG*1300, GEOG*1350, GEOL*1050, GEOL*1100
Department(s): Department of Geography

GEOG*2030 Environment and Development F (3-0) [0.50]
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.

Prerequisite(s): 5.00 credits, GEOG*1220 is recommended
Department(s): Department of Geography

GEOG*2110 Climate and the Biophysical Environment W (3-1) [0.50]
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.

Prerequisite(s): GEOG*1300 or GEOG*1350
Department(s): Department of Geography

GEOG*2210 Environment and Resources W (3-0) [0.50]
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.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): GEOG*1220 is recommended
Department(s): Department of Geography

GEOG*2230 Economic Geography F (3-0) [0.50]
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.

Prerequisite(s): GEOG*1200
Department(s): Department of Geography

GEOG*2260 Applied Human Geography W (3-2) [0.50]
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.

Lab assignments and class illustrations draw on a range of topics in human geography.

Prerequisite(s): GEOG*1200 or (ANTH*1150 and GEOG*1220)
Department(s): Department of Geography

GEOG*2420 The Earth From Space F (3-3) [0.50]
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.

Prerequisite(s): 0.50 credits in geography and/or earth science
Department(s): Department of Geography

GEOG*2460 Analysis in Geography F (3-2) [0.50]
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.

Prerequisite(s): 0.50 credits at the 1000 level in Geography
Department(s): Department of Geography

GEOG*2480 Mapping and GIS F,W (3-2) [0.50]
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.

Prerequisite(s): 5.00 credits
Department(s): Department of Geography

GEOG*2510 Canada: A Regional Synthesis W (3-0) [0.50]
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.

Department(s): Department of Geography

GEOG*3000 Fluvial Processes F (3-2) [0.50]
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.

Prerequisite(s): GEOG*2000, (GEOG*2460 or STAT*2040)
Department(s): Department of Geography

GEOG*3020 Global Environmental Change F (3-1) [0.50]
Major global environmental issues examined include climate change, deforestation, desertification and global fisheries. This course is interdisciplinary, exploring the interactions of bio-physical 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.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): 7.50 credits, (GEOG*2210 recommended)
Department(s): Department of Geography

GEOG*3050 Development and the City W (3-0) [0.50]
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.

Prerequisite(s): 7.50 credits, (GEOG*2030 and GEOG*2260 recommended)
Department(s): Department of Geography

Last Revision: October 14, 2014
2014-2015 Undergraduate Calendar
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG*3090 Gender and Environment</td>
<td>F (3-0) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*3110 Biotic and Natural Resources</td>
<td>F (2-2) [0.50]</td>
<td>This course focuses on the ecological basis for resource management, evaluates a number of current ecological theories and addresses their implications for resource management.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*3210 Management of the Biophysical Environment</td>
<td>F (3-0) [0.50]</td>
<td>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. Of</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*3320 Food Systems: Issues in Security and Sustainability</td>
<td>F (3-0) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
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<tr>
<td>GEOG*3420 Remote Sensing of the Environment</td>
<td>W (2-3) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*3480 GIS and Spatial Analysis</td>
<td>F, W (2-3) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*3490 Tourism and Environment</td>
<td>W (3-0) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*3600 Geography of a Selected Region</td>
<td>U (3-0) [0.50]</td>
<td>The study of an area which will include topics in physical, economic, social and historical aspects of geography.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*3610 Environmental Hydrology</td>
<td>W (3-1) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4110 Environmental Systems Analysis</td>
<td>F (3-6) [1.00]</td>
<td>An integrated systems approach to solving issues of environmental evaluation, impact and development. Focus will be on the biophysical components of the environment.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4150 Sedimentary Processes</td>
<td>W (3-2) [0.50]</td>
<td>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, flume and wave tank.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4210 Environmental Governance</td>
<td>F (3-1) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4220 Local Environmental Management</td>
<td>W (3-0) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4230 Environmental Impact Assessment</td>
<td>W (3-0) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4250 Coastal Processes</td>
<td>F (3-2) [0.50]</td>
<td>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.</td>
<td>Department(s): Department of Geography</td>
</tr>
</tbody>
</table>
### GEOG*4390 Seminar in Rural Geography W (3-0) [0.50]
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*2260, GEOG*3320  
**Department(s):** Department of Geography

### GEOG*4480 Applied Geomatics W (3-6) [1.00]
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

### GEOG*4690 Geography Field Research F (3-6) [1.00]
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

### GEOG*4880 Contemporary Geographic Thought W (3-0) [0.50]
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

### GEOG*4990 Independent Study in Geography U (0-3) [0.50]
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
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 F/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 W (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 German 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*2560 Themes in German Literature/Culture F (3-0) [0.50]
This course provides students with further skills for interpreting literary texts through an exploration of themes that have shaped German literature and culture.
Prerequisite(s): GERM*2050 or permission of the instructor
Department(s): School of Languages and Literatures

GERM*3020 Myth and Fairy Tales in Germany F (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), and magical mythology in music, art and literature. Authors may include Goethe, Brothers Grimm, ETA Hoffman, Wagner. Lectures and texts are in 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 or GERM*2590 ), GERM*2560
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 F (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, GERM*2560
Co-requisite(s): HUMN*3470
Department(s): School of Languages and Literatures

GERM*3500 Advanced German I F (3-0) [0.50]
A study of advanced German grammar as well as aspects of structure and style of the German language. will be covered through oral presentations and discussions with a special emphasis on essay writing. Translation into idiomatic German and English are also emphasized.
Prerequisite(s): GERM*2500
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.
Prerequisite(s): GERM*3500
Restriction(s): GERM*3530
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*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 Name</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREK*1100</td>
<td>Preliminary Greek I F (3-0) [0.50]</td>
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<td>Department(s): School of Languages and Literatures</td>
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<tr>
<td>GREK*1110</td>
<td>Preliminary Greek II W (3-0) [0.50]</td>
<td></td>
<td>A continuation of GREK*1100.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite(s): GREK*1100 or Grade 12 Greek</td>
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<td>Department(s): School of Languages and Literatures</td>
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<tr>
<td>GREK*2020</td>
<td>Greek Language and Culture F (3-0) [0.50]</td>
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<td>Consolidation of fundamental morphology and syntax acquired in GREK*1100 and</td>
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<td>GREK*1110. Intensive reading in texts that also illuminate aspects of Greek</td>
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<td></td>
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<tr>
<td></td>
<td>Prerequisite(s): GREK*1110</td>
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<td>Department(s): School of Languages and Literatures</td>
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Hispanic Studies

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.

HISP*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): SPAN*1100

Department(s): School of Languages and Literatures

HISP*1110 Introductory Spanish II F,W (3-1) [0.50]

This is a continuation of HISP*1100. Students will develop and apply increased reading, writing, listening and oral skills in Spanish through the study of new vocabulary and grammatical structures.

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

Equate(s): HISP*1100 or SPAN*1100

Department(s): School of Languages and Literatures

HISP*2000 Intermediate Spanish I F,W (3-1) [0.50]

This course is for students who have completed Spanish at first-year university or grade 12 level, and for heritage Spanish speakers. The course examines grammatical structures in greater depth. It focuses on vocabulary acquisition, oral and written practice, and exposes students to topics in culture.

Prerequisite(s): 1 of 4U Spanish, HISP*1110, SPAN*1110, (or equivalent)

Equate(s): SPAN*2000

Department(s): School of Languages and Literatures

HISP*2010 Intermediate Spanish II F,W (3-1) [0.50]

Continuing with the textbook used in HISP*2000, students will improve skills in reading, writing and conversation through further study of grammar. The course will encourage students to formulate and support opinions on cultural content.

Prerequisite(s): HISP*2000 or SPAN*2000

Equate(s): SPAN*2010

Department(s): School of Languages and Literatures

HISP*2040 Culture of Spain F (3-0) [0.50]

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): 1 of HISP*1110, SPAN*1110, 4U Spanish

Equate(s): SPAN*2040

Department(s): School of Languages and Literatures

HISP*2990 Hispanic Literary Studies W (3-0) [0.50]

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): 1 of HISP*1110, SPAN*1110, 4U Spanish

Equate(s): SPAN*2990

Department(s): School of Languages and Literatures

HISP*3080 Spanish American Culture W (3-0) [0.50]

A survey through selected readings, class discussion and audio-visual materials of the Spanish American countries, their histories, society, institutions and culture.

Prerequisite(s): 1 of HISP*2000, SPAN*1110, 4U Spanish

Equate(s): SPAN*3080

Department(s): School of Languages and Literatures

HISP*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 HISP*3230

Department(s): School of Languages and Literatures

HISP*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

Department(s): School of Languages and Literatures

HISP*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): SPAN*2990 or HISP*2990

Department(s): School of Languages and Literatures

HISP*3240 Topics in Hispanic Linguistics W (3-0) [0.50]

This course offers an introduction to the study of variation in Latin American Spanish in its social context. Topics include linguistic variation, linguistic change, bilingualism, dyslexia, language attitude, code-switching, language planning and conversation analysis.

Prerequisite(s): HISP*1110

Department(s): School of Languages and Literatures

HISP*3350 Advanced Spanish I F (3-0) [0.50]

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): SPAN*3500

Department(s): School of Languages and Literatures

HISP*3530 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): SPAN*3530

Department(s): School of Languages and Literatures

HISP*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, HISP*3230, SPAN*3080, SPAN*3110, SPAN*3120, SPAN*3130, SPAN*3160, SPAN*3170, SPAN*3180, SPAN*3300, SPAN*3320

Equate(s): SPAN*3800

Restriction(s): Instructor consent required.

Department(s): School of Languages and Literatures

HISP*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, HISP*3230, SPAN*3080, SPAN*3110, SPAN*3120, SPAN*3130, SPAN*3160, SPAN*3170, SPAN*3180, SPAN*3300, SPAN*3320

Equate(s): SPAN*3810

Restriction(s): Instructor consent required.

Department(s): School of Languages and Literatures

HISP*4100 Seminar in Hispanic Studies F,W (3-0) [1.00]

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.

Prerequisite(s): HISP*4410 or HISP*4420

Department(s): School of Languages and Literatures

HISP*4410 Senior Seminar on Latin American Post-1950 F (3-0) [1.00]

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 HISP*4100.

Prerequisite(s): HISP*2990 or SPAN*2990

Department(s): School of Languages and Literatures

HISP*4420 Senior Seminar on Spain or Africa Post-1936 W (3-0) [1.00]

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.

Prerequisite(s): HISP*2990 or SPAN*2990

Department(s): School of Languages and Literatures
**HISP*4500 Spanish Translation I F (3-0) [0.50]**

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.

**Prerequisite(s):** HISP*3530 or SPAN*3530

**Equate(s):** SPAN*4500

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

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**HISP*4520 Spanish Translation II W (3-0) [0.50]**

This course builds on the theoretical foundations studied in HISP*4500 or SPAN*4500, and enhances translation skills. Working on translations from English to Spanish, students will perfect expression in Spanish through extensive vocabulary enrichment and grammatical analysis.

**Prerequisite(s):** HISP*4500 or SPAN*4500

**Equate(s):** SPAN*4520

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

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**HISP*4840 Research Paper in Hispanic Studies U (3-0) [1.00]**

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.

**Prerequisite(s):** HISP*3220 or HISP*3230

**Equate(s):** SPAN*4840

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

**Department(s):** School of Languages and Literatures
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Department(s)</th>
<th>Last Revision: October 14, 2014</th>
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<td>HIST*1010</td>
<td>The Early Modern World F,W (3-0) [0.50]</td>
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<td>HIST*1150</td>
<td>The Modern World F,W (3-0) [0.50]</td>
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<td>HIST*1250</td>
<td>Science and Technology in a Global Context F,W (3-0) [0.50]</td>
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<td>HIST*2000</td>
<td>The British Isles, 1066-1603 S,F (3-0) [0.50]</td>
<td>Department of History</td>
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<td>HIST*2020</td>
<td>Film as History W (2-1) [0.50]</td>
<td>Department of History</td>
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<td>HIST*2040</td>
<td>War and Society F (3-0) [0.50]</td>
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<td>HIST*2070</td>
<td>World Religions in Historical Perspective W (3-0) [0.50]</td>
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<td>HIST*2100</td>
<td>Pre-Confederation Canada F (3-0) [0.50]</td>
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<td>HIST*2200</td>
<td>The Medieval World F (3-0) [0.50]</td>
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<td>HIST*2250</td>
<td>Environment and History F,W (3-0) [0.50]</td>
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<td>HIST*2260</td>
<td>Religion and Society W (3-0) [0.50]</td>
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<td>HIST*2300</td>
<td>The United States Since 1776 F (3-0) [0.50]</td>
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<td>HIST*2340</td>
<td>Migrations in the Atlantic World, 1500-1850 W (3-0) [0.50]</td>
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<td>HIST*2450</td>
<td>The Practising Historian F,W (3-0) [0.50]</td>
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<td>HIST*2500</td>
<td>Britain Since 1603 U (3-0) [0.50]</td>
<td>Department of History</td>
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<td>HIST*2510</td>
<td>Modern Europe Since 1789 F (3-0) [0.50]</td>
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<td>HIST*2600</td>
<td>Post-Confederation Canada W (3-0) [0.50]</td>
<td>Department of History</td>
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HIST*2610 Contemporary Canadian Issues W (3-0) [0.50]
A study of selected issues in modern Canadian history, the subjects investigated in this course may include aboriginal populations, the environment, the state, the family, and will vary with the expertise of the instructor.

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

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.

Department(s): Department of History

HIST*2830 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.

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.

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.

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.

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.

Department(s): Department of History

HIST*3020 Sexuality and Gender in History U (3-0) [0.50]
The course provides an introduction to the issues of sexuality and gender within history. The course will enable students to develop an understanding of how elements 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): 7.50 credits including 1.00 credits in History
Department(s): Department of History

HIST*3030 Celtic Britain and Ireland to 1066 W (3-0) [0.50]
The social, political and cultural history of the Celtic peoples of the British Isles from Prehistory to the advent of the Normans will be discussed. Special consideration will be given to the development of Celtic institutions as well as to comparative study of successive waves of invaders—Romans, Anglo-Saxons, Vikings and Normans.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): 7.50 credits including HIST*2000
Department(s): Department of History

HIST*3060 American Society W (3-0) [0.50]
This course is a study of selected aspects of American society focusing on the 19th and 20th Centuries. Specific topics, which will vary according to the expertise of the instructor, may include such themes as War and American society, the Jacksonian Era, Civil War America, or American popular culture.

Prerequisite(s): 7.50 credits including (1 of HIST*2150 , HIST*2300, HIST*2650)
Department(s): Department of History

HIST*3070 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

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 including (1 of HIST*1150, HIST*2150, HIST*2300, HIST*2650)
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.

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 doing so it will provide students with a background on the history of Scotland during the early modern period and introduce them to the considerable body of historical writing on the subject of the witch-hunts. In addition, students will explore notions of both elite culture and the 'popular culture' of those elements of society frequently neglected by historians. Due to the fact that the overwhelming majority of the accused witches were women, the course will include examinations of gender history and its contributions to our understandings of the period.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): 7.50 credits including HIST*1010
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, indigenismo, NAFTA and Zapatiata 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
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*3320 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 reconquest 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*3320 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*3320 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*3330 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*3330 Modern China F (3-0) [0.50]
This course examines the history of China since the nineteenth century. Topics may include economics, gender, imperialism, militarism, politics, and religion.
Prerequisite(s): 7.50 credits including HIST*2910
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*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 including HIST*2500 or HIST*2510
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, Hausa, 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*3420 Colonial Latin America F (3-0) [0.50]
This course covers the history of Latin America from the pre-Columbian period to age of independence in the early nineteenth century. Topics include pre-Columbian civilizations; the European conquest; the development of colonial societies and politics; the growth of slavery; eighteenth-century imperial reform, and the rise of independence movements.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 7.50 credits
Department(s): Department of History

HIST*3430 Topics in Environment and Society U (3-0) [0.50]
This is a topical course, which builds on themes introduced in HIST*2250, Environment and History. Topics may include global deforestation; the origins of the global environmental movement; agriculture and the environment; and the environmental impact of cultural encounters.
Prerequisite(s): 7.50 credits including HIST*2250
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*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*3550 Celtic Britain and Ireland Since 1603 U (3-0) [0.50]
This course will deal with the Celtic peoples in the British Isles and their effort to maintain their cultural, economic and political independence.
Prerequisite(s): 7.50 credits including (HIST*2000 or HIST*2500)
Department(s): Department of History
XII. Course Descriptions, 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.
Offerings: 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, 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 HIST*2601/2)
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.
Offerings: Offered in odd-numbered years.
Prerequisite(s): 7.50 credits including (ASCI*1000 or HIST*1250)
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, anti-evolutionism 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

HIST*3820 Early Modern France U (3-0) [0.50]
This course surveys French History from the renaissance to the French Revolution.
Prerequisite(s): 7.50 credits
Department(s): Department of History

HIST*3830 Modern Middle East W (3-0) [0.50]
This course explores struggles for national independence in the region after 1919, the impact of the developing oil industry, the creation of Israel and the resulting Arab-Israeli conflict, the rise of American influence, the divisiveness of Cold War politics, and the role of women in contemporary Islamic societies.
Prerequisite(s): 7.50 credits including (1 of HIST*2890, HIST*3840, POLS*3060)
Department(s): Department of History

HIST*3840 Ottoman Empire, 1300-1923 W (3-0) [0.50]
This course examines the rise of the Ottoman Empire in the 14th century, both in Europe and the Middle East, and traces its evolution until its demise in the 20th century. Students investigate the historiographical debates surrounding various aspects of writing Ottoman history.
Prerequisite(s): 7.50 credits
Department(s): Department of History

HIST*3910 Africa Since 1800 W (3-0) [0.50]
This course will trace the suppression of the slave trade and the opening of Africa to European imperialism. Emphasis will be given to resistance movements and rising nationalism between the two World Wars. An endeavour will be made to relate the national liberation movement to the achievement of independence.
Prerequisite(s): 7.50 credits including (1 of HIST*1150, HIST*2340, HIST*2960)
Department(s): Department of History

HIST*4030 Historical Biography U (3-0) [1.00]
This advanced research seminar asks students to consider the role of the individual in history by reading theoretical works and examples drawn from the major schools of thought on this issue. Students will undertake to write a biography that will utilize primary sources and will include a detailed historiographical discussion of the works available on their chosen subject. (H)
Prerequisite(s): 10.00 credits including 1.50 credits in History at the 3000-level
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*4040 Topics in Scottish History U (3-0) [1.00]
A seminar course dealing with selected aspects of Scottish social, economic and political history. The seminars will be based upon an examination of primary sources from the University library's extensive Scottish Collections, as well as secondary literature. Students should consult with the department for specific offerings. (H)
Prerequisite(s): 10.00 credits including HIST*3530
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*4050 Topics in Scottish History U (3-0) [1.00]
A seminar course dealing with selected aspects of Scottish social, economic and political history. The seminars will be based upon an examination of primary sources from the University library's extensive Scottish Collections, as well as secondary literature. Students should consult with the department for specific offerings. (H)
Prerequisite(s): 10.00 credits including HIST*3530
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*4090 Modern European History U (3-0) [1.00]
This course is an in-depth examination of a theme or themes from European history in the nineteenth and/or twentieth centuries. Topics chosen will vary with expertise of the instructor. (H)
Prerequisite(s): 10.00 credits including (1 of HIST*1150, HIST*2510, HIST*3090)
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*4100 Africa and the Slave Trades U (3-0) [1.00]
This course will discuss the origins, character, and operation of slavery and the export slave trades in Africa. It will examine the interaction between domestic slavery and the export slave trades, on the one hand, and demographic, political, economic, social and cultural impact on African states and societies, on the other. Other themes to be examined include slave resistance in Africa, and abolition and the introduction of legitimate commerce and their impact on Africa. (H)
Prerequisite(s): 10.00 credits including (1 of HIST*2340, HIST*2960, HIST*3410, HIST*3910)
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*4120 Topics in Global History U (3-0) [1.00]
This course focuses on issues that emphasize the history of connections between different parts of the world. Topics may include the growth of the world economy, transformations of the global environment; trade and exchange; diasporas and migration. (H)
Prerequisite(s): 10.00 credits including 1.50 credits in History at the 3000-level
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*4140 Sexuality in the Middle Ages F (3-0) [1.00]
This course will provide a thematic approach to the foundations of western attitudes towards sex and sexuality as they developed in the European Middle Ages. It will examine the complex interweaving of Greek and Roman medicine, medieval Christian canon law and theology, and Germanic popular beliefs, which together provided the underpinnings of western values and practices pertaining to human sex and sexuality, with enduring results. The course will take an historiographical approach to topics and themes. (H)
Prerequisite(s): 10.00 credits including (1 of HIST*2000, HIST*2200, HIST*3020)
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*4160 Seminar in Canadian Political History U (3-0) [1.00]
Political events, key personalities, the political process, and state instruments and institutions will be analyzed with a view to understanding historical aspects of the political system and culture in Canada. (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*4170 Exploration of Digital Humanities W (3-0) [1.00]
This course is designed to introduce students to applications of new and inter-disciplinary digital humanities approaches, methodologies and tools, and to explore their application to text, image, sound, map, and other media sources. It will appeal to students in literature, history, fine arts, and music who want an introduction to state-of-the-art digital humanities approaches, methodologies and tools, and to explore their application to text, image, sound, map, and other media sources. (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*4180 American Identities F (3-0) [1.00]
This course analyzes how Americans have constructed and enacted identities in the U.S. as citizens and consumers through investigating concepts such as 'race', ethnicity, gender, sexuality, class, regional distinctions, and nationalism. (H)
Prerequisite(s): 10.00 credits including (HIST*2300 or HIST*2560)
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*4200 Health, Mind and Body F (3-0) [1.00]
This is a seminar course which will explore the history of health, the body and the mind. Possible topics include: the history of athletics and physical fitness, the history of disability, the history of nutritional science and advice, the history of women’s health, the history of disease, the history of mental illness, and the history of psychiatry. (H)
Prerequisite(s): 10.00 credits, including 1.50 credits in History at the 3000-level
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*4220 Cities and Canadian Culture U (3-0) [1.00]
Reflecting the fact that Canada’s population has been predominantly urban for a century, this seminar explores the role of urban centres in shaping Canadian cultural identity. Particular focus will be placed on the ways that city living and city form have affected the expression of Canadian identity through such topics as spectator sports, uses of public spaces, and metropolitan control of print and broadcast media (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*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 History with Numbers F (3-0) [1.00]
This course surveys the use of quantitative methods, the historical evolution of data generation and recording, and the use of quantitative sources in historical analysis and evidence in historical research. The principal objective is to build numeracy among senior History students. Case studies and example will be drawn from studies of inequality, family structure and migration from a variety of regions in Europe, Asia, Africa and the Americans. (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*4560 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*4580 The French Revolution U (3-0) [1.00]
This seminar 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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
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<tbody>
<tr>
<td>HIST*4670</td>
<td>Seminar in Science and Society W (3-0) [1.00]</td>
<td>10.00 credits including 1 of ASCI<em>1000, HIST</em>1250, HIST*3690</td>
<td>Restricted to students in the B.A. Honours or B.A.S. program with a minimum of 70% average in all History course attempts.</td>
<td>Department of History</td>
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<td>HIST*4680</td>
<td>Urban America, 1870-1920 W (3-0) [1.00]</td>
<td>10.00 credits including ( 1 of HIST<em>2150 , HIST</em>2300, HIST*2650 )</td>
<td>Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.</td>
<td>Department of History</td>
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<tr>
<td>HIST*4700</td>
<td>Topics in Medieval History U (3-0) [1.00]</td>
<td>10.00 credits including HIST<em>2000 or HIST</em>2200</td>
<td>Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.</td>
<td>Department of History</td>
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<tr>
<td>HIST*4820</td>
<td>Topics in Islamic History W (3-0) [1.00]</td>
<td>10.00 credits, (1 of HIST<em>2890, HIST</em>3830, HIST*3840)</td>
<td>Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.</td>
<td>Department of History</td>
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<tr>
<td>HIST*4900</td>
<td>Topics in Modern India W (3-0) [1.00]</td>
<td>10.00 credits including HIST*3070</td>
<td>Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.</td>
<td>Department of History</td>
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<tr>
<td>HIST*4970</td>
<td>Special History Project Seminar II U (3-0) [0.50]</td>
<td>10.00 credits</td>
<td>Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts. Instructor consent required.</td>
<td>Department of History</td>
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Human Kinetics

Department of Human Health and Nutritional Sciences

HK*2270 Principles of Biomechanics W (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 of musculoskeletal tissues and optimization of human performance.
Prerequisite(s): 4.00 credits including ( BIOL*1040 or BIOL*1090), (PHYS*1000 or PHYS*1080)
Department(s): Department of Human Health and Nutritional Sciences

HK*3100 Neurornuscular 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*3940, ZOO*3200
Restriction(s): Restricted to B.S.C., Major in Human Kinetics or Neuroscience Minor.
Department(s): Department of Human Health and Nutritional Sciences

HK*3401 Human Anatomy: Dissection F (3-0) [0.75]
First part of the two-semester course HK*3401/2. Refer to HK*3401/2 for course description.
Co-requisite(s): HK*3940 or Instructor consent.
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*3940
Restriction(s): HK*3501/2. 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: Prosection W-F (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*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*3940 or Instructor consent.
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*3502W Human Anatomy: Prosection W (3-3) [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
Restriction(s): Registration in the Human Kinetics major.
Department(s): Department of Human Health and Nutritional Sciences

HK*3940 Human Physiology F (6-0) [1.25]
This course consists of a series of lectures, demonstrations and tutorials designed for students desiring a knowledge of physiological concepts as they apply to human beings. The course discusses cellular physiology, neurophysiology, endocrinology, and the physiology of the following systems: cardiovascular, renal, gastrointestinal and respiratory with an emphasis on the regulation of function.
Prerequisite(s): 1 of BIOL*1040 or (BIOL*1080, BIOL*1090), BIOC*2580
Department(s): Department of Human Health and Nutritional Sciences

HK*4070 Clinical Biomechanics F (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 resulting 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

HK*4360 Research in Human Health and Nutritional Sciences S,F,W (0-12) [1.00]
The student will select a research topic and design and complete a project in an area of interest, 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*4371 Research in Human Health and Nutritional Sciences II S,F,W (0-6) [0.50]
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*4371/2 Research in Human Health and Nutritional Sciences II S,F,W,W-S [1.00]
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 II F,W,S (0-6) [0.50]
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*4441 Advanced Study in Human Anatomy F (1-10) [1.00]
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*3401, HK*3402
Restriction(s): Course coordinator consent required.
Department(s): Department of Human Health and Nutritional Sciences

HK*4441 Advanced Study in Human Anatomy F-W (2.00)
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*3401, HK*3402
Restriction(s): Course coordinator consent required.
Department(s): Department of Human Health and Nutritional Sciences

HK*4442 Advanced Study in Human Anatomy W (1-10) [1.00]
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*4441
Restriction(s): Course coordinator consent required.
Department(s): Department of Human Health and Nutritional Sciences

HK*4460 Regulation of Human Metabolism W (3-0) [0.50]
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*3940, (HK*4302 or NUTR*4210)
Restriction(s): Course coordinator consent required.
Department(s): Department of Human Health and Nutritional Sciences

HK*4510 Teaching, Learning & Knowledge Transfer S,F,W (0-12) [1.00]
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

HK*4511 Teaching, Learning & Knowledge Transfer II S,F,W (0-6) [0.50]
First part of a two-semester course HK*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*4511 in the first semester and HK*4512 in the second semester (a grade will not be assigned to HK*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.

Prerequisite(s): 10.00 credits including BIOL*1080
Restriction(s): Course coordinator consent required.
Department(s): Department of Human Health and Nutritional Sciences

HK*4511/2 Teaching, Learning & Knowledge Transfer II S,F,W (0-6) [1.00]
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*4511 in the first semester and HK*4512 in the second semester (a grade will not be assigned to HK*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.

Prerequisite(s): 10.00 credits including BIOL*1080
Restriction(s): Course coordinator consent required.
Department(s): Department of Human Health and Nutritional Sciences

Last Revision: October 14, 2014
2014-2015 Undergraduate Calendar
Second part of a two-semester course HK*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*4511 in the first semester and HK*4512 in the second semester (a grade will not be assigned to HK*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.

Prerequisite(s): HK*4511
Restriction(s): Course coordinator consent required.
Department(s): Department of Human Health and Nutritional Sciences

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.

Prerequisite(s): HK*3940
Department(s): Department of Human Health and Nutritional Sciences

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.

Prerequisite(s): HK*3600
Restriction(s): Restricted to students in Human Kinetics.
Department(s): Department of Human Health and Nutritional Sciences

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.

Prerequisite(s): ENGG*3150 or HK*2270
Department(s): Department of Human Health and Nutritional Sciences
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 ornamental and aesthetic purposes. The interaction between plants and impact of environmental factors 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]
The biology, ecology, adaptation, and uses of cool-season and warm-season turfgrass species and cultivars will be introduced. Topics will include the identification and life strategies of different turfgrass species, principles of reproduction and techniques for establishment of turfgrass by seeding, sprigging and sodding. The ecology of management including mowing, irrigation, cultivation, mineral nutrition, repair and renovation, and management of stresses (thatch, weeds, insects, disease) will be covered. The turfgrass industry will be introduced, including application of ecological principles to athletic field management, sod production, golf course management, and professional lawn care.

Prerequisite(s): BIOL*1040 or [BIOL*1090, (1 of BIOL*1050, BIOL*1070, BIOL*1080)]
Restriction(s): HORT*3220
Department(s): Department of Plant Agriculture

*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): 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]
Biology, behavior and impact of insect pests of turfgrass and recognition of symptoms will be emphasized. Identification and management of weed species commonly found in turfgrass will be discussed. Environmental impacts of cultural and chemical control techniques will be discussed for each group of pests and advances in chemical and biological control methods will be developed.

Prerequisite(s): HORT*2450
Restriction(s): DTM*3300
Department(s): Department of Plant Agriculture

*HORT*3150 Principles and Applications of Plant Propagation F (2-2) [0.50]
Plant propagation is the art and science of multiplication of plant material involving the application of the principles of plant growth and development and the techniques of mass production. This course will explore biological, commercial, environmental, and social dimensions of plant propagation systems with emphasis on global trends in the plant production industry.

Prerequisite(s): AGR*2470 or BOT*2100
Restriction(s): HORT*3230, HORT*3350
Department(s): Department of Plant Agriculture

*HORT*3270 Medicinal Plants W (3-0) [0.50]
This course will focus on the use of medicinal plants, specifically in view of the application of recent biotechnology advancements in their production and processing for enhancing human health.

Offering(s): Offered in even-numbered years.
Prerequisite(s): 1 of BIOL*1040, BIOL*1050, BIOL*1070, BIOL*1080
Department(s): Department of Plant Agriculture

*HORT*3280 Greenhouse Production W (3-3) [0.50]
Principles and practices of production, culture and marketing of greenhouse flower and vegetable crops.

Prerequisite(s): BOT*3310 or PBIO*3110
Department(s): Department of Plant Agriculture

*HORT*3340 Wine-Grape Culture F (3-0) [0.50]
The history and impact of grape-growing in the New World will be presented and studied. Grape Vitis taxonomy (amphelogy) and physiology will be studied as it relates to the Old World/New World wine growing. The physiology of fruiting and vegetative balance for managing wine quality in the vineyard will be integrated with basic wine-making practices and general assessment techniques.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): AGR*2470 or BOT*2100
Department(s): Department of Plant Agriculture

*HORT*3510 Vegetable Production F (3-3) [0.50]
The vegetable industry and the characteristics, culture, storage and marketing of field-grown vegetable crops will be studied. Organic vegetable production will also be considered.

Prerequisite(s): BOT*2100
Department(s): Department of Plant Agriculture

*HORT*4200 Turf, the Environment and Society W (3-0) [0.50]
The course will explore the environmental impact of turfgrass management in urban and rural landscapes and society's perception of the how those areas should be used. Emphasis will be placed on the ecology of turfgrass systems and issues surrounding society's perception of management practices. The impact of public perception about the management and environmental impact of turfgrass areas in urban and rural landscapes will be discussed, including the issues surrounding the use and maintenance of turfgrass ecosystems.

Prerequisite(s): AGR*2050, CROP*2110, HORT*2450, HORT*4450, (1 of BIOL*2060, BOT*3050, BOT*2050)
Department(s): Department of Plant Agriculture

*HORT*4380 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.

Prerequisite(s): BOT*3310 or PBIO*3110
Department(s): Department of Plant Agriculture

*HORT*4380 Tropical and Sub-Tropical Crops F (3-0) [0.50]
This course examines the production and utilization of tropical and sub-tropical crops in farming systems. School of Environmental Design and Rural Development.

Prerequisite(s): AGR*1110 or AGR*1250
Department(s): Department of Plant Agriculture

*HORT*4420 Fruit Crops F (3-3) [0.50]
Growth patterns, fruiting characteristics and adaptation to environmental conditions of fruit crops in temperate regions. Classification, cultural practices including propagation and the physiological principles underlying these practices will be emphasized.

Prerequisite(s): BOT*2100
Department(s): Department of Plant Agriculture

*HORT*4450 Advanced Turfgrass Science W (3-2) [0.50]
This course builds on basic principles learned in Introduction to Turfgrass Science with an emphasis 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.

Prerequisite(s): HORT*2450
Department(s): Department of Plant Agriculture

Last Revision: October 14, 2014
**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, developing 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.

**Offerings:** Also offered through Distance Education format.

**Equate(s):** BUS*2010

**Restriction(s):** UNIV*2000

**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 Organizational 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*3070, PSYC*3080. Restricted to students in BCOMM, BASC: AHN, and BA: EURS.

**External Course Code(s):**

**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.

**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 relations 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)

**Equate(s):** BUS*3050, PSYC*3060

**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.

**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*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*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)

**Equate(s):** BUS*4000, HTM*4100

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

**Department(s):** Department of Management

**HROB*4000 Leadership and Organizational Management Capstone W (3-0) [1.00]**

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):** BUS*2010 or HROB*2010 plus 120 hours of placement experience

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

**Department(s):** Department of Management

**HROB*4030 Advanced Topics In Leadership and Organizational Management U (3-0) [0.50]**

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.

**Prerequisite(s):** 12.50 credits including (1 of BUS*3000, HROB*2100, PSYC*3070)

**Equate(s):** BUS*4030

**Department(s):** Department of Management

**HROB*4060 Workforce Optimization W (3-0) [0.50]**

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.

**Prerequisite(s):** 15.00 credits including (1 of BUS*3000, HROB*2100, PSYC*3070)

**Equate(s):** BUS*4060, HTM*4160

**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
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<thead>
<tr>
<th>Course Code: HROB*4100</th>
<th>Evidence-Based People Management F (3-0) [1.00]</th>
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<tr>
<td><strong>Description:</strong> 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>
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<tr>
<td><strong>Prerequisite(s):</strong> 12.50 credits including (1 of BUS<em>3000, HROB</em>2100, PSYC*3070)</td>
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<td><strong>Equate(s):</strong> BUS<em>4100, PSYC</em>4100</td>
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<td><strong>Restriction(s):</strong> This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
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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 is a survey of the hospitality and tourism industry, with reference to its historical development, growth, and organization. The management process and the scope of the industry today are examined.

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 or HTM*2700

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 Meetings and Convention Management W (3-0) [0.50]
This course examines the sales, servicing and management of the meetings, events, conventions, exhibitions, and trade show 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 this multifaceted component 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]
A study of the nature of unit operations in the various sectors of the lodging industry and of the functions and systems of lodging operations. Topics will include organization structure and responsibilities, sociotechnical systems and legal and security aspects.

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 Tourism Policy, Planning and Development F (3-0) [0.50]
This course focuses on the various aspects of tourism planning, policy, and development. Topics covered include: reasons for development; tourism development as a strategy for urban revitalization; tourism's links to heritage conservation and regional development; sustainability and the adverse impacts of development; cultural considerations and community participation; and the importance of context for individual tourism projects.

Prerequisite(s): GEOG*1220, HTM*1000

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*2700 Introductory Foods F,W (3-2) [0.50]
Scientific principles and their application to food preparation and food consumption. An integrated lecture and laboratory approach is used to study the chemical and physical properties of foods.

Prerequisite(s): 1 of Grade 12U Chemistry, OAC Chemistry, CHEM*1000, CHEM*1040, CHEM*1060, CHEM*1100

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]
A survey of cultural influences on individual and group food habits and patterns. The course studies the selection and use of food; the development of food beliefs, attitudes and related behaviours within the context of cultural systems.

Department(s): School of Hospitality, Food and Tourism Management

HTM*3030 Beverage Management F (2-2) [0.50]
This course provides students with knowledge of the beer, spirit, wine, coffee and soft drink industries and their importance in the hospitality environment. Course topics will include product characteristics, purchasing, pricing, control, marketing and promotion, trends and the responsible service of alcoholic beverages.

Prerequisite(s): 9.00 credits

Restriction(s): HTM*4180. 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*3060 Lodging Management F (3-0) [0.50]
The intent of this course is to explore and analyze the principles and practices of lodging management and related sales 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. Focus of the course is on communication both within and among departments, divisions, and most importantly, with the consumer.

Prerequisite(s): 9.00 credits including 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 Hospitality and Tourism Marketing 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. Course content includes marketing strategies and practices, segmentation and target marketing, positioning and branding, pricing, promotions, personal selling, and distribution system decisions for all hospitality and tourism related businesses.

Prerequisite(s): 9.00 credits including HTM*2100. ( 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 (4-6) [1.00]
This course covers the application of managerial functions to restaurant and foodservice operations with an emphasis on the principles of food production and service in a commercial setting.

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 analysis of operations management in service industries with the aim of improving productivity and service delivery. Specific areas to be studied include the nature of productivity, the use of work study methods, the significance of statistical concepts and the application of operations research techniques.

Prerequisite(s): ECON*2740 or STAT*2060

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 Industry U (3-0) [0.50]
An independent program of study formally integrating the student's academic study with a concentrated work experience. The study is to be decided by the student in consultation with the supervisory faculty (normally the department's Co-op Co-ordinator) prior to registration in the course.

Restriction(s): Registration in BCOMM: HAFA:C. 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
XII. Course Descriptions, Hospitality 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 Economics of Food Usage F (3-0) [0.50]**
This is an overview of food supply chain management in the food and foodservice industries of Canada with a global perspective. Food production, distribution, legislation and consumption habits impacting the economics and use of food in Canada and globally are studied.

**Offering(s):** Offered through Distance Education format only.
**Prerequisite(s):** 1 of FOOD*2010, HTM*2700, MCS*1000
**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 and Tourism Facilities Management and Design F (3-0) [0.50]**
This course will equip an individual to work as a knowledgeable member of a hospitality or tourism organization's design or re-design team. Efficient and effective space utilization for both front-and-back-of-the-house areas, plus a knowledge of how to read professional drawings (“blueprints”) will be covered. This course also will provide an understanding of the operation of a physical plant including such elements as systems maintenance, appropriate use of various materials, energy management, life cycle costing, and safety and security issues.

**Prerequisite(s):** HTM*3900
**Restriction(s):** Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.
**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 restaurants, and the study of major cuisines and classical cookery. Analysis of qualitative aspects of the restaurant business (ambience, total service package, and the dynamic relationship between service and the product of food and wine) is covered. Emphasis is placed upon creativity and authenticity in menu formulation, operational performance and guest satisfaction.

**Prerequisite(s):** HTM*3900
**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.
**Department(s):** School of Hospitality, Food and Tourism Management

**HTM*4190 Hospitality and Tourism Operations Planning F,W (3-0) [0.50]**
The course examines management and organization practices as they are applied to typical hospitality and tourism operational issues. Significant decision points and sub-system interrelationships are emphasized.

**Prerequisite(s):** (1 of ACCT*2230, BUS*2230, HTM*3070 ), HTM*3080
**Co-requisite(s):** BUS*3320 or 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 U (3-0) [0.50]**
This is a specialized course in hospitality revenue management that is tailored towards senior level HAFA and Tourism Management majors. The course builds upon previous courses by introducing hospitality revenue management theories, concepts and techniques. The objective of this course is to provide a solid foundation in revenue management for careers in hospitality management.

**Prerequisite(s):** ( BUS*3320 or MGMT*3320 ), HTM*2100
**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.
**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

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2014-2015 Undergraduate Calendar
### Humanities

**College of Arts**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUMN*3020 Myth and Fairy Tales in Germany F (3-0) [0.50]</td>
<td>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 Hoffmann, Wagner. Lectures and texts are English. This course is offered in conjunction with GERM*3020.</td>
<td>Admission to German Semester.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>HUMN*3100 London Studies in the Humanities W (2-3) [0.50]</td>
<td>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.</td>
<td>Admission to London Semester.</td>
<td>Dean's Office, College of Arts</td>
</tr>
<tr>
<td>HUMN*3150 Paris Studies in the Humanities W (2-3) [0.50]</td>
<td>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.</td>
<td>Admission to Paris Semester.</td>
<td>Dean's Office, College of Arts</td>
</tr>
<tr>
<td>HUMN*3210 Introduction to Polish History and Culture F (6-4) [1.00]</td>
<td>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.</td>
<td>Admission to Krakow Semester.</td>
<td>Dean's Office, College of Arts</td>
</tr>
<tr>
<td>HUMN*3220 Krakow Studies in the Humanities I F (3-2) [0.50]</td>
<td>An integrated course of studies in the humanities as they relate to the resources of Krakow, Poland. For Krakow Semester students only.</td>
<td>Admission to the Krakow Semester.</td>
<td>Dean's Office, College of Arts</td>
</tr>
<tr>
<td>HUMN*3230 Krakow Studies in the Humanities II F (3-2) [0.50]</td>
<td>An integrated course of studies in the humanities as they relate to the resources of Krakow, Poland. For Krakow Semester students only.</td>
<td>Admission to the Krakow Semester.</td>
<td>Dean's Office, College of Arts</td>
</tr>
<tr>
<td>HUMN*3240 India Studies in the Humanities W (3-0) [0.50]</td>
<td>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.</td>
<td>Admission to the India Semester.</td>
<td>Dean's Office, College of Arts</td>
</tr>
<tr>
<td>HUMN*3300 Latin American Studies in the Humanities F,W (1-2) [0.50]</td>
<td>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).</td>
<td>Admission to the Latin America semester.</td>
<td>Instructor consent required.</td>
</tr>
<tr>
<td>HUMN*3400 Renaissance Lovers and Fools W (3-0) [0.50]</td>
<td>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. This course is offered in conjunction with ITAL*3400.</td>
<td>5.0 credits</td>
<td>Dean's Office, College of Arts</td>
</tr>
</tbody>
</table>

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

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

**Prerequisite(s):** 5.00 credits

**Restriction(s):** Instructor consent required.
## Interdisciplinary Physical Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPS*1500</td>
<td>Integrated Mathematics and Physics I F (6-4) [1.00]</td>
<td>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.</td>
<td>(4U Calculus and Vectors or equivalent), (4U Physics or PHYS*1020 or equivalent)</td>
<td>MATH<em>1080, MATH</em>1200, PHYS<em>1000 PHYS</em>1080 . Restricted to B.Sc. students in APMS:C, BPCH, BPCH:C, BMPH, BMPH:C, CHPY, CHPY:C, CHEM, CHEM:C, MATH, NANO, NANO:C, PSCI, PHYS, PHYS:C, STAT, THPY</td>
<td>Department of Physics</td>
</tr>
<tr>
<td>IPS*1510</td>
<td>Integrated Mathematics and Physics II W (6-4) [1.00]</td>
<td>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.</td>
<td>IPS*1500</td>
<td>MATH<em>1210, MATH</em>2080, PHYS<em>1010, PHYS</em>1070, PHYS*1130 Restricted to B.Sc. students in APMS:C, BPCH, BPCH:C, BMPH, BMPH:C, CHPY, CHPY:C, CHEM, CHEM:C, MATH, NANO, NANO:C, PSCI, PHYS, PHYS:C, STAT, THPY</td>
<td>Department of Physics</td>
</tr>
</tbody>
</table>
## 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*2990 Introduction to Marx W (3-0) [0.50]
An interdisciplinary course designed to acquaint students with the thought of Karl Marx.

*Department(s):* Department of History, Department of Philosophy, Department of Political Science, Department of Sociology and Anthropology

### 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

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## 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 councilor. A list of current and archived offerings is available by following the links on the First Year Seminars webpage.

**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

**Restriction(s):** Instructor consent required. Acceptance in the Peer Helper program.

**Department(s):** Provost & 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

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

**Department(s):** Provost & VP Academic

### UNIV*2200 Towards Sustainability F (3-0) [0.50]
This course will introduce students to the complex and interrelated issues of sustainability. It will explore why it is important to understand the environmental, economic and social issues of our world and why they must be addressed in a holistic way. It will allow students to realize the impact they will make on the world and give them to knowledge to develop values that will help chart their career. This course will provide the opportunity to understand issues beyond their chosen discipline.

**Prerequisite(s):** 4.50 credits

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

### UNIV*2250 Experiential Learning Opportunity III: 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*2250 until UNIV*2260 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, UNIV*1260

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

**Department(s):** Provost & 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*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 (3-3) [1.00]
The course focuses on aspects of Shanghai as exemplifying the emergence of 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

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UNIV*3230 University Studies in Shanghai II U (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

UNIV*3240 University Studies in Shanghai III U (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

UNIV*3330 Confronting Science and Politics W (6-0) [1.00]
Using an enquiry-based approach, this course will present students with a number of critical global issues where science and politics collide. Students will be expected to research and understand the scientific, political and cultural issues that underlie the problems and identify tangible, real-world, and effective action or resolution. Students will practise oral and written forms of communication to explore issues of science, politics, culture, environment, humanitarianism and health.
Prerequisite(s): 7.50 credits including (1 of PSYC*2040, STAT*2040, STAT*2050, STAT*2060, STAT*2080, STAT*2100)
Restriction(s): Instructor consent required.
Department(s): Associate VP Academic

UNIV*4410 Civic Engagement with Communities F (3-0) [0.50]
In this capstone course students will critically reflect on the connections they have developed between their personal identity as engaged citizens and the impacts their contributions have made with the broader community. An e-portfolio of their experiential learning activities will be used to gain an appreciation of their personal growth and acquired skills, and to identify the challenges and opportunities in a lifelong commitment to social justice, sustainability, and respect for diversity.
Offering(s): First offering - Fall 2015
Prerequisite(s): UNIV*2410, 90 hours of approved community service.
Restriction(s): Instructor consent required.
Department(s): Department of Political Science
IBIO*4100 Interpreting Biodiversity I W (1.5-3) [0.50]
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 BIOD 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.
Prerequisite(s): 12.00 credits
Restriction(s): Enrolment restricted to BSCH:BIOD majors.
Department(s): Department of Integrative Biology

IBIO*4100 Interpreting Biodiversity II F (1.5-3) [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 application of key skills for interpreting biodiversity, the collection and analysis of biodiversity data. This student centred experience will culminate with an oral presentation and written report to the “clients”, classmates and instructors.
Prerequisite(s): IBIO*3100
Restriction(s): Enrolment restricted to BSCH:BIOD majors.
Department(s): Department of Integrative Biology

IBIO*4500 Research in Integrative Biology I F,W (1-5) [0.75]
The student will undertake an independent research project of a practical or theoretical nature that relates either to organismal biology or the teaching of organismal biology and is conducted under the supervision of a faculty member. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. 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 project is to be completed.
Restriction(s): Normally a minimum cumulative average of 70% in the biology courses during the first 6 semesters of a major in the College of Biological Science. Instructor consent required.
Department(s): Department of Integrative Biology

IBIO*4510 Research in Integrative Biology II F,W (1-5) [0.75]
The student will undertake an independent research project of a practical or theoretical nature that relates either to organismal biology or the teaching of organismal biology and is conducted under the supervision of a faculty member. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. 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 project is to be completed.
Prerequisite(s): IBIO*4500
Restriction(s): Normally a minimum cumulative average of 70% in the biology courses during the first 6 semesters of a major in the College of Biological Science. Instructor consent required.
Department(s): Department of Integrative Biology

IBIO*4521 Thesis in Integrative Biology F-W (0-12) [1.00]
This course is the first 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.
Prerequisite(s): 12.00 credits
Restriction(s): Normally a minimum cumulative average of 75% in the biology courses over the first 6 semesters of a major in the College of Biological Science. Permission of course coordinator.
Department(s): Department of Integrative Biology

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.
Prerequisite(s): IBIO*4521
Department(s): Department of Integrative Biology

IBIO*4600 Integrative Marine and Freshwater Research F (3-3) [1.00]
In this course, students will integrate theory and analytical methods to address common problems in marine and freshwater biology. Particular emphasis will be placed on the process of inquiry including: development of research problems, data retrieval from existing literature, design and interpretation of experiments, sampling, statistical inference, and written and oral presentation.
Prerequisite(s): BIOL*3450, (STAT*2040 or STAT*2230), (ZOO*3200 or ZOO*3210)
Restriction(s): ZOO*4540. Restricted to students in BSCH.MFB.
Department(s): Department of Integrative Biology
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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| 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 (3-1) [0.50]

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. (This course may not be taken by students who have credit for 12U Italian or equivalent.)

**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 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 W (2-1) [0.50]

This course introduces students to the scholarly study of literature, including critical methodologies. 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 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*2070

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

### ITAL*3060 Advanced Italian F (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*2070 or ITAL*2090

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

### ITAL*3200 Novels of Resistance W (3-0) [0.50]

In this course, students will read Italian novels such as Alberto Moravia’s "Gli indifferenti", Italo Calvino’s "Il sentiero dei nidi di ragno", and Dacia Maraini’s "Donna in guerra" with particular attention to the theme of resistance. The course will consider representations of fascism, patriarchy, and the bourgeois ethos and the ways in which writers envision the possibility of resistance to them.

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

**Prerequisite(s):** 1 of ITAL*2070, ITAL*2090, permission of the instructor

**Restriction(s):** ITAL*2350

**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*3950 Topics in Italian Literature W (3-0) [0.50]

Aspects of Italian literature. Each offering will treat a particular topic such as early texts in the Vernacular, Commedia dell’Arte, Eighteenth-Century Drama, realism in Italian Literature, the poetry of Montale, Ungaretti, and Saba.

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

**Prerequisite(s):** ITAL*3060

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

### ITAL*3960 Topics in Italian Literature F (3-0) [0.50]

Each offering will treat a particular topic such as early texts in the Vernacular, Commedia dell’Arte, Eighteenth-Century Drama, realism in Italian Literature, the poetry of Montale, Ungaretti, and Saba.

**Prerequisite(s):** ITAL*3060

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

### ITAL*3970 Topics in Italian Literature W (3-0) [0.50]

Each offering will treat a particular topic such as early texts in the Vernacular, Commedia dell’Arte, Eighteenth-Century Drama, realism in Italian Literature, the poetry of Montale, Ungaretti, and Saba.

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

**Prerequisite(s):** ITAL*3060

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

### ITAL*4900 Research Paper in Italian Studies F.W (3-0) [0.50]

This is the equivalent of a semester course. A research project on some aspect of Italian literature, language, 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):** Restricted to the 6th semester in the Italian Honours program.

**Department(s):** School of Languages and Literatures
Landscape Architecture
School of Environmental Design and Rural Development

LARC*1100 Design and Communications Studio F (3-3) [0.75]
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.
Restriction(s): Registration in the B.L.A. program.
Department(s): School of Environmental Design and Rural Development

LARC*1950 History of Cultural Form I F (3-0) [0.50]
This course explores the cultural form expressed in landscapes from ancient times to the present.
Department(s): School of Environmental Design and Rural Development

LARC*2020 Design Studio W (2-4) [0.75]
An examination of the theory, process and vocabulary of spacial design. An exploration of the social, psychological, and behavioural forces a designer must respond to. An introduction to landscape analysis.
Prerequisite(s): LARC*1100
Restriction(s): Registration in the B.L.A. program.
Department(s): School of Environmental Design and Rural Development

LARC*2100 Landscape Analysis F (2-2) [0.50]
This course is a study of biophysical factors and their influence on design. Including soils, climate, vegetation, hydrology, and fauna. Natural and cultural systems interpretation, site assessment methods, and data presentation techniques will be outlined. Students will formulate and conduct site assessments that include resource inventories and the analysis for land use suitability.
Prerequisite(s): LARC*2020
Co-requisite(s): LARC*3040
Department(s): School of Environmental Design and Rural Development

LARC*2230 Planting Design W (1-2) [0.50]
This course covers the visual and physical characteristics of plants and their use. Students will study design theory and its application at a site specific scale and the use of plants in a wide range of applications.
Co-requisite(s): LARC*2020
Restriction(s): Registration in the B.L.A. Program.
Department(s): School of Environmental Design and Rural Development

LARC*2240 Plants in the Landscape F (1-2) [0.50]
This course explores the identification and cultural requirements of native and introduced plants in cultivated and naturalized landscapes from a design perspective.
Prerequisite(s): LARC*2230
Restriction(s): LARC*2340, Registration in the B.L.A. Program.
Department(s): School of Environmental Design and Rural Development

LARC*2410 Site Engineering F (3-1) [0.50]
A focus on contour grading to facilitate circulation, stormwater runoff, and design intent. Aspects of surveying, plotting, as well as runoff and cut and fill calculations.
Prerequisite(s): LARC*2020, LARC*2420
Department(s): School of Environmental Design and Rural Development

LARC*2420 Materials and Techniques W (3-0) [0.50]
The study of materials commonly used for landscape construction. Specification of procedures and materials for contractual purposes. Detail drafting.
Prerequisite(s): LARC*1100
Department(s): School of Environmental Design and Rural Development

LARC*2820 Urban and Regional Planning W (3-0) [0.50]
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.
Offering(s): Also offered through Distance Education format.
Department(s): School of Environmental Design and Rural Development

LARC*3040 Site Planning and Design Studio F (2-4) [0.75]
Application of the site planning process, including programming, site analysis, functional analysis and diagramming. Application of design theory and landscape analysis to site design.
Prerequisite(s): LARC*2020
Co-requisite(s): LARC*2100, LARC*2240
Department(s): School of Environmental Design and Rural Development

LARC*3050 Landscape Architecture I W (2-4) [0.75]
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.
Prerequisite(s): LARC*3040
Department(s): School of Environmental Design and Rural Development

LARC*3060 Landscape Architecture II F (2-4) [0.75]
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.
Prerequisite(s): LARC*3050
Department(s): School of Environmental Design and Rural Development

LARC*3070 Landscape Architecture III F (2-6) [1.00]
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.
Prerequisite(s): LARC*3060
Department(s): School of Environmental Design and Rural Development

LARC*3320 Principles of Landscape Ecology F (3-0) [0.50]
This course offers an integrated approach to understanding the functioning of landscapes. The emerging theories, concepts and methodologies of landscape science and their application to landscape and environmental management will be discussed.
Prerequisite(s): LARC*2100, LARC*2240
Department(s): School of Environmental Design and Rural Development

LARC*3430 Landscape Construction I W (2-4) [0.50]
Production of construction drawings, documents and cost estimates using computer and manual techniques.
Prerequisite(s): LARC*3430
Co-requisite(s): LARC*3060
Department(s): School of Environmental Design and Rural Development

LARC*3440 Landscape Construction II F (2-4) [0.75]
Production of construction drawings, documents and cost estimates using computer and manual techniques.
Prerequisite(s): LARC*3430
Co-requisite(s): LARC*3060
Department(s): School of Environmental Design and Rural Development

LARC*3500 Independent Study S,F,W (0-6) [0.50]
Each student establishes, in consultation with the faculty member chosen, the content of special study within the area of expertise of that instructor.
Prerequisite(s): LARC*3040
Department(s): School of Environmental Design and Rural Development

LARC*4090 Seminar W (3-0) [0.50]
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.
Prerequisite(s): LARC*3060
Department(s): School of Environmental Design and Rural Development

LARC*4510 Honours Thesis F (3-0) [0.50]
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.
Prerequisite(s): LARC*3060, LARC*3440
Department(s): School of Environmental Design and Rural Development

LARC*4610 Professional Practice F (3-0) [0.50]
Lectures and assignments dealing with professional ethics, organizations, contract law and procedures, relationships with clients, contractors and professional practitioners, office procedures and professional promotion practices and trends.
Prerequisite(s): LARC*3050
Department(s): School of Environmental Design and Rural Development
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<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Description</th>
<th>Prerequisite(s)</th>
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<tbody>
<tr>
<td>LARC*4620</td>
<td>Internship in Landscape Architecture S,F,W (0-10)</td>
<td>1.00</td>
<td>An experiential learning opportunity requiring professional office experience and faculty supervision under program regulations. Actual work experience for academic credit. Students are required to submit a project or paper as part of the course requirements.</td>
<td>LARC<em>3060, LARC</em>3440</td>
<td>School of Environmental Design and Rural Development</td>
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<tr>
<td>LARC*4710</td>
<td>Integrative Design Studio W (2-6) [1.00]</td>
<td>1.00</td>
<td>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.</td>
<td>LARC*4510</td>
<td>School of Environmental Design and Rural Development</td>
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<tr>
<td>LARC*4730</td>
<td>Special Study in Landscape Architecture S,F,W (0-4)</td>
<td>0.50</td>
<td>This is a supervised independent study course involving competitions, special projects, modules, and other formats.</td>
<td>LARC*3040</td>
<td>School of Environmental Design and Rural Development</td>
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<tr>
<td>LARC*4740</td>
<td>Case Studies S,F,W (0-6) [0.50]</td>
<td>0.50</td>
<td>Travel and field studies of selected projects as approved by a faculty member. Students are required to submit a project or paper.</td>
<td>LARC*3040</td>
<td>School of Environmental Design and Rural Development</td>
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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.)

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<tr>
<th>Course Code</th>
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<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>Restriction(s): This course may not be taken by anyone who has Grade 12 Latin</td>
<td>School of Languages and Literatures</td>
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<tr>
<td>LAT*1110 Preliminary Latin II W (3-0) [0.50]</td>
<td>A continuation of LAT*1100.</td>
<td>Prerequisite(s): LAT*1100 or Grade 12 Latin</td>
<td>School of Languages and Literatures</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>Prerequisite(s): Grade 12 Latin or LAT*1110</td>
<td>School of Languages and Literatures</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>Prerequisite(s): 1 of CLAS<em>3000, CLAS</em>3120, CLAS*3300</td>
<td>School of Languages and Literatures</td>
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<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>Prerequisite(s): CLAS<em>3060 or CLAS</em>3120</td>
<td>School of Languages and Literatures</td>
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</tbody>
</table>
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.
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*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 information. The 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.
Prerequisite(s): 1 of ACCT*2230, AGEC*2230, BUS*2230, HATA*3070, HTM*3070
Equate(s): BUS*3320 or MGMT*3320
Restriction(s): Registration in BCOMM programs, BA.MEF, BA.ID area of emphasis BA.EBD or BA.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): (ECON*2560 or ECON*3560), (1 of AGEC*3320, AGEC*3400, BUS*3320, FARE*3400, MGMT*3320), (1 of AGEC*3310, FARE*3310, HTM*3120, REAL*3890)
Restriction(s): BUS*4250, HTM*4200. Restricted to students in B.Comm. 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 Applied Community Project I F,W (3-3) [0.50]
Offered through the Centre for Business and Social Entrepreneurship (CBASE), 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 topic selected will be determined in agreement between the student and the faculty member with expertise in the area.
Prerequisite(s): 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*4060 Applied Community Project II F,W (3-3) [0.50]
Offered through the Centre for Business and Social Entrepreneurship (CBASE), 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 topic selected will be determined in agreement between the student and the faculty member with expertise in the area.
Prerequisite(s): 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

MGMT*4350 Business Case Competition Preparation F (3-0) [0.50]
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

2014-2015 Undergraduate Calendar
Last Revision: October 14, 2014
XII. Course Descriptions, Marketing and Consumer Studies

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.
Equate(s): COST*1000
Restriction(s): Registration in B.Comm. program, BA MKMN minor, BA BADM minor, BA European Studies area of emphasis in European Business Studies, or BBRM EQM. This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information. This course may not be taken for credit subsequent to receiving credit in 1 of AGEC*4370, FARE*4370, 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 hand-in assignments designed to introduce students to basic business communication skills
Prerequisite(s): 4.00 credits including MCS*1000
Restriction(s): Registration in BCMM:MKMN or BCMM:MKMN:C
Department(s): Department of Marketing and Consumer Studies

MCS*2020 Marketing 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. Not available to students registered in B.Cmp program or CIS majors and minors.
Department(s): Department of Marketing and Consumer Studies

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]
Organizations survive and achieve their goals by satisfying the needs and wants of consumers as well as or better than their competitors. This course examines consumer behaviours, the economic, social, cultural and psychological factors related to consumer behaviours, the evolution and change in behaviours and relationships, and the ways in which consumers respond to stimuli employed in the marketing of products, services and ideas.
Prerequisite(s): (1 of HABA*1000, HTM*1000, MCS*1000), (1 of HROB*2100, PSYC*1000, PSYC*1200). Although not required, it is recommended that students take PSYC*1000 prior to MCS*2600.
Restriction(s): Registration in B.Comm. programs, BA/MKMN minor, or BA/EURS 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*3000 Advanced Marketing F (3-0) [0.50]
This course provides students with an opportunity to extend their knowledge of the marketing principles and strategies they learned in MCS*1000 to develop a marketing plan and to explore sales as a career.
Prerequisite(s): 10.00 credits including MCS*1000
Restriction(s): Not available to B.Comm. students registered in MKMN, MKMN:C, AGBU, AGBU:C majors.
Department(s): Department of Marketing and Consumer Studies

MCS*3010 Quality Management W (3-0) [0.50]
Lectures will include general concepts and expectations of quality assurance from consumer, government, managerial and technological points of view and discuss the relationship of national and international groups concerned with quality assurance. Seminars apply concepts to selected products and services.
Prerequisite(s): 10.00 credits including (1 of ECON*2740, 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.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): ECON*2740 or STAT*2060
Restriction(s): Registration in B.Comm. MKMN, MKMN:C, REH, REH:C, or the MKMN 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.
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*3080 The Corporation and Society F (3-0) [0.50]
This course is designed to take students through an academic critique of global corporations in the societies and natural environments in which they operate. The course will explore current and prospective models for operating in society and the natural environment.
Prerequisite(s): 10.00 credits
Restriction(s): Registration in B.Comm. program.
Department(s): Department of Marketing and Consumer Studies

MCS*3500 Market Analysis and Planning 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 and 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, (ECON*2740 or 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*3600 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

Last Revision: October 14, 2014
**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

**MCS*4040 Management in Product Development F (3-0) [0.50]**

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*4050 The Evolution of Capitalism: A Canadian Perspective W (3-0) [0.50]**

This course offers a Canadian perspective on capitalism as an evolving process of creative destruction; implications for Canadian culture and the allocation of economic, political, and social power; effects on education, the capacity of governments to govern, and societal notions of what constitutes the public good.

**Prerequisite(s):** 15.00 credits including ECON*1050, ECON*1100

**Restriction(s):** Registration in B.Comm. program.

**Department(s):** Department of Marketing and Consumer Studies

**MCS*4100 Entrepreneurship F (3-0) [0.50]**

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):** Registration in B.Comm. MKMN or B.Comm. MKMN:C.

**Department(s):** Department of Marketing and Consumer Studies

**MCS*4200 Consumer Studies Practicum S,F,W (3-0) [0.50]**

This course provides students with supervised experience in developing marketing plans or working on consumer studies projects.

**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

**MCS*4400 Pricing Management F (3-0) [0.50]**

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 F,W (3-0) [0.50]**

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 U (3-0) [0.50]**

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 consult with the department to determine what topic, if any, will be offered during the 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 U (3-0) [0.50]**

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 consult with the department to determine what topic, if any, will be offered during the 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*4940 Consumer Studies Practicum S,F,W (3-0) [0.50]**

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*4950 Consumer Studies Practicum S,F,W (3-0) [0.50]**

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 consult with the department to determine what topic, if any, will be offered during the 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*4970 Consumer Studies Practicum S,F,W (3-0) [0.50]**

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 consult with the department to determine what topic, if any, will be offered during the 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*4990 Consumer Studies Practicum S,F,W (3-0) [0.50]**

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
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 (3-1) [0.50]

This course is intended for business and economics students. The topics covered include lines, systems of linear equations, convex sets, and basic algebra including exponential and logarithmic functions. Calculus covered in the course includes limits, continuity, sequences and series, derivatives, higher order derivatives, curve sketching, linear approximators, optimization, and integration.

Offerings: Also offered through Distance Education format.
Prerequisite(s): 4U Advanced Functions
Restriction(s): MATH*1000 , MATH*1080, MATH*1200 Not available to students registered in the BSC program.
Department(s): Department of Mathematics and Statistics

MATH*1050 Introduction to Mathematical Modeling U (3-1) [0.50]

This course applies non-calculus techniques to model "real world" problems in business, psychology, sociology, political science and ecology. The mathematical topics introduced include graphs and directed graphs, linear programming, matrices, probability, games and decisions, and difference equations. Mathematics majors may not take this course for credit.

Equate(s): CIS*1900
Restriction(s): Not available to students registered in BCOMP programs or CIS.
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*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 mean-value theorem for integrals; the fundamental theorem of calculus; applications of 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 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 mean-value theorem for integrals; the fundamental theorem of calculus; applications of the definite integral; the mean value theorem for integrals.

Prerequisite(s): 1 of MATH*1000 , MATH*1080, MATH*1200
Restriction(s): IPS*1510, MATH*1210
Department(s): Department of Mathematics and Statistics

MATH*1215 Linear Algebra I F (3-0) [0.50]

This course introduces the theory and application of linear algebra. Linear algebra is used to describe phenomena in a wide range of areas. First order equations are studied extensively as well as linear equations of second and higher order. Other topics include difference equations, phase plane analysis, and an introduction to power series methods and Laplace transforms.

Prerequisite(s): IPS*1500 or MATH*1200
Restriction(s): MATH*1215
Department(s): Department of Mathematics and Statistics

MATH*2000 Set Theory F (3-1) [0.50]

This course introduces the theory of sets and emphasizes formal mathematical proof. Topics include relations and functions, number systems including formal properties of the natural numbers, integers, and the real and complex numbers. Equivalence relations and partial and total orders are introduced. The geometry and topology of the real number line and Cartesian plane are introduced. Techniques of formal proof are introduced including well-ordering, mathematical induction, proof by contradiction, and proof by construction.

Prerequisite(s): 0.50 credits in mathematics at the university level
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*2150 Applied Matrix Algebra F,W (3-1) [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. Applications of these topics, including least squares fitting, will be included. The course is not intended for Mathematics majors.

Offerings: Also offered through Distance Education format.
Prerequisite(s): 1 of a 4U mathematics credit or a first year university mathematics credit
Restriction(s): MATH*1210
Department(s): Department of Mathematics and Statistics

MATH*2170 Differential Equations I W,S (3-1) [0.50]

This course introduces the theory and application of differential equations, which are used to describe phenomena in a wide range of areas. First order equations are studied extensively as well as linear equations of second and higher order. Other topics include difference equations, phase plane analysis, and an introduction to power series methods and Laplace transforms.

Prerequisite(s): 1 of IPS*1510, MATH*1210, MATH*2080
Restriction(s): MATH*2270
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 which arise from problems in engineering. 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. This course is intended for students in B.Eng.
Prerequisite(s): ENGG*1500, IPS*1510 or MATH*1210
Restriction(s): MATH*2170
Department(s): Department of Mathematics and Statistics

MATH*3100 Differential Equations II F (3-1) [0.50]
First order linear systems and their general solution by matrix methods. Introduction to nonlinear systems, stability, limit cycles and chaos using numerical examples. Solution in power series of second order equations including Bessel's equation. Introduction to partial differential equations and applications.
Prerequisite(s): (MATH*2150 or MATH*2160), MATH*2170
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.
Prerequisite(s): MATH*2000, (MATH*2150 or 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*2160
Department(s): Department of Mathematics and Statistics

MATH*3170 Partial Differential Equations and Special Functions W (3-0) [0.50]
This course covers fundamental partial differential equations: the wave equation, the heat equation and Laplace's equation. Topics include linearity and separation of variables, solution by Fourier series, Bessel and Legendre functions, an introduction to the method of characteristics and Fourier transforms.
Prerequisite(s): MATH*3100
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*2000, 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.
Prerequisite(s): (MATH*2150 or 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 mathematics, 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): (MATH*2150 or MATH*2160), (MATH*2170 or MATH*2270)
Department(s): Department of Mathematics and Statistics

MATH*4000 Advanced Differential Equations W (3-0) [0.50]
This course provides a rigorous treatment of the qualitative theory of ordinary differential equations and an introduction to the modern theory of dynamical systems. Existence and uniqueness of solutions and their dependence on initial conditions and parameters are covered as well as linearization and the local behaviour of nonlinear systems near equilibrium points. Stability of solutions is examined including the stable manifold theorem and the method of Lyapunov. Limit cycles are covered, with a discussion of Poincaré-Bendixson theory in the plane. The definition and a discussion of some properties of dynamical systems, both continuous and discrete, are given, including an introduction to bifurcations and chaotic dynamics.
Offering(s): Offered in even-numbered years.
Prerequisite(s): MATH*3100, MATH*3160 or MATH*3200
Department(s): Department of Mathematics and Statistics

MATH*4040 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*4070 Case Studies in Modeling F (3-2) [0.50]
The course covers selected case studies in mathematical modelling at an advanced level, and is intended for mathematical science students in the 7th or 8th semester. The course covers case studies of real-world problems arising from various areas and the contribution of mathematical models to their solution. Examples that may be covered include models of data communication networks, transportation networks, and spread of epidemics.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 3.50 credits in mathematical science including MATH*2130 and (MATH*2170 or MATH*2270)
Department(s): Department of Mathematics and Statistics

MATH*4140 Applied Algebra W (3-0) [0.50]
The topics covered in this course include permutation representations and the Polya-Burside technique of enumeration, classification of groups, the theory of fields including Galois theory, the construction of finite fields, combinatorial applications to the design of experiments, the theory of binary error correcting codes, combinatorial graphs and their symmetry groups, and finite combinatorial geometries.
Offering(s): Offered in even-numbered years.
Prerequisite(s): MATH*3130
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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Offering(s)</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
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</thead>
<tbody>
<tr>
<td>MATH*4200</td>
<td>Advanced Analysis F (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>MATH<em>3160, MATH</em>3200</td>
<td>Department of Mathematics and Statistics</td>
</tr>
<tr>
<td>MATH*4220</td>
<td>Applied Functional Analysis W (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>MATH*3200</td>
<td>Department of Mathematics and Statistics</td>
</tr>
<tr>
<td>MATH*4240</td>
<td>Advanced Topics in Modeling W (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>MATH*3240</td>
<td>Department of Mathematics and Statistics</td>
</tr>
<tr>
<td>MATH*4270</td>
<td>Advanced Partial Differential Equations F (3-0) [0.50]</td>
<td></td>
<td>MATH<em>3170, MATH</em>3200, MATH*3260</td>
<td>Department of Mathematics and Statistics</td>
</tr>
<tr>
<td>MATH*4290</td>
<td>Geometry and Topology W (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>MATH<em>3130, MATH</em>3200</td>
<td>Department of Mathematics and Statistics</td>
</tr>
<tr>
<td>MATH*4430</td>
<td>Advanced Numerical Methods F (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>MATH<em>2130, (MATH</em>2150 or MATH<em>2160), MATH</em>2200, (MATH<em>2170 or MATH</em>2270)</td>
<td>Department of Mathematics and Statistics</td>
</tr>
<tr>
<td>MATH*4510</td>
<td>Environmental Transport and Dynamics F (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>MATH<em>3510 or MATH</em>3100, 0.50 credits in statistics</td>
<td>Department of Mathematics and Statistics</td>
</tr>
<tr>
<td>MATH*4600</td>
<td>Advanced Research Project in Mathematics F,W (0-6) [1.00]</td>
<td></td>
<td>Approval of a supervisor and the course coordinator.</td>
<td>Department of Mathematics and Statistics</td>
</tr>
</tbody>
</table>
Molecular and Cellular Biology

Department of Molecular and Cellular Biology

**MCB*2050 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

*Restriction(s):* MCB*2210

*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*2210, MBG*2020) or MCB*2050

*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*4500 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.

*Prerequisite(s):* MCB*3350 or equivalent laboratory experience at the discretion of the student's faculty advisor. Normally, students must have completed 6 semesters in an appropriate program in the biological sciences.

*Restriction(s):* Students in programs offering project courses cannot enroll in MCB*4500. 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):* MBG*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
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*1040, BIOL*1070, BIOL*1080, BIOL*1090, CHEM*1040)
Restriction(s): MICR*1020, MICR*2020. 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 Microbiology Methods I F,W (1-3) [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
Equate(s): MICR*2030
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): 1 of BOT*2100, MICR*2030, 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*1040 or 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 in 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): (MCB*2210, MBG*2020) or MCB*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*2020 or MBG*2040), MICR*2430
Equate(s): MICR*3120

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
Equate(s): MICR*3120

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 or (MCB*2210 or MBG*2020)], MICR*3230

Department(s): Department of Molecular and Cellular Biology

MICR*4180 Microbial Processes in Environmental Management F (3-0) [0.50]

In this course the metabolic basis of microbial processes fundamentally important in the management of agricultural, industrial or municipal wastes are examined. Topics covered include relevant considerations in using microorganisms for pollution control, factors that affect efficient microbial degradation in the environment, and major microbial enzyme systems/pathways for biodegradation of persistent pollutants. Emphasis will be placed on the biochemistry, physiology, genetics and biotechnological applications of pollutant-degrading microorganisms.

Prerequisite(s): BIOC*2580, [BIOL*1040 or (2 of BIOL*1070, BIOL*1080, BIOL*1090)]

Department(s): School of Environmental Sciences

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*2020 or MBG*2040), (MICR*2030 or 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*2030 or MICR*2430 is recommended)

Department(s): Department of Molecular and Cellular Biology
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MICR*4430</td>
<td>Medical Virology W</td>
<td>(3-0) [0.50]</td>
<td>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.</td>
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<td><strong>Prerequisite(s):</strong> MICR*3330</td>
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<td><strong>Department(s):</strong> Department of Pathobiology</td>
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<tr>
<td>MICR*4520</td>
<td>Microbial Cell Biology F</td>
<td>(3-0) [0.50]</td>
<td>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.</td>
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<td><strong>Prerequisite(s):</strong> BIOC<em>3560, MBG</em>3080</td>
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<td><strong>Restriction(s):</strong> MICR*3270</td>
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<td><strong>Department(s):</strong> Department of Molecular and Cellular Biology</td>
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<tr>
<td>MICR*4530</td>
<td>Immunology II W</td>
<td>(3-0) [0.50]</td>
<td>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.</td>
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<td><strong>Prerequisite(s):</strong> MICR*3230</td>
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<td><strong>Department(s):</strong> Department of Molecular and Cellular Biology</td>
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XII. Course Descriptions, Molecular Biology and Genetics

Department of Animal and Poultry Science
Department of Molecular and Cellular Biology
Department of Plant Agriculture

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 organs 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.
Prerequisite(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*1040 or BIOL*1090)
Restriction(s): MBG*2000, MBG*2020
Department(s): Department of Molecular and Cellular Biology

MBG*2400 Fundamentals of Plant and Animal Genetics F (5-0) [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 and Poultry Science

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): MBG*2020 or 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): BIOL*1000, (MBG*2040 or MBG*2400), 0.50 credits in statistics
Department(s): Department of Animal and Poultry Science

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*2020 or MBG*2040), (1 of MICR*2020, MICR*2030, MICR*2420)
Department(s): Department of Molecular and Cellular Biology

MBG*3090 Applied Animal Genetics F (5-0) [0.50]
This course studies the basis of, and methods for, effective use of modern animal breeding tools for practical improvement of livestock species. The course involves an examination and comparison of the structure of genetic improvement programs across species. International aspects and challenges to animal breeding programs are considered.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): ( MBG*2000 or MBG*2040), 0.50 credits in statistics
Department(s): Department of Animal and Poultry Science

MBG*3100 Plant Genetics W (3-2) [0.50]
This course examines reproduction in plants, genome organization, organelle and polyplody genetics, and analyses of mutations, genetic variation and linkage with classical and modern approaches.
Prerequisite(s): (1 of MBG*2000, MBG*2040, 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, ( MBG*2020 or MCB*2050)
Restriction(s): Registration in BSC,BIOC (major or minor), BIOC:C , BTOX:C , BTOX,C, BPCH,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 agendas independently, and to diagnose and analyze experimental results obtained with these techniques.
Prerequisite(s): 70% in ( MBG*2020 or MCB*2050) and 75% in MBG*3350
Department(s): Department of Molecular and Cellular Biology

MBG*4030 Animal Breeding Methods and Applications F (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. 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 and Poultry Science

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): MBG*2020 or MCB*2050
Restriction(s): MBG*4070
Department(s): Department of Molecular and Cellular Biology

MBG*4070 Genetics and Molecular Biology of Development F (3-0) [0.50]
This course is the lecture portion only of MBG*4040
Prerequisite(s): MBG*2020 or MCB*2050
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): MBG*2020 or MCB*2050
Restriction(s): MBG*4080
Department(s): Department of Molecular and Cellular Biology

MBG*4100 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): MBG*2020 or MCB*2050
Department(s): Department of Molecular and Cellular Biology

Last Revision: October 14, 2014
2014-2015 Undergraduate Calendar
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>MBG*4160</td>
<td>Plant Breeding F (3-2) [0.50]</td>
<td>This course examines the application of genetic principles to plant improvement. Topics include breeding objectives, mating systems, selection, testing and germplasm maintenance of horticultural and crop plants.</td>
<td>(1 of MBG<em>2000, MBG</em>2040, MBG<em>2400), STAT</em>2040</td>
<td>Department of Plant Agriculture</td>
</tr>
<tr>
<td>MBG*4240</td>
<td>Applied Molecular Genetics W (3-0) [0.50]</td>
<td>In this course the topics studied will include molecular and cellular aspects of biotechnology, in vitro manipulations of animal and plant cells, genetic engineering in eukaryotes and development of transgenic organisms, methods of gene therapy and molecular biology of cancer and its treatment.</td>
<td>MBG<em>2020 or MCB</em>2050</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MBG*4270</td>
<td>DNA Replication, Recombination and Repair W (3-0) [0.50]</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>MBG<em>2020 or MCB</em>2050</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MBG*4300</td>
<td>Plant Molecular Genetics W (3-0) [0.50]</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>1 of MBG<em>2000, MBG</em>2040, MBG*2400</td>
<td>Department of Plant Agriculture</td>
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</table>
MUSC*1180 Applied Composition

This course is intended for students who have not studied music formally, introduces the main concepts and terminology of Western art (Classical) music from the Medieval period through the 20th century by examples from a wide selection of musical works. The primary goal of this course is to give students the knowledge, general research methods, and listening skills necessary to think critically about sound in general and Western art music in particular.

Offering(s): Also offered through Distance Education format.
Restriction(s): MUSC*2280, MUSC*2600, MUSC*2610, MUSC*2620, MUSC*3630.
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 science students with an interest or background in music. The fundamentals of vibrations and waves will be introduced and applied to a study of architectural elements. The psychoacoustic basis of pitch and loudness will be discussed. (Also listed as PHYS*1810.)

Offering(s): Offered in even-numbered years.
Restriction(s): 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.

Offering(s): Offered through Distance Education format only.
Restriction(s): MUSC*1120
Equate(s): 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*2280 Masterworks of Music W (0-10) [0.50]
Selected musical works from 1600 to the present will be studied with reference to the historical, literary, and artistic milieu in which they were written and performed. Previous familiarity with basic musical terminology and note reading is required.

Department(s): School of Fine Art and Music

MUSC*2330 Genre and Style in Western Art Music F (3-0) [0.50]
Through a close study of representative works from the Western Art Music tradition, this course examines the structure and context of enduring musical genres and styles from the 16th through the 19th centuries. An emphasis is placed on critical listening, score reading, and historical research in music.

Prerequisite(s): MUSC*1060, MUSC*1180
Restriction(s): MUSC*2600, MUSC*2610, MUSC*2620
Department(s): School of Fine Art and Music

MUSC*2410 Applied Composition I F,W (1-6) [0.50]
This course offers individual instruction in the technical and aesthetic aspects of music composition. In order to register for this course, students must submit a portfolio and arrange for an interview with the School of Fine Arts and Music at the time of course selection.

Prerequisite(s): MUSC*2180
Restriction(s): Instructor consent required. Registration in a Music Program (Honours major or minor, General).
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*2410.

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 seminars, arrange assignments, and give personal supervision in London.

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 Applied Music V S,F,W (1-6) [0.50]
A continuation of MUSC*2510.
Prerequisite(s): 3.00 credits in music courses including a minimum grade of 70% in MUSC*2510, (MUSC*2540 or 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*3510 Applied Music VI S,F,W (1-6) [0.50]
A continuation of MUSC*3500 including preparation and performance of a juried recital, restricted to students in a Music program (honours major or minor, area of concentration).
Prerequisite(s): 4.00 credits in music courses including a minimum grade of 70% in MUSC*3500
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 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 (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). Instructor consent required.
Department(s): School of Fine Art and Music

MUSC*3560 Advanced Music Ensemble II F,W (0-3) [0.25]
A continuation of MUSC*3550.
Prerequisite(s): MUSC*3550
Restriction(s): Instructor consent required.
Department(s): School of Fine Art and Music

MUSC*3630 20th Century Music 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*2370 or MUSC*2670), (MUSC*2330 or MUSC*2620)
Restriction(s): Registration in a Music Program (Honours major or minor, General, Area of Concentration). Instructor consent required.
Department(s): School of Fine Art and Music

The following topics courses normally focus on current areas of faculty research. It is expected that students will have completed at least 10.00 credits before taking these upper-level courses.

MUSC*3730 Topics in Jazz and Improvised Music F (3-0) [1.00]
This course provides a seminar experience in focused 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): 9.00 credits including MUSC*2010 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): 9.00 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): 9.00 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: a 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): 9.00 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): 9.00 credits including MUSC*2100, (MUSC*2010 or MUSC*2220)
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. There is also a practical component, in which each student will conduct an ensemble or give a series of private lessons, as well as present a collaborative teaching assignment. The course is designed to prepare music students to teach privately or in a classroom.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 9.00 credits including MUSC*2180, MUSC*2670
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*4200 Independent Project in Music S,F,W (3-0) [0.50]
This is an independent learning option 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 honors major in music.
Department(s): School of Fine Art and Music

MUSC*4401/2 Honours Music Recital S-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 honors 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 honors major in music.
Department(s): School of Fine Art and Music
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<thead>
<tr>
<th>MUSC*4450 Honours Seminar in Music W (3-0) [1.00]</th>
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<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>
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<tr>
<td>Prerequisite(s): Completion of the music core.</td>
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<td>Restriction(s): Instructor consent required.</td>
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<td>Department(s): School of Fine Art and Music</td>
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NANO*1000 Introduction to Nanoscience F (3-0) [0.50]
This course introduces students to the emerging field of nanoscience. Its 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 of Nanomaterials F (3-3) [0.50]
This course explores the structure of matter, focussing on condensed phases. Crystalline and amorphous materials as well as polymers and composites will be studied. Structural, mechanical, and electronic properties will be highlighted and the changes in these properties that are observed as the dimensions are reduced below 100 nm in size will be studied. Methods to fabricate nanoparticles, nanocomposites, thin films, polymers, ferrofluids, and other nanomaterials will be discussed.
Prerequisite(s): CHEM*1050, [IPS*1510 or (MATH*1210, PHYS*1010)]
Restriction(s): Registration in Nanoscience Major.
Department(s): Department of Chemistry

NANO*2100 Analysis of Nanomaterials W (3-3) [0.50]
This course provides an in-depth study of the important instruments that have been developed to analyze nanostructured materials. Useful information that is derived from scattering processes involving X-rays, visible light, electrons, and neutrons will be studied. Microscopic techniques such as Atomic Force Microscopy will also be studied because of the nanoscale structural information that they can provide. The study of spectroscopic techniques also forms part of the course. The application of these instruments to lithographic production techniques is also developed.
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 on the production of many devices. This course will study the various methods by which thin films are grown including physical and chemical vapour 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 Physics

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*3700 Introduction to Quantum Computing W (3-0) [0.50]
This course is an introduction to quantum computation and quantum information. Following an introduction to the basics of linear algebra, quantum mechanics, and computer science, the topics covered will be taken from the following: qubits, quantum channels, quantum circuit model and unitary gates, entanglement and quantum teleportation, introductory quantum algorithms, physical error models, no-cloning theorem, error-correcting codes, and quantum error correction.
Prerequisite(s): MATH*2160, (CHEM*3860 or PHYS*3230)
Department(s): Department of Mathematics and Statistics

NANO*4100 Biological Nanomaterials F (3-0) [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 F (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*4500 Quantum Algorithms F (3-0) [0.50]
This course studies important algorithms being developed in the field of quantum computing. Topics covered will include a selection from the following: review of the quantum circuit model, classical versus quantum algorithms, phase kick-back, Deutsch-Jozsa algorithm, Simon's algorithm, quantum Fourier transform, Shor's factoring algorithm, Grover's search algorithm, and an introduction to quantum computational complexity.
Prerequisite(s): NANO*3700
Department(s): Department of Mathematics and Statistics

NANO*4510 Quantum Cryptography and Error Correction W (3-0) [0.50]
This course introduces the basics of quantum error correction and considers applications to quantum cryptography. Topics covered will include a selection from: private key cryptography, quantum key distribution, security and coherent information, private quantum channels, error models, recovery and testable conditions for error correction, stabilizer codes, introduction to fault tolerant quantum computing, and the threshold theorem.
Prerequisite(s): NANO*3700
Department(s): Department of Mathematics and Statistics

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
### 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):** 12.50 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.  
**Enrolment restriction to Neuroscience minor.**  
**Department(s):** Department of Biomedical Sciences

### NEUR*4401/2 Research in Neurosciences S,F,W (0-6) [1.00]
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.  
**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 and Poultry Science
Department of Family Relations and Applied Nutrition
Department of Human Health and Nutritional Sciences

NUTR*1010 Nutrition and Society F,W (3-0) [0.50]
This course examines the significance of nutrition in terms of individuals and societies throughout the world. Factors involved in the application of knowledge of nutritional needs and food selection.
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 (BIOM*2000 or BIOM*3200), FRHD*3070, NUTR*2050, ( BIOL*1040 or BIOL*1080), CHEM*1040
Department(s): Department of Family Relations and Applied Nutrition

NUTR*2050 Family and Community Nutrition F (3-0) [0.50]
Nutritional needs through the life cycle and their significance in family and community health.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): NUTR*1010
Restriction(s): NUTR*3010
Department(s): Department of Family Relations and Applied Nutrition

NUTR*2150 Introduction to Nutritional and Food Sciences 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 FOOD*2150.)
Prerequisite(s): ( BIOL*1040 or BIOL*1080), CHEM*1040
Equate(s): FOOD*2150
Restriction(s): FOOD*2000, 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 (3-0) [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*3120
Restriction(s): NUTR*2070
Department(s): Department of Family Relations and Applied Nutrition

NUTR*3210 Fundamentals of Nutrition 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.
Prerequisite(s): BIOC*2580
Department(s): Department of Human Health and Nutritional Sciences

NUTR*3330 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*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 adjuncts in the effective use of functional foods and nutraceuticals, and regulatory and marketing/consumer issues 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*3110, BIOM*3200, 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*3110, BIOM*3200, HK*3940, ZOO*3210)  
**Department(s):** Department of Human Health and Nutritional Sciences

### NUTR*4330 Applied Nutritional and Nutraceutical Sciences II W (3-3) [0.75]

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, NUTR*3330, NUTR*3390, HK*3940  
**Restriction(s):** Registration in B.Sc. NANS major or minor.  
**Department(s):** Department of Human Health and Nutritional Sciences

### NUTR*4350 Current Issues in Lifestyle Genomics and Nutrition F (3-0) [0.50]

This course discusses controversial and/or emerging topics in Human Health and Nutritional and Nutraceutical Sciences. Topics of current interest will be announced during the course selection period.

**Prerequisite(s):** NUTR*3210, HK*3940, ( MBG*2020 or MBG*2040)  
**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, (BIOM*3200 or 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, herbas 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*3050, ( 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*3400, NUTR*4040, NUTR*4070  
**Restriction(s):** NUTR*4120 Instructor consent required.  
**Department(s):** Department of Family Relations and Applied Nutrition

### NUTR*4890 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):** NUTR*3040 or FRHD*3070, NUTR*4120  
**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
### Organic Agriculture

#### OAGR*2070 Introduction to Organic Agriculture W (3-3) [1.00]
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.

**Prerequisite(s):** 5.00 credits  
**Restriction(s):** OAGR*2050, OAGR*3030  
**Department(s):** Department of Plant Agriculture, School of Environmental Sciences

#### OAGR*4050 Design of Organic Production Systems F (6-0) [1.00]
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.

**Prerequisite(s):** OAGR*2070  
**Restriction(s):** OAGR*3130, OAGR*4160  
**Department(s):** Department of Plant Agriculture, School of Environmental Sciences

#### OAGR*4180 Social Issues in Organic Agriculture W (2-2) [0.50]
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.

**Prerequisite(s):** 1 of EDRD*3400, (OAGR*3030, OAGR*3130), SOC*2080  
**Equate(s):** EDRD*4180, REXT*4180  
**Department(s):** School of Environmental Design and Rural Development
Pathology
Department of Pathobiology

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

**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 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 5.00 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,W (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 include: 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 loss, 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, Epicetus, 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
PHIL*2180 Philosophy of Science F (3-0) [0.50]
As a system of knowledge pursuit, 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*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, private right and professional responsibility.
Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)
Department(s): Department of Philosophy

PHIL*3040 Philosophy of Law F (3-0) [0.50]
This course is an introduction to the main topics in the philosophy of law. It aims to give students a philosophical grounding in such issues as the purpose and nature of law, the relationship between law and individual freedom and the question of international law. Thinkers studied may include St. Thomas Aquinas, John Stuart Mill and H.L.A. Hart. The course may also include an examination of the way in which controversial ethical and social issues are treated under the Canadian Charter of Rights and Freedoms.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits or PHIL*2120
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 re-imagined 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*3100 Contemporary British and American Philosophy F (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/diversity of science, and feminist approaches to science.
Offering(s): Offered in even-numbered years.
Prerequisite(s): PHIL*2180
Department(s): Department of Philosophy

PHIL*3170 Critical Debates in the Philosophy of Science W (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*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
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>PHIL*3210</td>
<td>Women in the History of Philosophy F</td>
<td>(3-0) [0.50]</td>
<td>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. Major topics covered have ranged across feminist issues, epistemology, metaphysics, and ethics. Because texts and topics will vary with the instructor, students are advised to consult the departmental website: <a href="http://www.uoguelph.ca/philosophy/">http://www.uoguelph.ca/philosophy/</a>. Offering(s): Offered in odd-numbered years. Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits Department(s): Department of Philosophy</td>
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<tr>
<td>PHIL*3240 Ethics in the Life Sciences W</td>
<td>(3-0) [0.50]</td>
<td>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<em>2120, PHIL</em>2180 are recommended. Department(s): Department of Philosophy</td>
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<td>PHIL*3230</td>
<td>Issues in Social and Political Philosophy W</td>
<td>(3-0) [0.50]</td>
<td>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</td>
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<tr>
<td>PHIL*3250</td>
<td>Philosophy of Language F</td>
<td>(3-0) [0.50]</td>
<td>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</td>
</tr>
<tr>
<td>PHIL*3280</td>
<td>21st Century Philosophy F</td>
<td>(3-0) [0.50]</td>
<td>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</td>
</tr>
<tr>
<td>PHIL*3350</td>
<td>Selected Topics in Philosophy II U</td>
<td>(3-0) [0.50]</td>
<td>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: <a href="http://www.uoguelph.ca/philosophy/">http://www.uoguelph.ca/philosophy/</a>. Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits Department(s): Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*3410</td>
<td>Major Texts in the History of Philosophy W</td>
<td>(3-0) [0.50]</td>
<td>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: <a href="http://www.uoguelph.ca/philosophy/">http://www.uoguelph.ca/philosophy/</a>. Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits Department(s): Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*3420</td>
<td>Philosophical Problems of Religion F</td>
<td>(3-0) [0.50]</td>
<td>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<em>2130, PHIL</em>3910, PHIL*3920 Department(s): Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*3450</td>
<td>Ethics in the Life Sciences W</td>
<td>(3-0) [0.50]</td>
<td>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<em>2120, PHIL</em>2180 are recommended. Department(s): Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*3710</td>
<td>Directed Reading F</td>
<td>(3-0) [0.50]</td>
<td>This course is offered 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 Department(s): Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*3720</td>
<td>Directed Reading F,W</td>
<td>(3-0) [0.50]</td>
<td>This course is offered 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 Department(s): Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*3910</td>
<td>Indian Philosophy F</td>
<td>(3-0) [0.50]</td>
<td>This course provides an analysis of selected primary sources of Indian philosophy in translation, from the Vedic Upanishads to the &quot;integral yoga&quot; 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</td>
</tr>
<tr>
<td>PHIL*3920</td>
<td>Chinese Philosophy W</td>
<td>(3-0) [0.50]</td>
<td>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</td>
</tr>
<tr>
<td>PHIL*3930</td>
<td>African Philosophy F</td>
<td>(3-0) [0.50]</td>
<td>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 odd-numbered years. Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits Department(s): Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*4040</td>
<td>Advanced Philosophy of the Environment U</td>
<td>(3-0) [0.50]</td>
<td>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</td>
</tr>
<tr>
<td>PHIL*4060</td>
<td>Philosophy of Feminism II U</td>
<td>(3-0) [0.50]</td>
<td>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: <a href="http://www.uoguelph.ca/philosophy/">http://www.uoguelph.ca/philosophy/</a>. Prerequisite(s): 1.00 credits in Philosophy at the 3000 level or PHIL*2060 Department(s): Department of Philosophy</td>
</tr>
</tbody>
</table>
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*4500 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*4550 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*4710 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*4720 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

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
# Portuguese

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PORT*1100</td>
<td>Introductory Portuguese (Brazilian Culture) F (3-0) [0.50]</td>
<td></td>
<td>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.</td>
<td></td>
<td>Instructor consent required.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>PORT*1110</td>
<td>Intermediate Portuguese (Brazilian Culture) W (3-0) [0.50]</td>
<td></td>
<td>This course is a continuation of Introductory Portuguese with emphasis on oral work. The learning context will be present-day Brazilian culture.</td>
<td>PORT*1100</td>
<td>Instructor consent required.</td>
<td>School of Languages and Literatures</td>
</tr>
</tbody>
</table>
### Physics

**PHYS*1000 An Introduction to Mechanics F (3-3) [0.50]**
This is a course for physical science students which develops the concepts of mechanics as applied to translational and rotational kinematics and dynamics, equilibrium of rigid bodies, oscillations, gravitation, special relativity, and fluid statics and dynamics. Normally this is part of the two-course unit PHYS*1000 and PHYS*1010.

**Prerequisite(s):** (1 of 4U Physics, Grade 12 Physics, PHYS*1020), 4U or Grade 12 Calculus

**Restriction(s):** IPS*1500, PHYS*1080

**Department(s):** 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. Normally this is part of the two-course unit PHYS*1000 and PHYS*1010.

**Prerequisite(s):** (1 of IPS*1500, MATH*1080, MATH*1200), (1 of 4U Physics, Grade 12 Physics, PHYS*1020)

**Restriction(s):** IPS*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 movement 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*1080 Physics for Life Sciences F,W (3-3) [0.50]**
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

**Department(s):** Department of Physics

**PHYS*1090 Introductory Physics for Life Sciences W (3-3) [0.50]**
This is a course for non-science students. Emphasis will be on the interdisciplinary 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. B.Sc. students may not take this course for credit.

**Department(s):** Department of Physics

**PHYS*1600 Contemporary Astronomy F (3-3) [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. B.Sc. students may not take this course for credit.

**Department(s):** Department of Physics

**PHYS*1810 Physics of Music F (3-3) [0.50]**
This course is designed for arts and social science students with an interest in 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*2260 Quantum Physics W (3-0) [0.50]**
The course investigates and describes the properties of atoms, molecules and nuclei in terms of phenomena of quantum physics. Topics include wave properties of matter, particle properties of electromagnetic radiation, uncertainty principle, operators and eigenvalue equations, elementary angular momentum, spin and elementary quantum mechanics.

**Prerequisite(s):** (1 of IPS*1500, MATH*1000 , MATH*1080, MATH*1200), (1 of IPS*1510, PHYS*1010, PHYS*1070), (MATH*2150 or MATH*2160)

**Restriction(s):** NANO*2100

**Department(s):** Department of Physics

**PHYS*2310 Mechanics I F (4-4) [0.50]**
This course continues building the foundation in mechanics begun in the first year and is intended for students proceeding to advanced studies in the physical sciences. Topics include analysis of experimental uncertainties (errors), one, two and three dimensional motion, damped and forced harmonic oscillator, gravitation and orbital motion.

**Prerequisite(s):** (1 of IPS*1510, MATH*1210, MATH*2080), (1 of IPS*1500, PHYS*1000, PHYS*1080)

**Restriction(s):** PHYS*2440

**Department(s):** Department of Physics

**PHYS*2320 Mechanics II W (4-0) [0.50]**
This course is a continuation of PHYS*2310. Topics include special relativity, noninertial reference frames, dynamics of systems of particles, and rigid body dynamics.

**Prerequisite(s):** PHYS*2310

**Restriction(s):** PHYS*2450

**Department(s):** Department of Physics

**PHYS*2330 Electricity and Magnetism I F (4-4) [0.50]**
This course continues building the foundation 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, capacitors, 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))

**Co-requisite(s):** PHYS*2310

**Restriction(s):** PHYS*2460

**Department(s):** Department of Physics
PHYS*2340 Electricity and Magnetism II W (4-0) [0.50]
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

PHYS*2440 Mechanics I F (3-3) [0.75]
This course and the following one, PHYS*2450, continue building the foundation in mechanics begun in the first year. These courses are intended for students proceeding to advanced studies in the physical sciences. Topics include analysis of experimental uncertainties (errors), one, two and three dimensional motion, damped and forced harmonic oscillator, gravitation and orbital motion. The laboratory work requires a formal treatment of error analysis, as well as computer programming for data analysis.
Prerequisite(s): (1 of IPS*1510, MATH*1210, MATH*2080), (1 of IPS*1500, PHYS*1000, PHYS*1080)
Department(s): Department of Physics

PHYS*2450 Mechanics II W (3-3) [0.75]
This course and the following one, PHYS*2460, continue building the foundation in electricity and magnetism begun in the first year. These two courses are 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, capacitors, D.C. circuits, transients and dielectric materials. The laboratory work requires a formal treatment of error analysis, as well as computer programming for data analysis.
Prerequisite(s): PHYS*2440
Department(s): Department of Physics

PHYS*2460 Electricity and Magnetism I F (3-3) [0.75]
This course and the following one, PHYS*2470, continue building the foundation in electricity and magnetism begun in the first year. These two courses are 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, capacitors, D.C. circuits, transients and dielectric materials. The laboratory work requires a formal treatment of error analysis, as well as computer programming for data analysis.
Prerequisite(s): PHYS*2440
Department(s): Department of Physics

PHYS*2470 Electricity and Magnetism II W (3-3) [0.75]
This course is a continuation of PHYS*2460. Topics include magnetic forces and fields, the Biot-Savart equation, Ampere's Law, magnetic induction, LRC transients, A.C. circuits and magnetic materials, Maxwell's equations and the propagation of electromagnetic waves in vacuum.
Prerequisite(s): PHYS*2460
Department(s): Department of Physics

PHYS*2600 General Astronomy F (4-1) [0.50]
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 credit 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*3080 Energy W (3-0) [0.50]
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*3100 Electronics F (3-3) [0.75]
This course consists of an introduction to network analysis, the physics of semiconductors, p-n junctions, transistors and integrated circuits. Other topics include: amplifier properties, signal processing using operational amplifiers, an introduction to digital electronics including counters and registers, as well as circuits to convert analog signals to digital and vice-versa. The laboratory illustrates lecture topics, and a major component consists of techniques to interface a computer to integrated circuits for data acquisition.
Prerequisite(s): PHYS*2340 or PHYS*2470
Department(s): Department of Physics

PHYS*3170 Radioactivity and Radiation Interactions F (3-0) [0.50]
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): MATH*2200, MATH*3100, PHYS*2260
Department(s): Department of Physics

PHYS*3220 Waves and Optics W (3-0) [0.50]
This course demonstrates the importance of waves in many areas of physics, with an emphasis on waves in optics. The concept of waves is presented within the framework of the mathematics of periodic functions, with discussions of normal modes in oscillatory systems involving both stationary and propagating modes, and Fourier analyses using both series and integral forms. Examples will emphasize applications involving visible light, waves such as polarization, interference and diffraction. In addition, other electromagnetic waves and sound waves will be discussed.
Prerequisite(s): PHYS*2310 or PHYS*2440
Department(s): Department of Physics

PHYS*3230 Quantum Mechanics I F (3-0) [0.50]
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): (CHEM*2070 or PHYS*2260), MATH*2160, (MATH*2170 or MATH*2270), (PHYS*2340 or PHYS*2470)
Department(s): Department of Physics

PHYS*3240 Statistical Physics I F (3-0) [0.50]
This course is an introduction to statistical physics including thermodynamics and statistical mechanics of equilibrium phenomena.
Prerequisite(s): (1 of PHYS*2260, PHYS*2310, PHYS*2440)
Co-requisite(s): MATH*2200
Department(s): Department of Physics

PHYS*3400 Advanced Mechanics W (3-0) [0.50]
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*2320 or PHYS*2450)
Department(s): Department of Physics

PHYS*3510 Intermediate Laboratory W (0-6) [0.50]
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*2440 or (NANO*2100, PHYS*2310)], PHYS*3100
Department(s): Department of Physics

PHYS*4001 Research in Physics F (0-6) [0.50]
This course is the first part of the two-semester course PHYS*4001/2. Refer to PHYS*4001/2 for the course description.
Prerequisite(s): PHYS*3510
Restriction(s): PHYS*4510 . Instructor consent required.
Department(s): Department of Physics

PHYS*4001 Research in Physics F-W (0-6) [1.00]
This is a two-semester (F-W) course in which students apply their knowledge and skills through independent research of an experimental or theoretical nature within physics. Students will be required to present their results in both oral and written reports. Students must make arrangements with a faculty supervisor and obtain approval of the course co-ordinator before course selection. Approval of the course co-ordinator will only be granted upon receipt of a completed registration form, available from the co-ordinator during the course selection period. This is a two-semester course offered over consecutive semesters. When you select it, you must select PHYS*4001 in the Fall semester and PHYS*4002 in the Winter semester. A grade will not be assigned to PHYS*4001 until PHYS*4002 has been completed.
Prerequisite(s): PHYS*3510
Restriction(s): PHYS*4510 . Instructor consent required.
Department(s): Department of Physics

PHYS*4002 Research in Physics W (0-6) [0.50]
This course is the second part of the two-semester course PHYS*4001/2. Refer to PHYS*4001/2 for the course description.
Prerequisite(s): PHYS*4001
Department(s): Department of Physics
PHYS*4040 Quantum Mechanics II W (3-0) [0.50]
A second course in quantum mechanics. Topics include spin, linear vector spaces, two-level systems, quantum dynamics, rotations and angular momentum, time dependent perturbation theory. Born approximation.
Prerequisite(s): PHYS*3230
Department(s): Department of Physics

PHYS*4070 Clinical Applications of Physics in Medicine W (3-0) [0.50]
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]
The application of quantum theory to atomic and molecular structure, and the interaction between electromagnetic radiation and atoms and simple molecules.
Prerequisite(s): PHYS*3240, PHYS*4040
Department(s): Department of Physics

PHYS*4130 Subatomic Physics W (3-0) [0.50]
This course surveys the field of subatomic physics from radioactive emitters 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]
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 Poisson and wave 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.
Offering(s): Offered in even-numbered years.
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*3240 including a discussion of the grand canonical distribution, quantum statistics, and transport theory.
Prerequisite(s): PHYS*3230, PHYS*3240
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): 7.00 PHYS credits.
Department(s): Department of Physics

PHYS*4500 Advanced Physics Laboratory FW (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 Biophysical Methods F (3-0) [0.50]
This course provides an introduction to physical techniques to determine the structure of macromolecules and macromolecular structures of biological interest. The techniques include: differential caloriemetry, X-ray and neutron scattering, electron microscopy, Raman and infrared spectroscopy, nuclear magnetic resonance, and electron spin resonance. Applications of these techniques in the study of biological membranes will be emphasized.
Offering(s): Last offering - Fall 2015
Prerequisite(s): CHEM*3860 or PHYS*3230
Department(s): Department of Physics

PHYS*4560 Biophysical Methods F (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): (MATH*2150 or MATH*2160), (MATH*2170 or MATH*2270), (PHYS*2320 or PHYS*2450), (PHYS*2340 or PHYS*2470)
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): (MATH*2150 or MATH*2160), (MATH*2170 or MATH*2270), (PHYS*2320 or PHYS*2450), (PHYS*2340 or PHYS*2470)
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): (MATH*2150 or MATH*2160), (MATH*2170 or MATH*2270), (PHYS*2320 or PHYS*2450), (PHYS*2340 or PHYS*2470)
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): (MATH*2150 or MATH*2160), (MATH*2170 or MATH*2270), (PHYS*2320 or PHYS*2450), (PHYS*2340 or PHYS*2470)
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:**

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<tr>
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<td>BIOM*4041/2</td>
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<td>BIOM*4050</td>
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**School of Human Biology:**

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**Department of Integrative Biology:**

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<td>ZOO*4470</td>
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2014-2015 Undergraduate Calendar

Last Revision: October 14, 2014
# Plant Biology

**School of Environmental Sciences**

**Department of Plant Agriculture**

### 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*1040, BIOL*1050, BIOL*1070, BIOL*1090  
*Department(s):* Department of Plant Agriculture

### PBIO*3750 Plant Tissue Culture F (2-3) [0.50]

An examination and discussion of 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*2451/2 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*4150 Molecular and Cellular Aspects of Plant Development W (3-0) [0.50]

An examination of 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):* BOT*2100  
*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 and UV-B radiation) and soil (such as metals and organic xenobiotics). The format includes both lecture and presentation/discussion of current and historical peer-reviewed literature.

*Prerequisite(s):* 2 of BIOL*2060, (BIOL*2210 or MCB*2210), BOT*2030, BOT*2050, BOT*2100, CROP*2110, (ENVB*2030 or ENVS*2330), (ENVB*2040 or ENV*2040), ENV*1100  
*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):* 1 of MBG*2020, MBG*2040, MBG*2400  
*Department(s):* Department of Plant Agriculture
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*1500 World Politics F (3-0) [0.50]
An examination of the fundamental patterns of international politics, focusing especially on the major issues and contemporary events at the root of international conflict. As well, the reality of globalization and interdependence is assessed in terms of the alternative patterns of international cooperation in the contemporary world.
Offering(s): Also offered through Distance Education format.
Department(s): Department of Political Science

POLS*2000 Political Theory F (3-0) [0.50]
A study of the philosophic and ideological developments which have led to the emergence of the modern state and contemporary politics.
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]
The 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. The course critically evaluates the changing role of bureaucracy; financial and human resource management; and the evolving concepts of responsibility and accountability.
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*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*1400, POLS*2250, POLS*2300
Department(s): Department of Political Science

POLS*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
POLS*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 quantitative and qualitative 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

POLS*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

POLS*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-H 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

POLS*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

POLS*3270 Local Government in Ontario U (3-0) [0.50]

Municipal governments are major spenders of public funds in Canada, and are also the level 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

POLS*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.

Prerequisite(s): POLS*2250 or 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

POLS*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

POLS*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

POLS*3380 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

POLS*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

POLS*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

POLS*3450 European Governments and Politics U (3-0) [0.50]

Europe has forged a new form of political organization, the European Union, in addition to its myriad 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): POLS*2100 or POLS*2200

Department(s): Department of Political Science

POLS*3470 Business-Government Relations in Canada U (3-0) [0.50]

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

POLS*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

POLS*3640 Research Methods I: Political Inquiry and Methods F (2-1) [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

POLS*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): 1st-year IDEV*2010, 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) [0.50]
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*4100 Women, Justice and Public Policy U (3-0) [0.50]
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) [0.50]
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*4160 Multi-Level Governance in Canada U (3-0) [0.50]
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) [0.50]
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) [0.50]
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*4290 Topics in Public Management W (3-0) [0.50]
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*4320 Topics in Public Policy U (3-0) [0.50]
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
POL*4300 Human Rights, Ethics, and Development W (3-0) [0.50]
This course is intended to address the ethical issues that arise from development processes and studies by focusing on human rights. The subject is explored from a range of philosophical, religious, and cultural perspectives, including both Western and non-Western. Related themes include global and social justice; nationalism, cosmopolitanism, and multiculturalism.
Prerequisite(s): (POLS*2000 and 1.00 credits in the Political Thought stream) or (POLS*2000 and 0.50 credits in Political Thought stream and 0.50 credits 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

POL*4340 Nationalism, State-building and Identity U (3-0) [0.50]
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

POL*4710 Topics in Comparative Politics U (3-0) [0.50]
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

POL*4720 Topics in International Relations U (3-0) [0.50]
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*4740 Advanced Topics in Rights and Liberties F (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): (POLS*3130 or POLS*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*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 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*4970 Honours Political Science Research I S,F,W (3-0) [0.50]
This is Part I of the Honours 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. Major honours political science students must register in this course in their 8th semester.
Prerequisite(s): POLS*4970
Restriction(s): Instructor consent required.
Department(s): Department of Political Science
Population Medicine

**POPM*3240 Epidemiology F (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.

Pre requisite(s): (1 of BIOL*1040, BIOL*1080, 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.

Pre requisite(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.

Pre requisite(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
XII. Course Descriptions, Psychology

Psychology

Department of Psychology

Students wishing to take a 2000, 3000 or 4000 level course without having completed the appropriate prerequisites must receive permission of the instructor who will determine whether the student has the required background for the course. Students in all psychology courses will be encouraged to participate in the on-going research of the department.

Honours Courses: courses designated with (H) are designed for students in a psychology honors specialization. This includes B.A. Honours Psychology (PSYC) major or minor, B.A. Information Systems and Human Behaviour (ISHB) major, B.Sc. Psychology: Brain and Cognition (PBC), major or minor, and the Neuroscience (NEUR) minor. (H) courses are Honours level requiring for registration a cumulative average of at least 70% in all course attempts in Psychology or registration in the ISHB major, NEUR minor, or PBC major or minor. Unless otherwise specified, all other courses may be taken by students in a general or honors program, providing the prerequisites are met.

Psychology Core: courses marked (C) are Psychology core courses. Students registered in psychology programs are advised to complete at least 2.00 credits of the psychology core at the 2000 level prior to attempting any 3000 level psychology credit.

For courses without semester designations, please check with the department. The remaining courses will normally be offered as indicated. Advance schedules are available in the department.

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*2010, STAT*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*2360
Restriction(s): PSYC*3330
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 (3-2) [0.50]

This course is an introduction to the function and structure 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. Laboratory demonstrations and exercises may be included. (C)

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*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

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*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): LING*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 (3-0) [0.50]

This course will focus on contemporary research and theory related to 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): PSYC*2410 (also see psychology core statement)

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]

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)

Department(s): Department of Psychology

XII. Course Descriptions, Psychology

Last Revision: October 14, 2014
PSYC*3460 Abnormal Development U (3-0) [0.50]
Theory, research and aspects of current practice concerning abnormal psychological development in childhood and adolescence.
Prerequisite(s): PSYC*3440 or PSYC*3450 (also see psychology core statement)
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 FRHD*2270, 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*3710 Psychology of Learning Difficulties and Disabilities I F (3-0) [0.50]
An examination of current theories regarding learning difficulties and disabilities in educational settings. Emphasis will be placed on cognitive, social and motivational factors associated with learning problems and on behavioral and educational remedial approaches.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 1 of FRHD*2270, PSYC*2450, PSYC*2650 (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3720 Psychology of Learning Difficulties and Disabilities II W (3-0) [0.50]
This is a continuation of PSYC*3710. Students will develop and report on a systematic remedial project involving an underachieving school-age child.
Prerequisite(s): PSYC*3710 and 3.00 credits in PSYC courses (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3800 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*2100, 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*2100, 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]
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): PSYC*3310 or PSYC*3500 (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): PSYC*3310 or PSYC*3500
Department(s): Department of Psychology

PSYC*4330 Advanced Topics in I/O Psychology (H) 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*4400 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

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**PSYC*4400 Seminar in Clinical Psychology F (3-0) [0.50]**

This course deals with issues and theories in clinical psychology. It is intended primarily for honors 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

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**PSYC*4470 Behavioural Neuroscience Seminar W (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

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**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

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**PSYC*4510 Current Issues in Psychology S,F,W (0-6) [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

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**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

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**PSYC*4750 Seminar in Motivation and Emotion U (3-0) [0.50]**

This course examines the topics of motivation and emotion from various subdisciplinary perspectives, adopting a senior seminar format and problem-centred approach. (H)

**Prerequisite(s):** 15.00 credits

**Department(s):** Department of Psychology

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**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

**Restriction(s):** A minimum grade point average of 75% in Psychology courses.

**Department(s):** Department of Psychology

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**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

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**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 electing 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
XII. Course Descriptions, Real Estate and Housing

**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 survey 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.

**Equate(s):** COST*1820, MCS*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*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*2850 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 class.

**Prerequisite(s):** 4.00 credits
**Equate(s):** COST*2850, MCS*2850
**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*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):** MCS*1820 or REAL*1820, ECON*2740 or STAT*2060
**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, REAL*1820, 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 (3-0) [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, (MCS*3810 or REAL*3810), (MCS*4820 or REAL*4820)
**Restriction(s):** MCS*3820, MCS*4810. 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

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Last Revision: October 14, 2014

2014-2015 Undergraduate Calendar
SOC*1100 Sociology S,F,W (3-0) [0.50]
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

SOC*1500 Crime and Criminal Justice F,W (3-0) [0.50]
This course will introduce students to the study of crime and criminal justice. It will examine the various criminological theories, types of criminal activity, and the criminal justice system.

Department(s): Department of Sociology and Anthropology

SOC*2010 Canadian Society U (3-0) [0.50]
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

SOC*2070 Social Deviance S,F,W (3-0) [0.50]
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*1100 or SOC*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

SOC*2080 Rural Sociology W (3-0) [0.50]
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*1150, GEOG*1220, SOC*1100
Department(s): Department of Sociology and Anthropology

SOC*2280 Society and Environment U (3-0) [0.50]
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*1150, GEOG*1220, SOC*1100
Department(s): Department of Sociology and Anthropology

SOC*2390 Class and Stratification U (3-0) [0.50]
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

SOC*2700 Criminological Theory F,W (3-0) [0.50]
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

SOC*2760 Homicide S,F,W (3-0) [0.50]
This course will review legal definitions of homicide, statistical trends in homicide—both in Canada and internationally—and theoretical explanations of homicide. The course will also examine the key criminological/sociological empirical research studies on the various types of homicide, such as: femicide, familialicide, serial and mass murder.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): 1 of ANTH*1150, FRHD*1010, PHIL*1010, POLS*1400, PSYC*1000, PSYC*1100, PSYC*1200, SOC*1100, SOC*1500
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. Please see the departmental website for more information.

Department(s): Department of Sociology and Anthropology

SOC*3040 Sociology of Social Welfare W (3-0) [0.50]
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*2112, SOAN*2120
Department(s): Department of Sociology and Anthropology

SOC*3110 Comparative Religious Systems W (3-0) [0.50]
An analysis of stability and change in patterns of religious beliefs, behaviour and institutions.

Offering(s): Offered in odd-numbered years.
Prerequisite(s): SOAN*2112, SOAN*2120
Department(s): Department of Sociology and Anthropology

SOC*3130 Politics and Society U (3-0) [0.50]
An interpretation of the political process and its relationship to other aspects of the social structure, including such topics as political parties, movements, factions, citizen participation, power structures and the process of political exchange.

Prerequisite(s): SOAN*2112, SOAN*2120
Department(s): Department of Sociology and Anthropology

SOC*3310 Contemporary Theory F (3-0) [0.50]
This course outlines and evaluates the major theories in use today. A central aspect of the course is instruction in the application of these theories.

Prerequisite(s): SOAN*2112, SOAN*2120
Department(s): Department of Sociology and Anthropology

SOC*3340 Education, Change and Resistance U (3-0) [0.50]
An examination of educational institutions and their relationships to other sectors of society, in particular political and economic. Topics include the nature and objectives of education, equality of opportunity, measures of educational achievement and attainment, manifest and hidden curricula, and public policy.

Prerequisite(s): SOAN*2112, SOAN*2120
Department(s): Department of Sociology and Anthropology

SOC*3380 Society and Nature U (3-0) [0.50]
The course provides a range of worldviews which address the relations between society and the environment. Material in the course will include historical perspectives and contemporary perspective, thereby allowing students to understand that worldviews concerning this crucial relation are dynamic, changing and reflect the diverse, and sometimes competing, perspectives of a society within particular moments of history.

Prerequisite(s): GEOG*2210 or SOC*2280
Department(s): Department of Sociology and Anthropology

SOC*3410 Individual and Society U (3-0) [0.50]
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*2112, SOAN*2120
Department(s): Department of Sociology and Anthropology

XII. Course Descriptions, Sociology

Last Revision: October 14, 2014
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 Young Offenders 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):
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 or WMST*3000)
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*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 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
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

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

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 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
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*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
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 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*2122 Classical Theory W (3-0) [0.50]
Second part of the two-semester course SOAN*2111/2. Refer to SOAN*2111/2 for course description.
Prerequisite(s): SOAN*2111
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 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 or WMST*3000)
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. Note: Students who have completed any other statistics course(s) should consult with the instructor. In some instances, SOC*3120 may be waived as a departmental requirement.
Prerequisite(s): SOAN*2120
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 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 F (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, depeasantization, 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*3460 Ethnicity and Aging W (3-0) [0.50]
This course provides an examination of ethnic social structure, ethnicity, and aging. Variations in age related behaviour associated with ethnic groups in Canada will be viewed from a sociological and gerontological perspective.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): (SOAN*2112 or ANTH*2160), SOAN*2120, SOAN*2290
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. This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.
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 themes 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, WMST*3000)
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
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*2010, PSYC*3320.

STAT*2040 Statistics I S, F, W (3-1) [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; 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; ANOVA for CRD and RCBD. Assignments will deal with real data from the natural sciences. Laboratory sessions involve statistical computing and visualization using appropriate statistical software.
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, S (3-2) [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*2060, 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 graphic 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 ECOLC.
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 W (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.
Prerequisite(s): STAT*2050
Restriction(s): STAT*4220
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), (MATH*2160 or MATH*2160, may be taken concurrently), 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.
Prerequisite(s): (1 of IPS*1510, MATH*1210, MATH*2080), (1 of STAT*2050, STAT*3240, STAT*3100)
Department(s): Department of Mathematics and Statistics

Last Revision: October 14, 2014
2014-2015 Undergraduate Calendar
### 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 W (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):** (MATH*2150 or 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
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 both ARTH*1220, 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 and guest speakers the students will explore perceptual, conceptual and topical dimensions of art making practices.

Restriction(s): 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.

Restriction(s): 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 introduces various technical and aesthetic issues of painting, with an emphasis placed on representational strategies. Diverse approaches will be investigated through specific studio assignments in acrylic and oil-based media on various painting supports. Prior or concurrent Drawing classes are recommended.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and 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 introduces various technical and aesthetic issues of painting, with an emphasis placed on representational strategies. Diverse approaches will be investigated through specific studio assignments in acrylic and oil-based media on various painting supports. Prior or concurrent Drawing classes are recommended.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and SART*1060 can be taken as co-requisites).

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 projects and readings. Students will be actively engaged in exploring a variety of materials and ideas including modular construction, casting, and scale exercises.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and SART*1060 can be taken as co-requisites).

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.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and SART*1060 can be taken as co-requisites).

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.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and SART*1060 can be taken as co-requisites).

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 creative application of photography in art, and the basic principles of traditional photo-chemical and digital photography.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and SART*1060 can be taken as co-requisites).

Department(s): School of Fine Art and Music

SART*2700 Introduction to Computer Graphics F (0-6) [0.50]

This course extends the conceptual, technical, and aesthetic issues of studio art into the field of computer arts. Some computer experience is recommended.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and SART*1060 can be taken as co-requisites).

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, translating traditional media into complex vector graphics. Some computer experience is recommended.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and SART*1060 can be taken as co-requisites).

Department(s): School of Fine Art and Music

SART*2800 Extended Practices I F,W (0-6) [0.50]

This course introduces contemporary studio concerns with emphasis on an interdisciplinary approach to art production. Students will be actively engaged in exploring a variety of skills, materials and ideas including video, audio, artist multiples, site work and concept art. These skill sets provide a solid base for upper level courses, where thematic projects encourage students to choose the most appropriate medium for their approach beyond a singular discipline or particular medium.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; (ARTH*1220 and SART*1060 can be taken as co-requisites).

Department(s): School of Fine Art and Music

SART*3090 Drawing II F,W (0-6) [0.50]

An extension of SART*2090 which attempts to foster understanding of the basic skills and technical issues necessary to the making of drawings while introducing the philosophical and critical issues related to the discipline.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; SART*2090

Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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]

This course is an extension of the work begun in SART*2200. The various technical and aesthetic issues of representational painting will be further investigated as will the diverse approaches to pictorial organization derived from observation. However, the issues of abstraction and other forms of non-representational approaches will be introduced and developed in a deeper and fuller attempt to explore the possibilities available to the contemporary painter.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060; SART*2200

Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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): ARTH*1220, ARTH*1520, SART*1050, SART*1060, SART*2300
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060, (SART*2460 or SART*2470)
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060, (SART*2460 or SART*2470)
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3470 Photo-Printmaking W (0-6) [0.50]
This course investigates the uses of photographic resources in image making to produce photo etchings, silk-screens, and lithographs, as well as the use of computer graphics to augment the design process.

Offering(s): Offered in odd-numbered years.
Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060, (SART*2460 or SART*2470)
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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 is an in-depth study of website design using professional web authoring software. Students will design and create a website which explores a contemporary issue in their art practice.

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060, (SART*2700 or SART*2710)
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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, photo-chemical and digital photographic methods as an expansion of photographic concepts introduced in SART*2610 and SART*3750. These techniques will serve as the basis for aesthetic investigation into the formal, conceptual, technical and theoretical issues related to historic and new technologies in photographic practice.

Prerequisite(s): SART*3750
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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 is a further exploration of expressive, formal and technical aspects of black and white and colour photography, with an emphasis on lighting, colour, and scale.

Prerequisite(s): SART*2610
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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]
Thematically based projects encourage students to choose the most appropriate medium or combination of media for each assignment. Students may pursue and perfect one medium or take a more interdisciplinary approach (artists multiples, installation, performance, video, alternative venues, relational art or a combination of approaches).

Prerequisite(s): ARTH*1220, ARTH*1520, SART*1050, SART*1060, SART*2800
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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,W (0-6) [0.50]
This is an independent study course based on either Studio Art-related voluntary or paid practical experience. Evaluation will be based on assignments related to work duties. Written proposals, signed by the instructor, 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 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 of the Bachelor of Arts program 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 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 instructor, 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 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 artform.

Prerequisite(s): SART*3090
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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.

Prerequisite(s): SART*4090
Department(s): School of Fine Art and Music

SART*4200 Painting III F (0-6) [0.50]
A further extension of the work begun in SART*2200 and SART*3200. While the various technical and aesthetic issues will continue to be investigated through the discipline of observational painting there will be more emphasis on the critical issues relevant to contemporary painting and allowance for personal expression through both abstract and representational modes.

Prerequisite(s): SART*3200,
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4230 Special Topics in Painting W (0-6) [0.50]
An advanced course which focuses on a specific theme, subject, or technique in painting. Topics may include the figure and narrative in painting, the landscape in contemporary painting, or New Abstraction.

Prerequisite(s): SART*3200
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music
XII. Course Descriptions, Studio Art

**SART*4240 Painting IV W (0-6) [1.00]**

This course offers advanced investigations into the theory and practice of painting, with strong emphasis on the development of a critically informed and engaged individual practice.

**Prerequisite(s):** SART*4200 or SART*4230

**Restriction(s):** Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program 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 at least 2 studio projects including 1 site-response installation, and an independent work 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 of the Bachelor of Arts program 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 will further investigate traditional and photo based printing media. Computer graphics will be used to augment the design process.

**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 of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.

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

**SART*4470 Experimental 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 of the Bachelor of Arts program 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 of the Bachelor of Arts program 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 of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.

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

**SART*4700 Photography III F (0-6) [0.50]**

This course is a continued investigation into the formal, technical and theoretical issues of contemporary photography, with an emphasis on individual project development.

**Prerequisite(s):** SART*3750

**Restriction(s):** Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.

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

**SART*4720 Photography IV W (0-6) [1.00]**

This is an advanced and specialized course in individual studio work, which affords students opportunities for interdisciplinary and collaborative approaches and oversees the development of independent studio 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

**SART*4750 Specialized Studio Practice I F (0-6) [1.00]**

This is an advanced and specialized course in individual studio work, which affords students opportunities for interdisciplinary and collaborative approaches and oversees the development of independent studio 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

**SART*4800 Special Topics in Sculpture W (0-6) [0.50]**

This is an advanced course which focuses on a specific theme, subject, 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, Kinetic Media, Public Art, Mold Making, or Figuration and Installation. Normally, two different topics will be offered each year (see SART*4870).

**Prerequisite(s):** SART*3300

**Restriction(s):** Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.

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

**SART*4810 Extended Practices III W (0-6) [0.50]**

Contemporary issues in interdisciplinary art production will be addressed through at least two thematic projects and one self-directed work based on the students' own research in close consultation with the instructor. Students may choose to pursue and perfect one medium, or take a more interdisciplinary approach to art production.

**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 of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.

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

**SART*4870 Special Topics in Sculpture W (0-6) [0.50]**

This is an advanced course which focuses on a specific theme, subject, 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, Kinetic Media, Public Art, Mold Making, or Figuration and Installation. Normally, two different topics will be offered each year (see SART*4800).

**Prerequisite(s):** SART*3300

**Restriction(s):** Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.

**Department(s):** School of Fine Art and Music
SART*4880 Extended Practices IV W (0-6) [1.00]

In close consultation with the instructor, students produce two self-directed projects based on their own research. Presentations, grants, writing and composing artist statements will provide students the opportunity to develop personal conviction and a professional approach to Studio Art practice.

Prerequisite(s):  1 of SART*4660, SART*4670, SART*4810
Restriction(s):  Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.
Department(s):  School of Fine Art and Music

SART*4890 Interactive Multimedia W (0-6) [1.00]

This course explores the online multimedia world of the Internet. Students will use professional authoring and imaging software to create multimedia presentations which explore contemporary art issues. Seminars will examine cultural and theoretical issues brought about by the spread of digital communication through the Internet.

Prerequisite(s):  SART*3480
Restriction(s):  Registration is limited to students registered in the Art History or Studio Art specializations of the Bachelor of Arts program with an average of 70% in all ARTH and SART course attempts.
Department(s):  School of Fine Art and Music
XII. Course Descriptions, Theatre Studies

**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>Offerings</th>
<th>Department(s)</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>THST*3110</td>
<td>Acting II</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
</tr>
<tr>
<td>THST*3120</td>
<td>Acting III</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
</tr>
<tr>
<td>THST*3410</td>
<td>Special Studies in Production I</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
</tr>
<tr>
<td>THST*3420</td>
<td>Special Studies in Production II</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
</tr>
<tr>
<td>THST*3600</td>
<td>Directed Readings and Special Independent Studies</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
</tr>
<tr>
<td>THST*3620</td>
<td>Special Studies Seminar</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
</tr>
<tr>
<td>THST*3630</td>
<td>Special Studies in Studio Practice</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
</tr>
<tr>
<td>THST*4090</td>
<td>Directing</td>
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<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
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<td>THST*4250</td>
<td>Honours Project in Theatreical Production</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</td>
</tr>
<tr>
<td>THST*4650</td>
<td>Honours Essay</td>
<td></td>
<td>School of English and Theatre Studies</td>
<td>DRMA<em>1000 or THST</em>1040</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.

**Notes:**

- 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.

**Restriction(s):** Restricted to students who are declared majors in Theatre Studies.

**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.

**Restriction(s):** Restricted to students who are declared majors in Theatre Studies.

**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*2240 Introduction to Theatre Studies F,W (2-3) [0.50]

This course introduces students to the disciplines and subject areas that constitute Theatre Studies at the university level, including the work of playwrights, directors, designers, actors and technicians in creating productions, and the scholarly study of theatrical history, theory and dramatic literature. Attendance at a number of performances is required, since these performances are among the "texts" for the course.

**Equate(s):** DRMA*1000

**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.

**Prerequisite(s):** THST*1040

**Equate(s):** DRMA*2300, DRMA*3180

**Department(s):** School of English and Theatre Studies

- THST*2080 Acting I F,W (2-3) [0.50]

This is a studio course for students applying classroom theory to acting problems.

**Prerequisite(s):** THST*1040

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** School of English and Theatre Studies

- THST*2210 Dramaturgy and Playwriting W (3-0) [0.50]

Students will study how plays are made. The course includes analysis of theatrical texts and exercises in scripting.

**Prerequisite(s):** THST*1040

**Equate(s):** DRMA*1050

**Department(s):** School of English and Theatre Studies

- THST*2230 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.

**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 (2-3) [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.

**Prerequisite(s):** DRMA*1000 or THST*1040

**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*2500 Contemporary Cinema W (2-3) [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.

**Equate(s):** DRMA*2500

**Department(s):** School of English and Theatre Studies

- THST*2650 History of Communication F (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 odd-numbered years.

**Prerequisite(s):** THST*1200

**Department(s):** School of English and Theatre Studies

- THST*3030 Theatre for Young Audiences U (2-2) [0.50]

This is a studio course addressing selected topics dealing with theatrical practice for children and/or adolescents such as: creating theatre for young audiences; theatre as an instructional tool; teaching theatre to children; theatre games and play.

**Prerequisite(s):** 10 credits

**Equate(s):** DRMA*2100

**Restriction(s):** Students must be enrolled as a Major or Minor or area of concentration in Theatre Studies or B.A.Sc. Child, Youth and Family.

**Department(s):** School of English and Theatre Studies

- THST*3080 Acting Studio F,W (2-3) [0.50]

This is a studio course addressing selected topics dealing with theatrical practice for children and/or adolescents such as: creating theatre for young audiences; theatre as an instructional tool; teaching theatre to children; theatre games and play.

**Prerequisite(s):** THST*2080

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** School of English and Theatre Studies

- THST*3100 Screenwriting W (3-0) [0.50]

Students will be introduced to and be assessed on the various phases of the process of developing a film script, including developing a one-minute screenplay without dialogue; a five minute screenplay with dialogue; a strategy for “pitching” an idea to a producer; and the final script. Students will also conduct research on film scholarship and film reception, to contextualize their own writing.

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

**Prerequisite(s):** 1.00 credits from THST*1200, THST*2080, THST*2120, THST*2240

**Restriction(s):** DRMA*3620, THST*3620

**Department(s):** School of English and Theatre Studies

- THST*3110 Acting II F,W (2-3) [0.50]

This is a continuation of THST*2080. Students will perform in a public production. Admission is by audition only.

**Prerequisite(s):** THST*2080

**Equate(s):** DRMA*3110

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

**Department(s):** School of English and Theatre Studies

- THST*3120 Acting III F,W (2-3) [0.50]

This is a continuation of THST*3110. Students will perform in a public production. Admission is by audition only.

**Prerequisite(s):** THST*3110

**Equate(s):** DRMA*3120

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

**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.
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*3230.
Prerequisite(s): THST*3220
Equate(s): DRMA*3230
Department(s): School of English and Theatre Studies

THST*3240 Theatrical Organization F (3-0) [0.50]
A study of various models of theatrical organization such as theatrical funding, board and management structures, production management, technical direction, and stage management, together with their implications for theatrical production and interpretation.
Offering(s): Offered in even-numbered years.
Prerequisite(s): THST*2010, THST*2230
Equate(s): DRMA*3240
Department(s): School of English and Theatre Studies

THST*3260 Shakespeare: Text & Performance S (3-0) [0.50]
The course examines major theories, practices and textualities of radical theatre, considering its development and genealogies of interventionist processes, with particular attention to the Stratford Festival and is offered in Stratford, Ontario. The course may involve a lab fee. Admission is by application to the School.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): THST*2010 or 1.00 credits in English
Equate(s): DRMA*3260
Restriction(s): Instructor consent required.
Department(s): School of English and Theatre Studies

THST*3280 Theatrical Space W (3-0) [0.50]
This course is a study of theatrical space as it shapes performance, reception, social value and cultural meanings. It explores the nature of performance spaces and the relationship between performer and audience, and considers theoretical approaches to the problem of theatrical space, including analyses of cultural location, aesthetic spatiality, public space and kinaesthetic space. The course offers an historical overview of various theatre and non-theatre venues for performance from the perspectives of actors, directors, designers, technicians and audiences.
Offering(s): Offered in even-numbered years.
Prerequisite(s): THST*2010, THST*2230
Department(s): School of English and 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.
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 THST*3080 or THST*3110
Co-requisite(s): THST*3260
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.
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.
Prerequisite(s): THST*3220, (1 of THST*2120, THST*3240, THST*3400, 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.
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 (3-3) [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 odd-numbered years.
Prerequisite(s): THST*2010 or 1.00 credits in English
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.
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 images.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): THST*2230, THST*2240
Restriction(s): DRMA*3440
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 filmmakers.
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*3540 World Theatre Cultures U (3-0) [0.50]
This course presents a focused study of theatrical traditions and dramatic practices (largely) outside European traditions. Variable content course. Consult the School's website for current topics.
Prerequisite(s): (THST*2010, THST*2120) or 1.50 credits in English
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.
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 and Special Independent Studies U (3-0) [0.50]
Independent study 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. Special studies may also be arranged in the practical aspects of the theatre, with appropriate assignments, not leading to a production. 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, (1 of THST*2080, THST*2120, THST*2240)
Equate(s): DRMA*3600
Restriction(s): Instructor consent required.
Department(s): School of English and Theatre Studies

THST*3620 Special Studies Seminar U (3-0) [0.50]
This seminar course provides for intensive study of a specific aspect of drama and/or theatre.

Prerequisite(s): 3.00 credits in Theatre Studies.
Equate(s): DRMA*3620
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.

Prerequisite(s): THST*2010
Equate(s): DRMA*4300
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 content course.

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.

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.

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*4090 Directing F (3-2) [0.50]
In this course students will have the opportunity to apply the fundamentals of directing through a specific directorial assignment.

Prerequisite(s): THST*3700
Restriction(s): 14.00 credits. Restricted to students in Theatre Studies with a 70% average in all course attempts in Theatre Studies.
Department(s): School of English and Theatre Studies

THST*4250 Honours Project in Theatrical Production F,W (0-6) [0.50]
The completion, under direction, of a project in acting, directing, dramaturgy, design or technical theatre.

Prerequisite(s): THST*2010, THST*2230, (1 of DRMA*3440 , THST*3110, THST*3220, THST*3430, THST*3480, THST*3700). Admission is by application to the School.
Equate(s): DRMA*4250
Restriction(s): Instructor consent required. or the Director of the School consent required.
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*1040, THST*2010, THST*2230, (2 of THST*2080, THST*2120, THST*2240), THST*3550, THST*3850, (THST*3650 or THST*3660)
Restriction(s): Restricted to majors in Theatre Studies who have completed a minimum of 14.00 credits.
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.

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.

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.

Prerequisite(s): (THST*3650 or THST*3660), THST*3850
Equate(s): DRMA*4340
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
Equate(s): DRMA*4650
Restriction(s): Instructor consent required.
Department(s): School of English and Theatre Studies

2014-2015 Undergraduate Calendar
**Toxicology**

*Department of Biomedical Sciences*
*Department of Chemistry*
*School of Environmental Sciences*
*Department of Mathematics and Statistics*
*Department of Molecular and Cellular Biology*
*Department of Pathobiology*

**TOX*2000 Principles of Toxicology F (3-0) [0.50]**

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 Biomedical Sciences

**TOX*3300 Analytical Toxicology F (3-3) [0.50]**

A course in trace analysis designed for students in toxicology and related programs. Analytical techniques of value in analyzing samples of toxicological importance will be presented with emphasis also on sample collection and preparation prior to analysis.

**Prerequisite(s):** CHEM*2480, BIOC*2580, TOX*2000 (TOX*2000 may be taken concurrently)

**Restriction(s):** CHEM*3430, CHEM*3450. This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.

**Department(s):** Department of Chemistry

**TOX*3360 Environmental Chemistry and Toxicology S,W (3-0) [0.50]**

This course examines the chemistry of the natural environment and the influence of pollutants upon the environment. Topics will include methods of introduction of pollutants to, and removal of pollutants from, the environment. (Also listed as CHEM*3360.)

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

**Prerequisite(s):** CHEM*1050

**Equivalent(s):** CHEM*3360

**Department(s):** Department of Chemistry

**TOX*4000 Medical Toxicology F (4-0) [0.50]**

This course will focus on the toxicology of mammalian body systems with emphasis on dose-response, mechanisms and the sites of action of major groups of chemical toxicants and biological toxins. The course is designed for students majoring in Bio-Medical Sciences and Toxicology.

**Prerequisite(s):** BIOM*3090

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

**TOX*4100 Toxicological Pathology W (2-2) [0.50]**

Evaluation of the pathologic responses of cells and tissues to toxic compounds. The course is designed for students majoring in toxicology.

**Prerequisite(s):** PATH*3610 (or equivalent)

**Department(s):** Department of Pathobiology

**TOX*4200 Topics in Toxicology W (3-0) [0.50]**

Topics in toxicology will consist of oral and written presentations by students, faculty members, and guest lecturers. The emphasis will be on the broad integrative aspects of toxicology with particular reference to the whole organism and higher levels of natural systems; risk assessment and regulatory toxicology.

**Prerequisite(s):** TOX*2000, TOX*3300

**Restriction(s):** Restricted to students in BSCH.TOX, BSCH.TOX:C

**Department(s):** Department of Biomedical Sciences, School of Environmental Sciences

**TOX*4590 Biochemical Toxicology F (3-0) [0.50]**

This course will focus on the biotransformation of drugs, carcinogens, and other toxicants, including consideration of human health implications of these metabolic processes. The enzymes catalyzing these reactions will be discussed in detail.

**Prerequisite(s):** (1 of BIOC*3570, CHEM*3430, TOX*3300), BIOC*3560, (MBG*2020 or MBG*2040)

**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 P1 (3-3) [0.75]
A lecture and laboratory course emphasizing the microscopic organization of the tissues and organs of domestic animals in various physiological states. Correlations between morphology and function of various cells and tissues comprising the organ systems will be discussed.

Co-requisite(s): All Phase 1 courses.
Department(s): Department of Biomedical Sciences

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 I 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 Veterinary Medical Genetics P1 (1-1) [0.50]
The course deals with the genetic basis of disease and birth defects in general and the salient features and inheritance patterns of the common birth defects, metabolic errors and reproductive problems in domestic animals.

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 behaviour 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).

Prerequisite(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, pathogenetic 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 in 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
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 Anaesthesia 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 (2-0) [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. 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.
Restriction(s): Registration in the D.V.M. Program
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 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 cat and dog. 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 pet birds, commercial poultry and non-traditional species (fish, amphibians, reptiles, rabbits, rodents, ferrets, non-domestic carnivores and non-domestic ungulates). The primary emphasis is directed towards enhancing 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 Pathobiology

VETM*4490 Systems Pathology P3 (V-V) [1.00]
The course will contribute to students' achievement of selected elements of graduating competency in the context of pathobiology across the range of species. The primary emphasis is directed towards developing the 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
XII. Course Descriptions, Veterinary Medicine

**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 of 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*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 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*4670, 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 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 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*4720, VETM*4880, 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 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*4890, VETM*4900, VETM*4930, VETM*4940
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

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Last Revision: October 14, 2014

2014-2015 Undergraduate Calendar
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 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 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

### WMST*3000 Feminist Theory and Methods F (3-0) [0.50]
A comparative and critical examination of feminist theories and their methodological implications, including contributions of and tensions between various feminisms. Special attention to contemporary developments in the field.

**Prerequisite(s):** 10.00 credits including (1 of ISS*2200, WMST*1000, WMST*2200), (0.50 additional credits from Women's Studies List A), (1 of ARTH*2480, DRMA*2300, ENGL*2120, PHIL*2060, POLS*2000, SOAN*2400)  
**Department(s):** Dean's Office, College of Arts

### WMST*3010 Gender and Diversity W (3-0) [0.50]
An examination of studies of the interaction of gender with race, class, ethnicity, sexual orientation, ability/disability, and other axes of difference as they position women within systems of power. Students will compare and assess contemporary theories, approaches, and research that address together gender and diversity issues and problems.

**Prerequisite(s):** 10.00 credits including WMST*1000, WMST*2000, 0.50 additional credits from Women's Studies List A  
**Department(s):** Dean's Office, College of Arts

### WMST*4010 Seminar in Women's Studies W (3-0) [0.50]
The framework of the course will be provided by a series of unresolved issues or challenging questions regarding women which will call upon the students' critical, evaluative, and integrative abilities. The content will largely depend upon the students' backgrounds within the program and their other major areas of study.

**Prerequisite(s):** 15.00 credits including WMST*1000, WMST*2000 and 1.00 additional credits from Women's Studies List A at the 3000 level or above.  
**Department(s):** Dean's Office, College of Arts
Zoology

Department of Integrative Biology

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*1040 or 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*1040 or 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): 1 of BIOM*3010, BIOM*3200, HK*3940, HK*3401/2, ZOO*2090, ZOO*3200, ZOO*3210
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): 1 of MBG*2000 or MBG*2040), BIOL*2400 is strongly recommended.
Restriction(s): ZOO*2100
Department(s): Department of Integrative Biology

ZOO*3200 Comparative Animal Physiology I F (3-3) [0.50]
The course will examine the underlying molecular and cellular events which mediate physiological processes and contribute to whole animal homeostasis. Particular emphasis will be placed on comparing the strategies and adaptations used by different animals and the influence of varying environmental conditions. The course discusses cellular physiology, neuromuscular physiology and endocrinology. This course involves exercises that use animals. BIOM*3200 and HK*3940 are available to cover similar material without labs.
Prerequisite(s): BIOM*2580
Department(s): Department of Integrative Biology

ZOO*3210 Comparative Animal Physiology II W (3-3) [0.50]
This is the second course that provides an introduction to the physiological mechanisms used by vertebrates and invertebrates. The course will examine the underlying molecular and cellular events which mediate physiological processes and contribute to whole animal homeostasis. Particular emphasis will be placed on comparing the strategies and adaptations used by different animals and the influence of varying environmental conditions. The course discusses respiratory, cardiovascular, osmoregulatory and digestive physiology. This course involves exercises that use animals. BIOM*3200 and HK*3940 are available to cover similar material without labs.
Prerequisite(s): BIOM*2580
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*4110 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*3110 , BIOM*3200, HK*3940, ZOO*3200, ZOO*3210
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
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
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
Department(s): Department of Integrative Biology
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
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<tr>
<td>ZOO*4920</td>
<td>Lab Studies in Ornithology F (0-3) [0.25]</td>
<td>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.</td>
<td>14.00 credits including ZOO*2090</td>
<td>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. Instructor consent required.</td>
<td>Department of Integrative Biology</td>
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<tr>
<td>ZOO*4940</td>
<td>Lab Studies in Herpetology W (0-3) [0.25]</td>
<td>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.</td>
<td>15.00 credits including ZOO*2090</td>
<td>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.</td>
<td>Department of Integrative Biology</td>
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<tr>
<td>ZOO*4950</td>
<td>Lab Studies in Mammalogy W (0-3) [0.25]</td>
<td>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.</td>
<td>15.00 credits including ZOO*2090</td>
<td>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.</td>
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