

# Course Listings

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## 200 Details of Courses

Courses taught at the University of Alberta are listed alphabetically. All courses, except those taught by Faculté Saint-Jean, are described in English.

Each course is designated by its computer abbreviation and a number. Students should use this abbreviation and number when completing any form requiring this information.

Courses are numbered according to the following system:

000-099	Pre-University
100-199	Basic Undergraduate. Normally requires no university-level prerequisites. Designed typically for students in the first year of a program.
200-299	Undergraduate. Prerequisites, if any, are normally at the 100-level. Designed typically for students in the second year of a program.
300-399	Undergraduate. Prerequisites, if any, are normally at the 200-level. Designed typically for students in the third year of a program.
400-499	Advanced Undergraduate. Prerequisites, if any, are normally at the 300-level. Designed typically for students in the fourth year of a program.
500-599	Graduate. Designated for graduate students and certain advanced or honors undergraduate students in their final year.
600-799	Graduate Courses
800-899	Special Registrations
900-999	Graduate Thesis and Project Numbers

For the purposes of program descriptions and prerequisite designation, courses numbered 100-199 are designated as Junior Courses and courses numbered 200-499 are designated as Senior Courses.

**Note:** Some exceptions to the course number system described above have been granted to the Faculty of Law and the Faculty of Medicine and Dentistry.

### Course Description Symbols and Figures

Several symbols and figures are used to indicate the type, duration, and weight of courses.

- (1) ★—Indicates “units of course weight,” and usually follows the course title. The accompanying number indicates the weight of the course as used in computing grade point averages and for meeting degree requirements.

A course which runs throughout the Fall/Winter (i.e., from September through April) is usually weighted ★6. A course that runs for only one term (i.e., Fall: from September to December, or Winter: from January through April) is usually weighted ★3. Certain courses are offered over Fall/Winter or Spring/Summer, or in one term, with weights of ★1, ★2, and ★4. These are considered as one-sixth, one-third, and two-thirds of a Fall/Winter or Spring/Summer course, respectively. Some honors and graduate courses involving research may vary in weight according to the length and difficulty of the project. Some clinical courses may vary in weight according to the length of clinical experience. Some courses, not included in the computation of grade point averages, are offered for credit only and either carry a weight of ★0, or are marked as “Credit.”

Undergraduate students who take courses offered by the Faculty of Engineering but are not registered in Engineering will have a course weight assigned for these courses according to the protocol of their home faculty.

- (2) *fi*—Denotes: “fee index,” the value used to calculate the instructional fees for each course. The fee index is multiplied by the fee index value (given in the appropriate subsection of §22.2) to give the dollar value of instructional fees for the course.

For normal courses, the fee index is twice the value of the units of course weight; for example, a course with ★3 normally has *fi* 6. In cases where exceptional fees considerations need to be made, the fee index is set differently by the Board of Governors.

Note that certain programs (e.g. MD, DDS, etc.) are assessed on a program fee basis for all or certain years. In these cases, the fee index calculation does not apply.

- (3) (x term, a-b-c)—These figures in parentheses give information on when the course is offered and the hours of instruction required by the course in a week, or in some cases the total time in a term.

In the case of a single-term course, the term in which the course is given is mentioned (item x). The designation “either term” means that

the course may be offered either in the first term or in the second term or in each term, at the discretion of the department concerned. The designation “variable” means that the course may be taught either as a single-term or as a full-session course.

Item **a** indicates lecture hours. Item **b** indicates seminar hour(s), demonstration hours (d), clinic hours (c), or lecture-laboratory hours (L). Item **c** indicates laboratory hours. For two-term courses, the hours of instruction are the same in both terms unless otherwise indicated. The expression 3/2 means 3 hours of instruction every second week; 2s/2 means 2 seminar hours every second week.

Examples:

(first term, 3-0-3): a course taught in first term with 3 hours lecture, no seminar, and 3 hours lab per week.

(second term, 0-1s-2): a course taught in second term with no lectures, 1 seminar hour, and 2 hours of lab per week.

(either term, 3-0-0): a course taught in either first or second term, or each term, with 3 lecture hours per week, no seminar, and no lab.

(two-term, 3-0-3): a course taught over both first and second term with three lecture hours, no seminar, and three hours lab per week.

(variable, 3-0-0): a course which may be taught in either first or second term or over two terms with three lecture hours per week, no seminar, and no lab.

- (4) **Prerequisite**—This provides information on courses which must be successfully completed before registering in the more advanced course.

**Corequisite**—This provides information on courses which must be taken before or at the same time as the course described in the listing.

**Note:** Departments are authorized to cancel the registration of those students registered in a course offered by the department if they do not meet the prerequisite and/or corequisite requirements stated in the course description in this Calendar.

- (5) **[Department]**—This indicates the department responsible for registration for interdepartmental courses. Normally, courses will be credited to the discipline listed in the square brackets.

- (6) **Open Studies Courses**—**O** indicates a course available to students of Open Studies. **L** indicates that a course is available to Open Studies students on a delayed registration basis only (see §190.2.2).

### Important: Registration Procedures for Two-Term Courses

Students are strongly advised to refer to the *Registration Procedures* manual for details. Two-term courses are normally offered over two terms (either Fall/Winter or Spring/Summer). In a few instances, two-term courses are offered within a single term. In all cases these are identifiable in the Timetable Listing because they consist of part A and part B (e.g., English 101A and 101B).

To successfully register in a two-term course, students, must do the following:

- register in both the part A and part B for all types of sections offered (Lectures, Labs, Seminars, etc.);
- register in the same section numbers for part A and part B of a course (e.g. Lecture A1 for both part A and part B, and Lab E3 for both part A and part B);
- register in all the appropriate sections on the same day.

All of the above must be done or the course registration is invalid and will be deleted. Invalid registrations will be deleted nightly. It is the student’s responsibility to attempt the course registration again, subject to availability.

Example: A student wishes to register in ABCD 101, a two-term course. It has a lecture and a lab section. Based on the student’s timetable planning, decides to take Lecture C3 and Lab C8. The student must add

In Fall Term	ABCD 101A Lec C3 and ABCD 101A Lab C8,
and	
In Winter Term	ABCD 101B Lec C3 and ABCD 101B Lab C8.

All these sections must be added on the same day to successfully register. Otherwise the registration in ABCD 101 will be deleted overnight and the student’s place in the course will be lost.

### Course Renumbering

Over the years many courses have been renumbered. Old numbers can be found within individual course listings of previous Calendar editions.

### Course Availability

The appearance of a course description in the following list does not guarantee that the course will actually be offered in the forthcoming session. Information about courses to be offered, names of instructors, and all further details must be sought from the appropriate department.

**Alternative Delivery Courses**

Sections of certain approved courses may be offered in an Alternative Delivery format at an increased rate of fee assessment.

**Cost Recovery Courses**

Sections of certain approved courses may be offered in a Cost Recovery format at an increased rate of fee assessment.

**Courses on Reserve**

Courses not offered in the past four years are removed from this Calendar and placed on Reserve. These courses may be taught again in the future, in which case they would be brought back into the active Course Listings and placed in the Calendar. Information about Reserve Courses is available through the Registrar's Office, the University Secretariat, and Faculty Offices.

**Faculty Specific Regulations Regarding Courses**

For specific Faculty regulations relating to courses and for a complete list of subjects taught by a Faculty, please consult the Undergraduate Programs section of the Calendar at the end of each Faculty section.

**Physical Requirements for University Courses**

The University has a commitment to the education of all academically qualified students and special services are frequently provided on campus to assist disabled students.

Nevertheless, some courses make certain unavoidable demands on students with respect to the possession of a certain level of physical skill or ability if the academic objectives of the course are to be realized. In case of doubt, students are advised to contact the Department concerned and the Disabled Student Services Coordinator, Office of the Dean of Student Services.

Because support services cannot be guaranteed for all off-campus courses, instructors may be obliged to refuse registration in such courses.

**DRAMA 626 Research in Canadian Drama II**

★3 (fi 6) (second term, 0-3s-0). Research in selected topics related to Canadian Drama.

**DRAMA 659 Popular Theatre: Theory and Methodology**

★3 (fi 6) (either term, 0-9L-0). This course will examine the principles on which popular theatre rests, the objectives of popular theatre, various approaches to popular theatre, and evaluation of popular theatre. Students will examine these topics through a mix of academic study, practical introduction of specific popular theatre techniques, and an experience in a popular theatre process. Prerequisite: consent of Department.

**DRAMA 665 Special Projects in Dramatic Writing**

★3 (fi 6) (either term, 0-3L-0). Prerequisite: consent of Department

**DRAMA 670 Advanced Theatre Design I**

★6 (fi 12) (two term, 0-6L-0). Note: Restricted to MFA (Drama) students.

**DRAMA 671 Advanced Theatre Design II**

★6 (fi 12) (two term, 0-6L-0). Note: Restricted to MFA (Drama) students.

**DRAMA 672 Theatre Design III**

★3 (fi 6) (two term, 0-4L-0). Corequisites: DRAMA 660, 661, 680 or 681. Note: Restricted to MA (Drama) students (with consent of department) and MFA (Drama) students.

**DRAMA 673 Advanced Lighting Design**

★3 (fi 6) (two term, 0-6L-0). Restricted to MFA (Drama) students.

**DRAMA 674 Advanced Costume Techniques**

★3 (fi 6) (two term, 0-6L-0). Restricted to MFA (Drama) students.

**DRAMA 675 Advanced Scenepainting**

★3 (fi 6) (two term, 0-6L-0). Note: A single-term course offered over two terms. Restricted to MFA (Drama) Students.

**DRAMA 676 Production Design III**

★3 (fi 6) (two term, 0-0-6). Practical experience in designing an element or elements of a production. Note: A single term course offered over two terms. Restricted to MFA (Drama) Students. Repeatable.

**DRAMA 680 Styles of Directing**

★6 (fi 12) (two term, 0-3s-6). Note: Restricted to MFA (Drama) students.

**DRAMA 681 Advanced Projects in Directing**

★6 (fi 12) (two term, 0-3s-6). Note: Restricted to MFA (Drama) students.

**DRAMA 690 Topics in Applied Theatre Aesthetics**

★3 (fi 6) (either term, 0-3s-0). Prerequisite: consent of Department.

## 201.57 Earth and Atmospheric Sciences, EAS

Department of Earth and Atmospheric Sciences  
Faculty of Science

### Undergraduate Courses

#### 201.57.1 Faculty of Arts Courses

**Note:** See Also INT D 451 for courses which are offered by more than one department or faculty and which may be taken as options or as a course in this discipline.

**EAS 190 Spatial Organization of Human Activity**

★3 (fi 6) (either term, 3-0-0). Introduction to the concepts of relative location, spatial interaction and spatial organization of human activity in both rural and urban settings; geographical theories and techniques.

**EAS 191 Cultures, Landscapes and Societies**

★3 (fi 6) (either term, 3-0-0). The significance of human distribution on the earth. People's relationship to the physical environment and development of cultural landscapes. Population issues, settlements, cultural patterns, and processes.

**EAS 290 Human Impacts on the Environment**

★3 (fi 6) (either term, 3-0-0). Introduction to geographical concepts concerning global aspects of environmental impacts and problems affecting human-environmental relations. Prerequisite: One of EAS 101, 102, 190, 191, 201 or 210.

**EAS 291 Human Use of Resources**

★3 (fi 6) (either term, 3-0-0). Geographic perspective on components and characteristics of renewable and non-renewable natural resources, including their physical and spatial aspects, transportation, environmental impacts, use, conservation, and depletion. Prerequisite: One of EAS 101, 102, 190, 191, 201 or 210.

**EAS 293 The Urban Environment**

★3 (fi 6) (either term, 3-0-0). Introduction to urban geography emphasizing interactions between the physical environment and patterns of human settlement. Topics include models of urbanization and urban form, growth and decline in North American cities. Prerequisite: EAS 190, 191 or one social science core course in the Faculty of Arts.

**EAS 391 Introduction to Environmental Planning**

★3 (fi 6) (either term, 3-0-0). Introduction to issues in policy making, planning and management related to human interaction with the physical environment. Prerequisite: Any EAS 29X course.

**EAS 392 Research Methods in Human Geography**

★3 (fi 6) (either term, 3-0-2). Collection and analysis of data for research in human geography. Research design and sampling procedures. Special emphasis on social surveys, analysis and interpretation of quantitative data, and report writing. Field work required. Prerequisites: Any EAS 29X course and one of EAS 220, PSYCO 211, SOC 210 or STAT 141.

**EAS 394 Issues In Human Geography**

★3 (fi 6) (either term, 3-0-0). Theory and application of contemporary issues in human geography. Prerequisites: Any EAS 29X course.

**EAS 491 Resource Management and Environmental Policy**

★3 (fi 6) (either term, 3-0-0). Roles of governmental and nongovernmental organizations, industry and private enterprise, and advocacy organizations in addressing issues of resource scarcity and environmental policy. Institutions, policies, and strategies for resource and environmental management at the provincial/state, national, and international levels. Prerequisites: Any EAS 39X course or consent of Instructor.

**EAS 492 Geographical Information Systems for Social Science**

★3 (fi 6) (either term, 3-0-0). This course provides spatial analytic tools to social geographers and provides a social science perspective to geoprocessing students. Examples arise from marketing, operations research, sociology, and urban and economic geography. Assignments impart technical aspects through hands-on experience with commercial and in-house spatial analysis software. Prerequisite: EAS 221.

**EAS 493 Human Dimensions of Global Change**

★3 (fi 6) (either term, 3-0-0). Investigation of issues related to the human use of resources and impact on the regional and global environment. Critical review of alternative frameworks for assessing, mitigating and adapting to global environmental change. Prerequisite: Any EAS 3XX course or consent of Instructor.

**EAS 494 Environment and Health**

★3 (fi 6) (either term, 3-0-0). An examination of relations between human health and environmental issues, particularly those related to the natural, built, and social environments. Prerequisite: consent of Department.

**EAS 497 Directed Study in Human Geography I**

★3-6 (variable) (variable, 3-0-0). Prerequisite: Any EAS 39X course.

**EAS 498 Directed Study in Human Geography II**

★3 (fi 6) (either term, 3-0-0). Prerequisite: EAS 497.

### 201.57.2 Faculty of Science Courses

**Notes**

- (1) Students are responsible for their own accommodation and meal expenses on all Earth and Atmospheric Sciences field trips.
- (2) A list of paleontology courses and course descriptions may be found under Paleontology.

**EAS 101 Introduction to Physical Earth Science**

★3 (fi 6) (either term, 3-0-3). Introduction to the origin of the earth and solar system, minerals and rocks, geological time, plate tectonics, and structural geology. Geomorphic environments and surface processes, groundwater, and mineral and energy resources.

**EAS 102 Introduction to Environmental Earth Science**

★3 (fi 6) (either term, 3-0-3). Introduction to Environmental Earth Science with the emphasis on atmospheric processes affecting weather and climate, and ecological processes affecting vegetation and ecosystems. The earth's temperature, climate, water budget and atmospheric circulation; Canadian weather and climate; clouds and storms, atmospheric pollution, ozone depletion and climate change. Formation and classification of soils; structure and functions of ecosystems. Human impacts on ecosystems.

**EAS 103 Earth and Life Through Time**

★3 (fi 6) (second term, 3-0-3). Geologic and biological facts, processes, and concepts relevant to historical geology; minerals, rocks, plate tectonics, dating of rocks, formation of fossils, origin and evolution of life. Historical geology from the Big Bang to today, including formation of major deposits of economic value (diamonds, gold, nickel, oil and gas, salt, coal) and events of global significance, such as development of the ozone layer, global warming, asteroid impacts, extinction of dinosaurs and other life forms. Prerequisite: EAS 101.

**EAS 110 Earth Science Field School**

★3 (fi 6) (second term, 10 days). This excursion through the mountains and prairies of Alberta is designed to demonstrate the diverse geomorphology and landscape of the province and to observe the various rock types that make up the geological column from the Precambrian to the Recent, including the widespread glacial deposits. In addition, the structure of the rocks will be observed and discussed, fossils will be identified, and tours to various mines and damsites will be conducted. Prerequisite: EAS 101 or 201 or 210.

**EAS 200 Introductory Studies in Earth Science**

★1 (fi 2) (either term, 0-0-3). Laboratory study of topographic and geological maps, minerals, and rocks. EAS 200 together with EAS 201 is considered to be equivalent to EAS 101 for prerequisite purposes. Not available to students with credit in EAS 101 or EAS 210. Corequisite: EAS 201.

**EAS 201 Earth Science I**

★3 (fi 6) (either term, 3-0-0). Origin of the earth and solar system, minerals and igneous, metamorphic and sedimentary rocks, geological time, plate tectonics, the formation of ocean basins and mountain building. Surface processes and landforms, groundwater, and mineral and energy resources. Prerequisite: Any 100-level Science course.

**EAS 202 Violent Weather**

★3 (fi 6) (either term, 3-0-0). A survey of severe and unusual weather, with emphasis on tornadoes, hurricanes, hail and lightning. The scientific basis for the occurrence of these phenomena is presented along with practical precautions which may be taken to minimize their danger. Computer simulation and videos are used to illustrate how the weather systems work. Prerequisite: Any 100-level Science course.

**EAS 204 Environment Alberta**

★3 (fi 6) (either term, 3-0-0). The physical environment of Alberta. Regional variation in the patterns of climate, landforms, water, soils, vegetation and wildlife; the geographic synthesis of these patterns to give a broad understanding and appreciation of the province and its environmental problems. Prerequisite: One of EAS 101, 102, 201 or 210.

**EAS 205 Environment Earth**

★3 (fi 6) (either term, 3-0-0). General introduction to interactions between people and their natural environment, with an emphasis on geological processes. Topics include: soil resources and degradation; earthquakes and volcanoes; streams and flooding; landslides, mass movement and subsidence, shoreline development and coastal processes; surface water and groundwater resources; air and water pollution; waste management and disposal; and global change. Prerequisite: Any 100-level Science course.

**EAS 206 Geology of the Solar System**

★3 (fi 6) (either term, 3-0-0). Origin of the elements and the solar system, origin and evolution of the planets. Geologic and atmospheric properties of the planets, the nature of meteorites and comets. Results of recent space exploration. Prerequisite: One of EAS 101, 201 or 210.

**EAS 207 Mass Extinctions and Dinosaurs**

★3 (fi 6) (either term, 3-0-0). A discussion and description of the progression of life through time, with emphasis on important radiations and mass extinctions of life, and theories on why they occur. Evolution, radiation, morphology and life habits of dinosaurs are considered in detail. The evidence for asteroid impacts in the geologic record, their frequency and effect on the history of organisms through time. Origin and evolution of humans, and their impact on the biosphere. Prerequisite: Any 100-level Science course.

**EAS 208 Introduction to Global Change**

★3 (fi 6) (either term, 3-0-0). Natural and anthropogenic causes of global scale environmental change; the role of the atmosphere, oceans, biosphere and cryosphere in the processes of environmental change; relationships between levels of technology and development and the character of environmental change associated with human activity. Prerequisite: EAS 102.

**EAS 209 Geology of Western Canada and the National and Provincial Parks**

★3 (fi 6) (either term, 3-0-0). An overview of the geology and landscapes of Western Canada. The spectacularly exposed rocks of the prairie and mountain parks of Alberta and British Columbia will be fitted into a regional geological framework and examples from parks such as Yoho, Banff, Jasper, Dinosaur, and Kananaskis will be highlighted. Geological processes of mountain building and past and present landscape evolution will be emphasized. Prerequisite: One of EAS 101, 103, 201 or 210.

**EAS 210 Engineering Earth Science**

★4.5 (fi 6) (first term, 3-0-3). Rock-forming minerals, origins of igneous, metamorphic and sedimentary rocks; economic minerals and ore deposits; rock weathering and soil formation, mass-wasting, groundwater, deformation of the earth's crust. Laboratories on identification of minerals and rocks and the interpretation of topographic and geologic maps and aerial photography. Prerequisite: Any 100-level Science course. Not available to students with credit in EAS 101 or 201. Intended for students in Engineering programs. Non-Engineering students who take this course will receive ★3.0.

**EAS 212 The Oceans**

★3 (fi 6) (either term, 3-0-0). An introduction to the physics and chemistry of the oceans. Topics covered include ocean currents, the ocean floor, origins and buffering of the chemistry of the oceans. The role of the oceans in determining past and present climates is introduced. Prerequisite: Any 100-level Science course.

**EAS 220 Introduction to Computational Techniques in Earth and Atmospheric Sciences**

★3 (fi 6) (either term, 3-0-3). Introduction to computational methods and software for earth scientists and human geographers. Lectures emphasize the application of conventional descriptive and inferential analytical methods to spatial problems and their extensions to spatial analysis. Labs provide a hands-on introduction to the department's computational resources. Prerequisite: EAS 101 or 102.

**EAS 221 Introduction to Geographical Information Systems and Remote Sensing**

★3 (fi 6) (either term, 3-0-3). Background to the principles of Geographic Information Systems and Remote Sensing. Lectures emphasize the theoretical and methodological underpinnings, labs impart the technical aspects through hands-on experience with appropriate software. Prerequisite: Any 100-level Science course.

**EAS 222 Stratigraphy and Sedimentation**

★3 (fi 6) (either term, 3-0-3). Sedimentary processes, environments and facies; properties and classification of sedimentary rocks; stratigraphic nomenclature and the stratigraphic column; principles of stratigraphic paleontology. Prerequisite: One of EAS 101, 103 or 210. Not available to students with credit in EAS 231.

**EAS 224 Mineralogy I**

★3 (fi 6) (first term, 3-0-3). Principles of crystallography, physical and chemical properties of minerals, determinative mineralogy. Prerequisite: EAS 101 or 210.

**EAS 225 Earth Surface Processes and Landforms**

★3 (fi 6) (either term, 3-0-3). Geomorphological processes and landform analysis with special reference to the landscape of Alberta. Fieldwork required. Prerequisite: One of EAS 101, 102, 201 or 210.

**EAS 230 Introduction to Invertebrate Paleontology**

★3 (fi 6) (either term, 3-0-3). Systematics of important groups of invertebrate fossils. Introduction to biostratigraphy, paleoecology, and the study of mass extinctions and faunal radiations. Mechanisms and patterns of evolution. Groups covered include: Porifera, Cnidaria, Brachiopoda, Mollusca, Trilobita, Echinodermata, and some microfossil groups. Prerequisite: EAS 103.

**EAS 232 Mineralogy II**

★3 (fi 6) (second term, 3-0-3). Optical techniques in determinative mineralogy with particular emphasis on transmitted-light microscopy and its application to common rock-forming minerals. Mineral associations, textures and elementary ideas on the origin of igneous, metamorphic and sedimentary rocks. Prerequisite: EAS 224.

**EAS 233 Geologic Maps and Cross-Sections**

★3 (fi 6) (either term, 3-0-3). The construction and analysis of geologic maps and cross-sections, from surface and subsurface data. Introduction to procedures for collecting basic field information, aerial photograph interpretation, and the principles of geologic mapping. Prerequisite: One of EAS 101, 103, 201 or 210.

**EAS 234 Geology Field School**

★3 (fi 6) (second term, 12 days). A geological investigation of the Jasper area with emphasis on stratigraphy and properties of sedimentary rocks, paleontology, structural and Quaternary mapping, and Cordilleran tectonics. Field exercises teach the fundamentals of recording field data, aerial photograph interpretation, reconstructing depositional environments, and tectonic syntheses. This field school is run immediately following the Winter examination period. Prerequisites: EAS 233, 235 and 236.

**EAS 235 Clastic Sedimentology**

★3 (fi 6) (either term, 3-0-3). Genesis of clastic sedimentary rocks, from source areas to sedimentary basins. Composition and classification of clastic sedimentary rocks. Sedimentary textures, structures, and flow regimes. Clastic depositional environments: processes and facies, from non-marine to coastal and marine settings. Prerequisites: EAS 101, 103, or 210.

**EAS 236 Carbonate Sedimentology**

★3 (fi 6) (either term, 3-0-3). Detailed examination of carbonate sediments and rocks from the perspective of depositional processes, facies recognition, depositional models, diagenetic processes (e.g., replacement, cementation), and dolomitization. Laboratory exercises will be based on the analysis of hand samples, thin sections, and examination of core. Prerequisites: EAS 101, 103, or 210, and EAS 224.

**EAS 250 Biogeography**

★3 (fi 6) (either term, 3-0-3). The links between geomorphology and plant-animal environments will be covered through a biogeographical approach to ecological studies. Studies of the winter environment and the ecological role of snow. Plains and alpine field trips. Prerequisite: EAS 102 or BIOL 108.

**EAS 270 The Atmosphere**

★3 (fi 6) (either term, 3-0-0). An introduction to weather and climate. Atmospheric composition, temperature, humidity, wind, clouds; air masses, fronts, storms; weather forecasting. Weather map discussions. Prerequisite: Any 100-level Mathematics, Physics or Chemistry course, or EAS 102.

**EAS 320 Geochemistry I**

★3 (fi 6) (either term, 3-0-3). A survey of chemical processes occurring in geological settings with emphasis on the principles governing the migration and distribution of the elements and isotopes in the earth. Thermodynamics applied to sedimentary chemistry in the exogenic cycle. Prerequisite: CHEM 101 and either CHEM 102 or 161.

**EAS 321 Structural Geology**

★3 (fi 6) (either term, 3-0-3). Fundamentals of stress and strain in rocks; geometric, kinematic, dynamic analysis; nature, orientation, measurement, representation, and description of planar and linear penetrative and discrete structures, and of faults, joints and folds; stereographic and other projections and their applications; regional structure and the study of orogens. Prerequisite: EAS 233.

**EAS 323 Introduction to Hydrogeology**

★3 (fi 6) (first term, 3-0-3). The hydrologic cycle, water budgets and basic hydrologic processes; physical properties of porous media and groundwater flow principles; steady-state groundwater flow; transient groundwater flow, well hydraulics and groundwater resource evaluation; regional groundwater flow; and, basic hydrogeochemistry and transport processes. Prerequisites: One of EAS 101, 102, 201 or 210 and MATH 113 or 114, PHYS 124 or 144, and one of PHYS 126, 130, or 146. Not available to students with credit in EAS 223.

**EAS 324 Analysis of Aerial Photographs and Satellite Imagery**

★3 (fi 6) (either term, 1-0-3). The interpretation and mapping of topography, surficial geology and geomorphology from aerial photographs and satellite images. Some field work may be required. Prerequisite: EAS 221 or 225.

**EAS 325 Digital Mapping and Terrain Modelling**

★3 (fi 6) (either term, 3-0-3). Introduction to computerized mapping using gridded databases. The production and analysis of digital terrain models. Methods for the display of data derived from digital terrain models and for overlaying environmental information on them. Introduction to graphic output devices and to techniques of photographic and cartographic reproduction. Prerequisite: EAS 221.

**EAS 327 Environmental Instrumentation**

★3 (fi 6) (either term, 3-0-2). Laboratory work and lectures to develop skills in environmental measurement through comprehension of first principles. Instrumentation (basic electronics; matching signal sources and receivers; noise; frequency response). Sensor-environment coupling (heat and mass transfer). Sampling theory. Principles will be applied to selected environmental monitoring instruments. Field trip. Prerequisites: EAS 102 and MATH 113.

**EAS 330 Stratigraphy**

★3 (fi 6) (either term, 3-0-3). Principles of stratigraphy and stratigraphic paleontology, historical geology of North America from the Cambrian to the Cenozoic with emphasis on Western Canada. Prerequisite: EAS 222 or 235.

**EAS 331 Igneous Petrology**

★3 (fi 6) (either term, 3-0-3). A survey of igneous rocks from the ocean basins and the continents; their field settings, classification, petrography, mineralogy and chemistry; magmatic processes and petrogenesis; problem solving and laboratory work on major rock suites. Prerequisite: CHEM 101 and EAS 232.

**EAS 332 Metamorphic Petrology**

★3 (fi 6) (either term, 3-0-3). An introduction to the classification and genesis of metamorphic rocks in light of field, petrographic and geochemical data. Prerequisite: CHEM 101 and EAS 232.

**EAS 333 Advanced Geology Field School**

★3 (fi 6) (second term, 12 days). The study and mapping of deformed sedimentary, igneous, and metamorphic rocks and of macroscopic and mesoscopic structures in the field. 12 days of field exercises following Winter term examination period. Co-/prerequisites: EAS 234, 321, 331 and 332.

**EAS 351 Environmental Applications of Geographical Information Systems**

★3 (fi 6) (either term, 3-0-3). This course emphasizes the applications of Geographic Information Systems to the environmental sciences. Examples from resource management and the earth and biological sciences. Labs impart technical experience with commercial and in-house software. Prerequisites: EAS 220 and 221.

**EAS 352 Hydrology and Fluvial Landforms**

★3 (fi 6) (either term, 3-0-0). The generation of surface runoff and sediment yields in drainage basins. Flow in channels. Landforms and sedimentary sequences resulting from river erosion, sediment transport and deposition. Evolution of river valleys through time. Applied aspects of fluvial geomorphology. Fieldwork required. Prerequisite: EAS 225.

**EAS 354 Environmental Earth Science Field School**

★3 (fi 6) (either term, 12 days). Introduction to fieldwork in geomorphology, biogeography and microclimatology. Elementary field mapping, the use of

electronic field instrumentation for hydrological, water quality and micro-climatological monitoring, mapping and analysis of vegetation patterns, and techniques for the field description and laboratory analysis of soils and sediments. Introductory lectures and ten days of fieldwork. Prerequisites: EAS 225, 250 and 270 or consent of Instructor.

**EAS 370 Applied Atmospheric Physics**

★3 (fi 6) (either term, 3-0-0). An introduction to the physics of the atmosphere with applications: temperature, pressure, humidity, evaporation, condensation, dew, freezing, ice, frost, convection, clouds, rain, hail, rainbows, solar and terrestrial radiation. Development of thermodynamic concepts and tools used by atmospheric scientists in the analysis and forecasting of weather and climate: potential temperatures, psychrometry, thermodynamic diagrams, radiation charts. Prerequisites: EAS 270 and MATH 214.

**EAS 371 Atmospheric Fluid Dynamics**

★3 (fi 6) (either term, 3-0-0). An introduction to fluid dynamics on the rotating earth with reference to current weather; equations of motion and their simplification; vorticity; the atmospheric boundary layer; waves in the atmosphere; synoptic-scale weather; baroclinic instability; the general circulation. Prerequisites: EAS 270 and MATH 214.

**EAS 372 Weather Analysis and Forecasting**

★3 (fi 6) (either term, 3-0-0). An introduction to synoptic analysis. Meteorological codes. Analysis of surface charts. Air-masses and fronts. Upper air constant pressure charts. Structure and evolution of weather systems. Analysis of current and predicted weather data. Synoptic weather forecasting. Prerequisite: EAS 270.

**EAS 373 The Climate System**

★3 (fi 6) (either term, 3-0-0). An examination of the physical processes influencing global climate. Radiation and energy in the climate system, the hydrological cycle, general circulation of the atmosphere and ocean, climate feedback mechanisms, climate history and climate change, introduction to climate models. Prerequisite: EAS 270. Not available to students with credit in EAS 271.

**EAS 400 The Practice of the Geological Profession**

★1 (fi 2) (either term, 1-0-0). The technical and professional duties and responsibilities of the professional geologist, the ethics of the geological profession, technical and professional organizations. The role of the geologist in the social environment. Note: Restricted to fourth year Honors and Specialization students and fifth year Industrial Internship students in the Geology program of Earth and Atmospheric Sciences.

**EAS 401 Industrial Internship Practicum**

★3 (fi 6) (either term, 3-0-0). Required of all students who have recently completed an EAS Industrial Internship Placement. This course must be completed during the first academic year following their return to full-time studies in order to graduate in the Industrial Internship Program. Grade is determined based on the employer evaluation of the student's job performance and the performance on written assignments and oral presentations during the course. Prerequisites: WKEX 411 and 412.

**EAS 420 Geochemistry II**

★3 (fi 6) (either term, 3-0-3). Applications of geochemistry to rock- and ore-forming processes. Geochronology. Significance and use of minor elements and isotopes as tracers of major geological processes. Prerequisite: EAS 320.

**EAS 421 Advanced Structural Geology**

★3 (fi 6) (either term, 3-0-3). Brittle and ductile deformation; stress; mechanics of natural fractures; strain and kinematic models for the formation of ductile structures; strain rate and rheology; structural associations; and the anatomy of orogenic belts. Lab exercises introduce techniques of manual or computer-assisted stress and strain analysis, cross-section balancing, structural map interpretation, the recognition of shear-sense indicators in hand specimen and in thin section, and their applications in subsurface mineral and hydrocarbon exploration. Prerequisite: EAS 321.

**EAS 422 Basin Analysis**

★3 (fi 6) (either term, 3-0-3). Classification and evolution of sedimentary basins; tectonics and sedimentation; clastic and carbonate depositional systems in a sequence stratigraphic framework. Prerequisite: EAS 235 and 236.

**EAS 424 Subsurface Geological Methods**

★3 (fi 6) (first term, 3-0-3). Methods of acquiring geologic data from beneath the surface by remote means; drilling, sampling, coring, logging; significance of geophysical techniques; presentation of subsurface information. Prerequisite: EAS 222 or 235.

**EAS 425 Contaminant Hydrogeology**

★3 (fi 6) (either term, 3-0-3). An introduction to the principles of groundwater chemistry, the chemical evolution of natural groundwater flow systems, sources of contamination, and mass transport processes. Hydrogeologic aspects of waste disposal and groundwater remediation. Prerequisite: EAS 323.

**EAS 426 Honors Thesis**

★3 (fi 6) (variable, 3-0-0). Required for Honors students in their final year. Restricted to honors students in EAS. Prerequisite: Any 300-level EAS course.

**EAS 427 Directed Study I**

★3 (*fi 6*) (variable, 3-0-0). EAS 427 and 428 provide a means whereby Specialization and Honors students in their fourth year of the EAS program may undertake a research project supervised by a faculty member. Prerequisite: Any 300-level EAS course.

**EAS 428 Directed Study II**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EAS 427.

**EAS 430 Petroleum Geology**

★3 (*fi 6*) (either term, 3-0-3). Origin, maturation, and degradation of petroleum; conventional and unconventional source rocks; principles of migration; reservoir rocks; traps. Exploration and development of hydrocarbon plays using seismic, core and wire line logging, thin section petrography, correlation, mapping, and geochemistry. Prerequisites: EAS 236 and 320.

**EAS 431 Regional and Petroleum Hydrogeology**

★3 (*fi 6*) (either term, 3-0-3). Principles of hydrogeology, subsurface hydrodynamics and basinal fluid flow; evaluation and interpretation of subsurface hydrodynamic data of extended regions; hydraulics and hydrodynamics of petroleum entrapment; review of migration and accumulation theories; hydrogeologic indicators of petroleum accumulations; field examples. Co-/prerequisite: EAS 430 or consent of Instructor.

**EAS 432 Precambrian Geology**

★3 (*fi 6*) (either term, 3-0-0). Precambrian geological evolution of Earth focusing on development of the continental lithosphere. Geochemical evolution of the crust and mantle as well as the atmosphere and hydrosphere. Special reference to the evolution, stratigraphy, petrology and geochronology of the Canadian Shield. Prerequisite: EAS 320 and 331.

**EAS 433 Ore Deposits Geology**

★3 (*fi 6*) (first term, 3-0-3). Mineralogy and petrography of ore and gangue minerals under the reflected and transmitted light microscope and in hand specimen. Interpretation of ore textures and paragenetic sequences. Geological characteristics and distribution of ore deposits including deposits of base and precious metals, diamonds and industrial minerals. Prerequisite: EAS 331.

**EAS 434 Geochemistry of Ore Deposits**

★3 (*fi 6*) (second term, 3-0-0). Geochemical processes involved in ore formation. Introduction to aqueous thermodynamics; application of stable and radiogenic isotope, and fluid inclusion studies to interpretation of ore-forming processes. Application of geochemical and other methods to exploration for ore deposits. Prerequisite: EAS 433.

**EAS 435 Geotectonics**

★3 (*fi 6*) (either term, 3-0-0). Fundamentals of plate tectonic theory and the evolution of the Earth. Application of plate tectonics to the theory of sedimentary basins and orogenic belts. Tectonics of western North America. Prerequisite: EAS 321.

**EAS 436 Petrogenesis of Igneous and Metamorphic Rocks**

★3 (*fi 6*) (either term, 3-0-3). Origin and formation of igneous and metamorphic rocks in the light of field, mineralogical, chemical and experimental evidence. Prerequisite: EAS 331 and 332.

**EAS 437 Geology of Canada**

★3 (*fi 6*) (second term, 3-0-0). An overview of the bedrock geology of Canada; how it all fits together. Description and interpretation of the geologic divisions of the Canadian land mass, from the Canadian Shield, through the Appalachian, Cordilleran, and Innuitian orogens, to Phanerozoic basins and platforms. Using the entire database of Canadian geology, this course aims to provide the knowledge and tools to "read the rocks" anywhere in Canada by linking principal events and structures in the rock record to their significance in Canada's evolution over 4 billion years. Similarities and contrasts with the regional geology of other areas of Earth will be outlined. Prerequisites: EAS 321, 330, 331 and 332.

**EAS 451 Digital Remote Sensing**

★3 (*fi 6*) (either term, 3-0-3). This course introduces the interactions of electromagnetic radiation with terrestrial materials (rocks, soils, water, snow). These notions are fundamental for the interpretation of optical, thermal, and radar remote sensing imagery. Labs focus on image processing with emphasis on radiometric and geometric enhancements and image classification. The course covers existing and upcoming sensors and applications of the data to earth sciences including geologic and land use mapping and resource exploration. Prerequisites: EAS 220 and 221.

**EAS 453 Arctic Environments**

★3 (*fi 6*) (either term, 3-0-0). The course provides a regional overview of the physical environment of northern Canada and the adjoining circumpolar region. The content is multidisciplinary and is intended to accommodate students with a wide range of backgrounds. Topics include overview of prehistory and exploration, regional physiography, geology, evolution of the Arctic Ocean Basin, climate/climate change, permafrost, periglacial geomorphology, oceanography and sea ice-glaciers/glaciation, and the relevance of this information to increasing development of northern ecosystems. Prerequisite: EAS 225 or 250. Offered in alternate years with EAS 455.

**EAS 455 Alpine Environments**

★3 (*fi 6*) (either term, 3-0-3). A holistic approach to environments and environmental change in the world's high mountain areas, emphasizing interactions between climate, vegetation, surface processes and geology. Issues addressed include mountain building and its role in Cenozoic climate change; mountain climates and geocology; snow and its role in alpine hydrology, surface water acidification and avalanche activity; rock slope stability, mass movements and associated hazards; glaciers and their impact on alpine hydrology and geomorphology; problems of resource utilization in high mountains. A field trip may be required. Prerequisite: EAS 225 or 250. Offered in alternate years with EAS 453.

**EAS 457 Global Change**

★3 (*fi 6*) (either term, 3-0-0). Major processes of change in the contemporary environment, their history and their interrelationships (climate and sea level change, changes in atmospheric composition, deforestation, desertification, water resource depletion, soil erosion, atmospheric and aquatic pollution); global biogeochemical cycles and their role in environmental change. Prerequisite: One of EAS 208, 223, 225 or 250.

**EAS 470 Clouds and Storms**

★3 (*fi 6*) (either term, 3-0-0). Cloud properties; formation and growth of cloud droplets and ice crystals, rain and snow; weather radar; Doppler radar analysis; precipitation processes; severe convective storms, weather modification; numerical cloud models; Precipitation forecasting. Prerequisites: EAS 370 and 371.

**EAS 471 Atmospheric Modelling**

★3 (*fi 6*) (either term, 3-0-3). Dynamics and physics of general circulation models. Numerical Weather Prediction models, ocean models, limited area models. Finite difference methods; spectral methods, and numerical stability. Prerequisites: EAS 371, 373 and MATH 215.

**Graduate Courses****201.57.3 Faculty of Arts Courses****EAS 590 Topics in Human Geography**

★3 (*fi 6*) (either term, 3-0-0). Theory and practice of geographic research at the graduate level. Discussion of major themes and research methods in contemporary human geography. Techniques for the development and enhancement of professional skills.

**EAS 593 Advanced Human Dimensions of Global Change**

★3 (*fi 6*) (either term, 3-0-0). Investigation of issues related to the human use of resources and impact on the regional and global environment. Critical review of alternative frameworks for assessing, mitigating and adapting to global environmental change. Research project. Classes concurrent with EAS 493. Not available to students with credit in EAS 493.

**201.57.4 Faculty of Science Courses****Notes**

- (1) See also INT D 594 for a course which is offered by more than one department or faculty and which may be taken as an option or as a course in this discipline.
- (2) The following undergraduate course may be taken for credit by graduate students: PALEO 318, 319.
- (3) Enrolment in graduate courses is subject to consent by the instructor. Some graduate courses are offered in alternate years as indicated below.

**EAS 520 Reading and Seminar Course**

★3 (*fi 6*) (either term, 0-3s-0).

**EAS 522 Advanced Remote Sensing: Applications and Algorithms**

★3 (*fi 6*) (either term, 3-0-0). Review of the electro-optical remote sensing properties of snow, soils, minerals, and vegetation as well as measurement methods of reflectance and emissivity. Quantitative methods for vegetation indices, change detection, mineral mapping and abundance estimation, based on recent literature.

**EAS 523 Advanced Topics in GIS: Dynamics of Land Use/Cover Change**

★3 (*fi 6*) (either term, 3-0-0). Topics on the use of geographic information systems and remote sensing techniques to monitor land use/cover change (LUCC). Emphasis is on sustainable land management, biodiversity conservation, and landscape structure.

**EAS 524 Paleoecology and Taphonomy**

★3 (*fi 6*) (either term, 3-0-0). Ideas and techniques that allow us to use the occurrences and manner of preservation of fossils in sediments to examine ancient environments these organisms lived in, and those that affected their remains after death. Offered in alternate years.

**EAS 525 Advanced Paleontology**

★3 (*fi 6*) (either term, 3-0-0). Ideas and practical techniques important to undertaking research in paleontology and systematics. Offered in alternate years.



**EAS 530 Principles of Ichology**

★3 (fi 6) (either term, 3-0-0). Introduction to animal-sediment relationships in both modern and ancient environments; principles of classification and taxonomy, environmental significance of trace fossils in facies analysis.

**EAS 531 Advanced Clastic Sedimentology**

★3 (fi 6) (either term, 3-0-0). Flow regime concepts are used to explain hydrodynamic sedimentary structures. Facies models are applied to describe the 3D architecture of depositional systems. The dynamics of depositional environments are studied in relation to the external controls on sedimentation.

**EAS 532 Advanced Carbonate Sedimentology**

★3 (fi 6) (either term, 3-0-0). Course will cover aspects of carbonate mineralogy, formation of carbonates, role of biological activity, classification of carbonates, depositional environments of carbonates, diagenesis (including dolomitization) and geochemistry. The course may include a field trip in an area of modern carbonate deposition.

**EAS 533 Advanced Petroleum Geology**

★3 (fi 6) (either term, 1-2s-1). Selected topics of petroleum geology, such as origin of oil, gas, bitumen; thermal maturation and microbial alterations; migration and trapping; reservoir diagenesis; basin analysis. Offered on demand.

**EAS 535 Selected Topics in Petrology**

★3 (fi 6) (either term, 0-3s-0). Offered on demand.

**EAS 536 Mineralogy - Petrology - Geochemistry Seminar**

★3 (fi 6) (either term, 0-3s-0). Topics in geochemistry, petrology and mineralogy.

**EAS 537 Low Temperature Geochemistry**

★3 (fi 6) (first term, 3-0-0). Processes in diagenetic and hydrothermal settings with temperatures of up to about 200 degrees C. Thermodynamics and kinetics of low-temperature mineral-water systems: geochemical methods of investigation and interpretation, using isotopes, elemental compositions, etc.; major reaction products, such as silicate and carbonate minerals, gases, and liquid hydrocarbons. Offered on demand.

**EAS 538 High Temperature Geochemistry**

★3 (fi 6) (either term, 3-0-0). Geometrical, thermodynamical and kinetical treatment of solid-liquid-gas equilibria and their application to metamorphic and igneous processes. Properties of silicate melts, crystallization, element partitioning, solutions. Geothermometry and geobarometry. Isotopes as tracers in petrogenesis. Offered on demand.

**EAS 539 Isotope Geology: Radioactive Systems**

★3 (fi 6) (either term, 3-0-0). Theory and systematics of radioactive decay, geochronology and isotopic tracing U-Pb, Rb-Sr, Sm-Nd, Re-Os and other radioisotope systems. Applications of natural radioactive isotope variation to a variety of problems spanning low and high temperature geologic processes. Offered in alternate years.

**EAS 540 Isotope Geology: Stable Isotope**

★3 (fi 6) (either term, 3-0-0). Theory of light-element isotope fractionation; isotope variations in the meteoric cycle, igneous, metamorphic, sedimentary rocks and ore deposits. Isotope techniques in paleothermometry and paleoclimate studies. Isotope biogeochemistry, oil and gas. Offered in alternate years.

**EAS 541 Topics in Structural Geology and Tectonics**

★3 (fi 6) (either term, 3-0-0). Current topics in structural geology and tectonics, from mesoscopic strain and vorticity indicators to orogenic belts; terrane analysis and comparative tectonics, with emphasis on the contribution of North American Phanerozoic orogens to current theory; lectures by instructor, and student research and seminar presentations. Offered in alternate years.

**EAS 544 Quantitative Hydrogeology**

★3 (fi 6) (either term, 3-0-3). Detailed examination of the theory and application of computer simulation techniques. Finite difference and finite element techniques as applied to groundwater flow and transport. Familiarization with computer codes and problem solving.

**EAS 545 Regional Groundwater Flow**

★3 (fi 6) (either term, 1-3s-0). A comprehensive review of the diverse geologic and environmental effects and manifestations of regional groundwater flow including genesis of ore deposits, petroleum migration, soil salination, wet land hydrology, slope stability, contaminant transport, and so on. Topics of special interest to individual participants will be researched individually and discussed collectively in the form of seminars. Offered in alternate years.

**EAS 546 Basin Modelling**

★3 (fi 6) (either term, 3-0-0). Basin forming mechanisms and basin types. Evaluation of burial and thermal history of sedimentary basins. Quantifying hydrocarbon generation. Numerical modelling of hydrocarbon generation, migration and entrapment in sedimentary basins. Exploration applications of basin modelling. Offered in alternate years.

**EAS 547 Methods and Instrumentation in Geology**

★3 (fi 6) (either term, 3-0-0). Course will cover analytical techniques such as probe, SEM, XRD, TIMS/gas source mass spectrometry, superpress, XRF, ICP-MS, TEM, NMR, SHRIMP and microthermometric techniques.

**EAS 553 Ice Dynamics and Glacier Hydrology**

★3 (fi 6) (either term, 3-0-0). Introduction to the mechanics and hydrology of ice masses with an emphasis on how they can be modelled and investigated in the field. The management of ice masses as sources of water and energy.

**EAS 554 Circumpolar Quaternary Environments**

★3 (fi 6) (either term, 3-0-0). Nature of paleoenvironmental change in northern Canada prior to the instrumental record (~1950). Comparisons are also made with other Arctic regions as well as Antarctica. Topics include Tertiary cooling, glaciation, glaciostasy, paleolimnology, paleoceanography, the ice core record, and linkages between high latitude and low latitude environments based on atmospheric and oceanographic forcing. Students from a wide range of disciplines are encouraged to participate.

**EAS 556 Topics in Geomorphology and Sedimentology**

★3 (fi 6) (either term, 3-0-0). Selected, contemporary theories of landscape and sediment formation in glacial, glaciofluvial, alluvial, and periglacial environments.

**EAS 570 Advanced Climatology**

★3 (fi 6) (either term, 3-0-0). A study of recent developments in climatology. Climate models and their use in examining past and future climates. Interactions between the atmosphere and terrestrial systems. Prerequisite: EAS 472. Offered in alternate years.

**EAS 572 The Atmospheric Boundary Layer**

★3 (fi 6) (either term, 3-0-0). Dimensional analysis and similarity principles. Resolved (mean) and unresolved (fluctuating, turbulent) scales of motion, and the closure problem for the dynamical equations. Similarity theories for wind and turbulence over uniform terrain. Dynamics of disturbed windflows (hills, forests, clearings, etc.). Turbulent transport and dispersion models. Offered in alternate years.

**EAS 581 Advanced Regional and Petroleum Hydrogeology**

★3 (fi 6) (either term, 3-0-3). Principles of hydrogeology, subsurface hydrodynamics and basinal fluid flow; evaluation and interpretation of subsurface hydrodynamic data of extended regions; hydraulics and hydrodynamics of petroleum entrapment; review of migration and accumulation theories; hydrogeological indicators of petroleum accumulations; field examples. Research project. Classes concurrent with EAS 431. Not available to students with credit in EAS 431.

**EAS 582 Advanced Geochemistry of Ore Deposits**

★3 (fi 6) (either term, 3-0-3). Geochemical processes involved in ore formation. Introduction of aqueous thermodynamics; application of stable and radiogenic isotope, and fluid inclusion studies to interpretation of ore-forming processes. Application of geochemical and other methods to exploration for ore deposits. Research project. Classes concurrent with EAS 434. Not available to students with credit in EAS 434.

**EAS 583 Advanced Contaminant Hydrogeology**

★3 (fi 6) (either term, 3-0-3). An introduction to principles of groundwater chemistry, the chemical evolution of natural groundwater flow systems, sources of contamination, and mass transport processes. Hydrogeologic aspects of waste disposal and groundwater remediation. Research project. Classes concurrent with EAS 425. Not available to students with credit in EAS 425.

**EAS 584 Advanced Clouds and Storms**

★3 (fi 6) (either term, 3-0-0). Cloud properties; formation and growth of cloud droplets and ice crystals, rain and snow; weather radar; Doppler radar analysis; precipitation processes; severe convective storms; weather modification; numerical cloud models; precipitation forecasting. Research project. Classes concurrent with EAS 470. Not available to students with credit in EAS 470.

**201.58 East Asian Studies, EASIA**

Department of East Asian Studies  
Faculty of Arts

**Undergraduate Courses****EASIA 101 Understanding East Asia**

★3 (fi 6) (either term, 3-0-0). Important aspects of pre-modern and modern Asia from a broad interdisciplinary perspective.

**EASIA 230 Popular Culture and Contemporary Chinese Society**

★3 (fi 6) (either term, 3-0-0). Cultural texts and social changes in contemporary China. Note: Not open to students with credit in CHINA 230.

**EASIA 260 Popular Culture and Contemporary Japanese Society**

★3 (fi 6) (either term, 3-0-0). Cultural texts and social changes in contemporary Japan.

**EASIA 321 Gender in East Asian Cultures**

★3 (fi 6) (either term, 3-0-0). Gender as a cultural construct from antiquity to the present. Readings and lectures in English. Note: This course will not fulfill the language other than English requirement of the BA.

**01 EASIA 322 Colonial and Post-Colonial Literatures in East Asia**

★3 (fi 6) (either term, 3-0-0). Works from China, Japan, Korea and Tibet. Readings and lectures in English. Note: This course will not fulfill the language other than English requirement of the BA.

**01 EASIA 420 China and Tibet**

★3 (fi 6) (either term, 3-0-0). Historical, cultural, and religious interactions from prehistory to the present. Readings and lectures in English. Note: This course will not fulfill the language other than English requirement of the BA. Prerequisite: One of HIST 280, 281, ANTHR 278, RELIG 240, 343, 344 or consent of Department.

**EASIA 480 Honors Seminar**

★3 (fi 6) (either term, 3-0-0). Note: Open to fourth year Honors students only.

**Graduate Courses****EASIA 507 Topics in Major Contemporary Currents in Literary and Cultural Theory**

★3 (fi 6) (either term, 3-0-0). Prerequisite: Reading knowledge of one relevant language other than English. Note: This course is equivalent to C LIT 507 and MLCS 507.

**EASIA 597 China-Japan Comparative Perspectives**

★3 (fi 6) (either term, 0-3s-0). A seminar in Chinese/Japanese studies. May be repeated for credit when course content differs.

**EASIA 598 Topics in East Asian Research**

★3 (fi 6) (either term, 0-3s-0). An inquiry into the diversity of disciplines used in the study of East Asian literatures and cultures.

**EASIA 599 Directed Reading in East Asian Studies**

★3 (fi 6) (either term, 0-3s-0). May be repeated for credit when course content differs.

**201.59 Economics, ECON**

Department of Economics  
Faculty of Arts

**Note:** See also INT D 257, 302, 303, 346, and 369 for courses which are offered by more than one department or faculty and which may be taken as options or as a course in this discipline.

**Undergraduate Courses****01 ECON 101 Introduction to Microeconomics**

★3 (fi 6) (either term, 3-0-0). How markets and governments determine which products are produced and how income is distributed in the Canadian economy.

**01 ECON 102 Introduction to Macroeconomics**

★3 (fi 6) (either term, 3-0-0). Employment, inflation, international payments, monetary policy, and fiscal policy, all in the Canadian economy. Prerequisite: ECON 101 or consent of Department.

**ECON 204 Principles of Economics**

★3 (fi 6) (either term, 3-0-0). An introduction to economic principles as applied to business organization and finance; price determination; enterprise costs and output optimization; commercial and central banking; national income analysis. For students enrolled in the Faculty of Engineering only. Formerly ECON 304.

**01 ECON 210 Japanese Economic Development**

★3 (fi 6) (either term, 3-0-0). An analytical survey of economic factors leading to Japan's present position in world trade. Prerequisite: ECON 101 or equivalent.

**01 ECON 211 Chinese Economic Development**

★3 (fi 6) (either term, 3-0-0). A survey of the characteristics of and recent developments in the Chinese economy emphasizing the nature and consequences of China's economic reforms and Canada's economic relations with China. Prerequisite: ECON 101 or equivalent. Formerly ECON 311.

**01 ECON 213 An Introduction to the Economics of Developing Countries**

★3 (fi 6) (first term, 3-0-0). A survey of the major approaches to and problems of economic development in the less developed countries with particular emphasis on issues relating to savings and investment, income distribution, employment and population growth, and trade and aid. Prerequisite: ECON 101 or equivalent.

**01 ECON 218 Canadian Economic Development to 1945**

★3 (fi 6) (either term, 3-0-0). From a small colonial economy to become one of the world's richest and most advanced, emphasizing the fur trade, Confederation and the National Policy, western settlement, industrialization, and the Depression. Prerequisite: ECON 101 or equivalent.

**01 ECON 219 The Canadian Economy since 1945**

★3 (fi 6) (either term, 3-0-0). With emphasis on recurrent policy issues such as macroeconomic performance, trade liberalization, industrial policies, social policy,

intergovernmental fiscal arrangements, and regional development. Prerequisite: ECON 101 or equivalent.

**01 ECON 222 Technology, Institutions and Economic Growth**

★3 (fi 6) (either term, 3-0-0). Differences in technology and institutions are used to explain why some countries are richer than others; why economic growth rates differ across time and jurisdictions; and causes of convergence/divergence in cross-country growth rates. Prerequisite: ECON 101 or equivalent.

**01 ECON 281 Intermediate Microeconomic Theory I**

★3 (fi 6) (either term, 3-0-0). The theory of consumer behavior; theory of production and cost; price and output determination under competition, monopoly and other market structures. Prerequisite: ECON 101 or equivalent. Not open to students with credit in MANEC 301 or ECON 383.

**01 ECON 282 Intermediate Macroeconomic Theory I**

★3 (fi 6) (either term, 3-0-0). Models of price, interest rate, output, and employment determination; the impact of fiscal, monetary, and supply shocks; open economy macroeconomics with fixed and flexible exchange rates, and prices as well as international capital mobility. Prerequisite: ECON 101 and 102 or consent of Department. Note: Not open to students with credit in MANEC 333 or 402.

**ECON 299 Quantitative Methods in Economics**

★3 (fi 6) (either term, 3-0-1). Introduction to the use of statistical and mathematical methods in economics with computer applications. Prerequisites: ECON 101 and 102, STAT 141 or 151 or 255 or equivalent, and MATH 113. Note: Designed for students taking Economics as a major subject of concentration. Department permission must be obtained by other students wishing to take this course. ECON 299 or equivalent must be taken before ECON 399.

**01 ECON 323 International Economics**

★3 (fi 6) (either term, 3-0-0). A survey of the principles of international economics and the applications to economic policy. Topics include international trade in goods and financial assets, trade policy and exchange rate determination. Note: Not open to students with credit in or enrolled in ECON 421 or 422. Prerequisite: ECON 101 and 102 or equivalent.

**01 ECON 331 Labor Economics**

★3 (fi 6) (first term, 3-0-0). Theory and empirical evidence concerning the supply of and demand for labor services, wage differentials, and the impact of unions, with particular reference to Canadian contemporary issues. Some of the policy issues to be discussed are income maintenance, unemployment insurance, and minimum wage legislation. Prerequisite: ECON 101 or equivalent.

**01 ECON 341 Money and Banking**

★3 (fi 6) (either term, 3-0-0). Financial intermediation, commercial banking, central banking, securities markets, and regulation of the banking and financial sectors, the money supply process and monetary control. Prerequisite: ECON 101 and 102 or equivalent.

**01 ECON 350 The Economics of Public Expenditures**

★3 (fi 6) (either term, 3-0-0). Analysis of public sector expenditures in Canada. The rationale for government spending and the problems in the provision of public services. Prerequisite: ECON 101 or equivalent. Not open to students with credit in ECON 351.

**ECON 353 Taxation Policy and Structure**

★3 (fi 6) (either term, 3-0-0). Analysis of the Canadian tax structure and its role in attaining certain goals of society; requirements for an optimal tax structure. Prerequisite or corequisite: ECON 281 or consent of Department.

**01 ECON 355 Economics of Project Evaluation**

★3 (fi 6) (either term, 3-0-0). The use of cost-benefit analysis and other economic methods in evaluating public investment projects with examples from transportation, river basin management, electrical generation, oil and gas, and pollution control. Prerequisite: ECON 101 or 204 or equivalent.

**01 ECON 357 Health Economics**

★3 (fi 6) (either term, 3-0-0). Resource allocation and public policy in health care, including determinants of health status, market structures, incentives and the effects of imperfect information. Prerequisite: ECON 281 or equivalent, or consent of Department.

**01 ECON 361 Transportation Economics**

★3 (fi 6) (either term, 3-0-0). Travel demand and choice of means of transport; cost concepts including economies of network size and traffic density; efficient pricing of transport services and infrastructure; congestion and road pricing; advanced traveller information technologies; airline regulation, deregulation and competition. Prerequisite: ECON 281. Not open to students with credit in ECON 461.

**01 ECON 365 Resource Economics**

★3 (fi 6) (either term, 3-0-0). Issues in the production of exhaustible and renewable natural resources, including exploration, extraction, and taxation; scarcity and pricing; contemporary Canadian resource policy issues. Prerequisite: ECON 101 or equivalent.

**01 ECON 366 Energy Economics**

★3 (fi 6) (either term, 3-0-0). The economics of producing and consuming energy;

pricing, role in economic growth; energy sources and markets; the role of government; regulation and other energy policy issues. Prerequisite: ECON 101 or equivalent.

#### **ECON 373 Industrial Organization**

★3 (fi 6) (either term, 3-0-0). A survey of the behavior and performance of firms in different market structures and discussion of public policy toward the different structures. Note: Not open to students with credit in ECON 471. Prerequisite: ECON 101 or equivalent.

#### **ECON 378 Law and Economics: Common Law and Economic Incentives**

★3 (fi 6) (either term, 3-0-0). Economic implications of common law: property, contract, and tort; economic logic underlying different doctrines within the law, and illustrations of the law as an economic institution; externality, risk and deterrence, and other leading issues. Prerequisite: ECON 101 or equivalent.

#### **ECON 379 Law and Economics: Criminal Law and Economic Incentives**

★3 (fi 6) (either term, 3-0-0). Issues in criminal and family law. Economic analysis of crime deterrence and incentives for plea-bargaining. Rationale for child-support payment guidelines and economic incentives for private divorce agreements. Criminal provisions of the Competition Act and interface with intellectual property laws. Prerequisite: ECON 101 or equivalent.

#### **ECON 384 Intermediate Microeconomic Theory II**

★3 (fi 6) (either term, 3-0-0). Designed for majors and Honors students in Economics. Extensions and applications of microeconomic theory: intertemporal choice, risk, uncertainty and expected utility; oligopoly and game theory; externalities, public goods, adverse selection, moral hazard, and asymmetric information; general equilibrium. Prerequisites: ECON 281 and MATH 113 or equivalent.

#### **ECON 385 Intermediate Macroeconomic Theory II**

★3 (fi 6) (either term, 3-0-0). Designed for majors and Honors students in Economics. Theories of stabilization policy; expectations; the government budget constraint; inflation and unemployment; business cycles and growth; theories of aggregate consumption, investment, money demand, and money supply. Prerequisites: ECON 281 and 282.

#### **ECON 386 Applications of Mathematics to Economics I**

★3 (fi 6) (first term, 3-0-0). Elements of logic and set theory, linear algebra, differential calculus and their conjunction, as used in classical and modern economic analysis. Prerequisites: ECON 281/282; MATH 113/120 or equivalent.

#### **ECON 387 Applications of Mathematics to Economics II**

★3 (fi 6) (second term, 3-0-0). Difference and differential equations, linear inequalities, convexity, programming; assorted theorems of special use in modern economic analysis. Prerequisite: ECON 386.

#### **ECON 399 Introductory Econometrics**

★3 (fi 6) (either term, 3-0-1). An elementary treatment of the major topics in econometrics with emphasis on applied regression methods. Prerequisites: ECON 281/282 and STAT 255 or STAT 141/ ECON 299 or equivalent. Note: Not open to students with credit in AG EC 416 or ECON 408 or MGTSC 413 or 414 or 417 or 419 or STAT 341.

#### **ECON 400 Honors Essay: Fourth-Year Honors Economics**

★3 (fi 6) (second term, 3-0-0). Preparation of the honors essay, required for fourth-year honors students choosing the honors essay route. Prerequisite: consent of Department.

#### **ECON 401 History of Economic Thought I**

★3 (fi 6) (either term, 3-0-0). A survey of economic opinion and theories from Mercantilism to the Marginal Revolution. Emphasis on both theoretical and socioeconomic structures at various epochs of economic thinking. Prerequisite: ECON 281.

#### **ECON 402 History of Economic Thought II**

★3 (fi 6) (either term, 3-0-0). A survey of the economic opinions and theories from the rise of Neoclassical Economics to contemporary Macroeconomics. Emphasis will be on both theoretical and socioeconomic structures at various epochs of economic thinking. Prerequisite: ECON 281/282.

#### **ECON 407 Econometric Methods I**

★3 (fi 6) (first term, 3-0-0). Statistical inference in economics. Topics in statistical theory with emphasis on estimation and tests of hypotheses. The general linear regression model. Prerequisites: ECON 299 or STAT 255 or equivalent, and ECON 386/387 or consent of Department. Corequisite: ECON 481/482 or consent of Department.

#### **ECON 408 Econometric Methods II**

★3 (fi 6) (second term, 3-0-0). Econometric problems and techniques with emphasis on regression methods. Single equation techniques and introduction to simultaneous equation systems. Prerequisite: ECON 407 or equivalent.

#### **ECON 410 Pacific Rim Economic Development**

★3 (fi 6) (either term, 3-0-0). Analyzes the role of particular markets and

institutions in selected Pacific Rim economies. Special emphasis is given to either China or Japan; students should consult the Department of Economics to find which country is being emphasized in a given year. Prerequisites: ECON 281 or equivalent.

#### **ECON 412 European Economic Development**

★3 (fi 6) (either term, 3-0-0). The application of economic theory and research methodology to selected topics in European economic development. Prerequisite: ECON 281.

#### **ECON 414 Economics of Developing Countries**

★3 (fi 6) (either term, 3-0-0). An introduction to models of growth and development; the role of agriculture, industry, finance, and trade in structural transformation of developing countries; approaches to development planning. Prerequisite: ECON 281 or consent of Department.

#### **ECON 418 Topics in Canadian Economic Development**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ECON 281 or consent of Department.

#### **ECON 421 International Trade**

★3 (fi 6) (first term, 3-0-0). Nature and relevance of international trade; early trade doctrines; the theory of comparative advantage, classical and modern approaches and empirical evidence for them; new approaches to the pure theory of international trade; economic growth and international trade; market imperfections and trade; commercial policy; economic integration and the gains from trade. Prerequisites: ECON 281 and MATH 113 or consent of Department.

#### **ECON 422 International Payments**

★3 (fi 6) (second term, 3-0-0). Types of international transactions, macroeconomics in an open economy, exchange rates, balance of payments adjustments, and other issues in the international monetary system. Prerequisites: ECON 281, 282 and MATH 113 or consent of Department.

#### **ECON 431 Labor Economics**

★3 (fi 6) (either term, 3-0-0). Topics include demand for labor, supply of labor, wage differentials, trade union behavior, the minimum wage, education and income distribution, discrimination, mandatory retirement, and non-market work. Prerequisites: ECON 281 and MATH 113 or consent of Department.

#### **ECON 441 Monetary Theory and Policy**

★3 (fi 6) (either term, 3-0-0). Recent developments in monetary economics, including inflation tax and the optimum quantity of money; term structure of interest rates; money and economic activity; rules vs discretion in monetary policy; role of financial deregulation. Prerequisites: ECON 281, 282 and MATH 113.

#### **ECON 442 The Economics of Financial Markets**

★3 (fi 6) (either term, 3-0-0). The measurement of risk; portfolio analysis; hedging and speculation; market microstructure; asset pricing and market equilibrium. Prerequisites: ECON 281, STAT 141 or equivalent, and MATH 113 or equivalent.

#### **ECON 450 Topics in Public Expenditure and Fiscal Federalism**

★3 (fi 6) (either term, 3-0-0). Demand and supply of selected public services, public pensions, intergovernmental fiscal relations, and public choice. Prerequisites: ECON 281 and MATH 113 or consent of Department. Not open to students with credit in ECON 455.

#### **ECON 453 Economics of Taxation**

★3 (fi 6) (either term, 3-0-0). Analysis of the effects of taxation on the economic decisions of households and firms as reflected in the allocation of resources in the economy and the distribution of the tax burden. Measurement of the efficiency and incidence of the tax system. Prerequisite: ECON 281 and MATH 113 or consent of Department.

#### **ECON 462 Urban Economics**

★3 (fi 6) (either term, 3-0-0). Urban spatial structure, residential land use, firm location decisions, housing, transportation, and urban public finance. Prerequisites: ECON 281 and MATH 113 or consent of Department.

#### **ECON 467 Environmental and Natural Resource Policy**

★3 (fi 6) (either term, 3-0-0). Environmental and natural resource law; domestic and global policy issues related to renewable and non-renewable resources. Prerequisites: MATH 113, ECON 281, and ECON 365 or ECON 366 or INT D 365 or INT D 369. Not open to students with credit in ECON 466.

#### **ECON 471 Strategic Behavior of the Firm**

★3 (fi 6) (first term, 3-0-0). Oligopoly theory, cartel formation, product differentiation and advertising, entry into markets and strategic entry deterrence, research and development. Prerequisites: ECON 281 and MATH 113 or consent of Department.

#### **ECON 472 Market Power: Theory and Policy**

★3 (fi 6) (second term, 3-0-0). Market definition and measurement of market power. Canadian competition policy, including merger, predation, abuse of dominance, price discrimination, tie-in sales, exclusive dealing, resale price maintenance, collusion and bid rigging. Prerequisites: ECON 281 and MATH 113 or consent of Department.

**ECON 475 The Economics of Professional Sport**

★3 (fi 6) (either term, 3-0-0). An economic analysis of professional sport leagues, franchises and labor markets. Topics will include the economic structure of leagues, franchise value, profit maximization versus winning, pay and performance, free versus restricted agency, and discrimination. Prerequisite: ECON 281.

**ECON 481 Advanced Microeconomic Theory**

★3 (fi 6) (either term, 3-0-0). Consumer and producer theory, and selected topics. Prerequisites: ECON 384 and 386 or consent of Department.

**ECON 482 Advanced Macroeconomic Theory**

★3 (fi 6) (either term, 3-0-0). Business cycle theory, microfoundations of macro models, government budget constraints, expectations formation, the open economy, and representative agent optimizing models. Prerequisites: ECON 385 and 386.

**ECON 484 Game Theory and Economic Applications**

★3 (fi 6) (either term, 3-0-0). Analysis of structure and equilibrium of games. Applications to economic problems such as bargaining, auctions and collusion. Prerequisites: ECON 384 and 299.

**ECON 485 Macroeconomic Policy**

★3 (fi 6) (either term, 3-0-0). Identification and evaluation of the objectives and instruments of macroeconomic policy and the role of economists in the process of policy formulation. Policy evaluation is based on contemporary macroeconomic theory, and uses examples from the policy experiences of Canada and other nations. Prerequisites: MATH 113 and ECON 385 or consent of Department.

**ECON 498 Directed Readings I**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**ECON 499 Directed Readings II**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**Graduate Courses****ECON 501 History of Economic Thought**

★3 (fi 6) (either term, 3-0-0). A survey of economic thought from Adam Smith to modern times, with particular attention to the theories of economic development and growth.

**ECON 503 Microeconomic Theory I**

★3 (fi 6) (either term, 3-0-0). Producer and consumer behavior; partial equilibrium models of perfectly and imperfectly competitive markets; Walrasian general equilibrium; welfare economics. Prerequisites: ECON 386/387, 481/482.

**ECON 505 Microeconomic Theory II**

★3 (fi 6) (either term, 3-0-0). Choice under uncertainty; contingent claims and models of general equilibrium under uncertainty; markets with information asymmetries; non-cooperative game theory, games of incomplete information, repeated games, and bargaining theory. Prerequisite: ECON 503.

**ECON 506 Applied Econometrics**

★4 (fi 8) (two term, 2-0-1). The role of economic theory in the specification and estimation of models. Interpretation and critical evaluation of applied work by means of selected topics in econometric theory.

**ECON 507 Econometrics I**

★3 (fi 6) (first term, 3-0-0). Topics in statistical theory; distribution theory including transformation of random variables, the multivariate normal and associated quadratic forms, maximum likelihood estimation and associated asymptotic tests. Estimation and inference in the general linear model. Prerequisite: ECON 407/408 or equivalent.

**ECON 508 Econometrics II**

★3 (fi 6) (second term, 3-0-0). Single equation methods and problems. Estimation and inference in the simultaneous equations model. Prerequisite: ECON 507 or equivalent.

**ECON 509 Time Series Methods in Financial Econometrics**

★3 (fi 6) (either term, 3-0-0). Topics may include ARIMA modelling, spectral analysis, state-space models and the Kalman filter, nonstationary analysis, vector autoregressions, conditional heteroskedasticity and nonlinear models. Prerequisites: ECON 407 and 408 or equivalent.

**ECON 512 Economic Development I**

★3 (fi 6) (either term, 3-0-0). The techniques of development planning; qualitative and quantitative problems associated with the drafting and implementation of plans and programs; assessment of internal and external resources available for development and problems of measurement and mobilization of resources.

**ECON 513 Economic Development II**

★3 (fi 6) (either term, 3-0-0). Economic policy alternatives in a context of growth and development; problems of inflation, balance of payments, disequilibrium, concentration of growth effects; the role of international aid and other external measures.

**ECON 514 Topics in Canadian Economic Development**

★3 (fi 6) (either term, 3-0-0).

**ECON 516 European Economic Development**

★3 (fi 6) (either term, 3-0-0). The application of economic theory and research methodology to selected topics in European economic development.

**ECON 521 International Economics I**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ECON 481/482, ECON 421/422 recommended.

**ECON 522 International Economics II**

★3 (fi 6) (either term, 3-0-0).

**ECON 531 Labor Economics I**

★3 (fi 6) (either term, 3-0-0). Factors influencing the supply of, and demand for, labor services and the process of relative wage determination in the long and short run. Determination of money wage levels, aggregate labor-force participation, and the level and structure of aggregate employment and unemployment.

**ECON 540 Monetary Economics I**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ECON 481/482.

**ECON 541 Monetary Economics II**

★3 (fi 6) (either term, 3-0-0). Activities of financial intermediaries; evaluation of the effectiveness and the impact of monetary policy in both closed and open systems.

**ECON 550 Public Expenditure**

★3 (fi 6) (either term, 3-0-0). The theory of the role of the public sector in a market economy; market failures, income redistribution, public choice, and fiscal federalism.

**ECON 553 Economics of Taxation**

★3 (fi 6) (either term, 3-0-0). Effects of taxes on allocation, distribution and stabilization objectives. Evaluation of major taxes with particular attention paid to efficiency and incidence considerations.

**ECON 557 Health Economics**

★3 (fi 6) (either term, 3-0-0). Theoretical and applied issues in the determination of health models and a survey of contemporary health economic policy issues.

**ECON 561 Transportation Economics**

★3 (fi 6) (either term, 3-0-0). Transportation demand and modal choice; economies of scale, traffic density, and scope; congestion pricing of highways and transport infrastructure; new traveller information technologies; airline competition, regulation and deregulation.

**ECON 566 Environmental Economics**

★3 (fi 6) (either term, 3-0-0). Economic theory and policy relating to environmental problems; welfare and public policy issues in environmental decision making. Environmental law; transboundary pollution; economic instruments for pollution control.

**ECON 567 The Economics of Exhaustible Resources**

★3 (fi 6) (either term, 3-0-0). Theoretical, empirical, and policy studies in the following areas: supply and pricing under various market structures, the demand for exhaustible resources, exploration, resource extraction under price and technological uncertainty, taxation of exhaustible resources, exhaustible resources and the macro economy. Not open to students with credit in ECON 565.

**ECON 570 Strategic Behavior of the Firm**

★3 (fi 6) (either term, 3-0-0). Game theory; oligopoly theory; dynamic price competition; cartel formation; product differentiation; and advertising; entry and strategic entry deterrence; research and development.

**ECON 571 Market Power: Theory and Policy**

★3 (fi 6) (either term, 3-0-0). Market definition and measurement of market power. Canadian competition policy, including merger, predation, abuse of dominance, price discrimination, vertical market restrictions, collusion and bid rigging. May also include a review of the theory of regulation and regulatory mechanisms.

**ECON 581 Macroeconomic Theory I**

★3 (fi 6) (either term, 3-0-0). An examination of the core topics in macroeconomic theory. These will generally include methods of modelling output, employment, prices, business cycles, and macroeconomic policy. Prerequisite or corequisite: ECON 481/482 or equivalent.

**ECON 582 Macroeconomic Theory II**

★3 (fi 6) (either term, 3-0-0). This course extends the analysis of ECON 581 and introduces students to more advanced issues. Prerequisite: ECON 581 or equivalent.

**ECON 584 Game Theory and Economic Applications**

★3 (fi 6) (either term, 3-0-0). Analysis of structure and equilibrium of games. Applications to economic problems such as bargaining, auctions and collusion.

**ECON 585 Macroeconomic Policy**

★3 (fi 6) (either term, 3-0-0). Identification and evaluation of the objectives and instruments of macroeconomic policy and the role of economists in the process of policy formulation. Policy evaluation is based on contemporary macroeconomic theory, using examples from the policy experiences of Canada and other nations.

**ECON 598 Econometric Theory and Applications**

★3 (fi 6) (either term, 3-0-0). Advanced treatment of estimation, inference and econometric problems and techniques, including the use of matrix operations and statistical distribution theory, with an emphasis on applied econometric analysis. Prerequisites: ECON 481 and 482 or equivalent, and an advanced undergraduate level course in econometrics. Note: Not open to students with credit in ECON 506.

**ECON 608 Topics in Econometrics**

★3 (fi 6) (either term, 3-0-0).

**ECON 612 Topics in Economic Development**

★3 (fi 6) (either term, 3-0-0).

**ECON 614 Topics in European and North American Economic Development**

★3 (fi 6) (either term, 3-0-0).

**ECON 620 Topics in International Economics**

★3 (fi 6) (either term, 3-0-0).

**ECON 630 Topics in Labor Economics**

★3 (fi 6) (either term, 3-0-0).

**ECON 640 Topics in Monetary Economics**

★3 (fi 6) (either term, 3-0-0).

**ECON 652 Topics in Public Economics**

★3 (fi 6) (either term, 3-0-0). Topics available include local public finance, project evaluation, theory of public choice, public enterprise pricing policies, health care economics, and fiscal systems.

**ECON 664 Topics in Regional Economics**

★3 (fi 6) (either term, 3-0-0).

**ECON 672 Topics in Industrial Economics**

★3 (fi 6) (either term, 3-0-0).

**ECON 693 Topics in Comparative Economics**

★3 (fi 6) (either term, 3-0-0).

**ECON 699 Selected Research Topics in Economics**

★3 (fi 6) (either term, 3-0-0).

**ECON 900 Directed Research Project**

★3 (fi 6) (variable, unassigned).

**201.60 Économie, ECONE**

Faculté Saint-Jean

**Cours de 1er cycle****ECONE 101 Introduction à la micro-économie**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse du processus de détermination des produits et des quantités à produire en économie de marché. Étude de la répartition du revenu au Canada.

**ECONE 102 Introduction à la macro-économie**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude de l'emploi, de l'inflation, des politiques monétaires et fiscales au Canada. Préalable: ECONE 101 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 218 L'économie Canadienne Jusqu'en 1945**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude du développement économique canadien jusqu'en 1945 avec un accent sur la confédération, le développement de l'Ouest, l'industrialisation et la grande dépression. Préalable: ECONE 101 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 219 L'économie Canadienne Depuis 1945**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude du développement économique canadien depuis 1945 avec un accent particulier sur les problèmes de politiques économiques touchant la stabilisation économique, la libéralisation des échanges, la politique industrielle, la structure fiscale des différents niveaux de gouvernements et le développement régional. Préalable: ECONE 101 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 281 Microéconomie Intermédiaire I**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Présentation de la théorie néoclassique du consommateur, du producteur et de la détermination des prix et des quantités dans le cas de marchés concurrentiels, de monopole et de certaines autres structures de marché. Prérequis: ECONE 101 ou l'accord du Vice-doyen aux affaires académiques. Ce cours n'est pas ouvert aux étudiants ayant réussi les cours ECON 383, ou MANEC 301.

**ECONE 282 Macroéconomie Intermédiaire I**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction aux modèles analytiques de la macroéconomie. Présentation des modèles à prix fixes et flexibles de la

détermination du taux d'intérêt, de la production et de l'emploi. Étude des relations entre le marché de l'emploi et l'offre agrégée. Analyse des conséquences de la politique fiscale et monétaire ainsi que des chocs d'offre. Analyse en économie ouverte avec taux de change fixe et flexible. Étude des mouvements de capitaux. Préalables: ECONE 101 et 102 ou l'autorisation du Vice-doyen aux affaires académiques. Ce cours n'est pas ouvert aux étudiants ayant réussi les cours MANEC 301 et 402.

**ECONE 299 Méthodes Quantitatives En Économie**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Ce cours est destiné aux étudiants inscrits à la majeure en économie. Introduction à l'utilisation des outils mathématiques en économie avec applications. Préalables: ECONE 101 et ECONE 102, STAQ 141 ou 151 ou 255 ou l'équivalent et MATHQ 113. Ce cours doit être suivi avant ECONE 384, 385 et 399.

**ECONE 350 Économie Publique I**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction au fonctionnement de la politique économique de l'État. Étude des dépenses publiques au Canada. Analyse des raisons de l'intervention gouvernementale pour corriger les imperfections du marché et les problèmes reliés à l'offre de biens et services publics. Préalable: ECONE 281 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 353 Économie Publique II**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude du régime fiscal canadien et analyse de son rôle dans l'atteinte de certains objectifs sociaux. Analyse des conditions d'une "taxation optimale". Préalable: ECONE 281 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 365 Économie Des Ressources**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des problèmes reliés à l'exploitation de ressources naturelles renouvelables et non-renouvelables, incluant l'exploration, l'extraction et la taxation; rareté et détermination des prix des ressources; politiques canadiennes actuelles touchant ces sujets. Préalable: ECONE 101 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 369 Économie de l'environnement**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des liens entre la croissance économique et la détérioration de l'environnement; type et cause de la détérioration de l'environnement; théorie, politique et mesures liées à la détérioration de l'environnement; sujets en économie de l'environnement spécifiques à l'économie canadienne. Préalable: ECONE 101 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 384 Microéconomie intermédiaire II**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Ce cours est destiné aux étudiants inscrits à la majeure en économie. Développement élaboré de la théorie microéconomique et de certaines applications, avec un accent sur l'équilibre général. Certains des sujets suivants seront aussi abordés: choix intertemporels, choix risqués, l'incertain et l'hypothèse de l'utilité attendue; l'oligopole et la théorie des jeux, modèle walrasien et modèles avec entrée; économie du bien-être, biens publics, choix collectifs; problèmes d'information asymétrique (risque moral et antisélection). Préalables: ECONE 281 et 299 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 385 Macroéconomie intermédiaire II**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Ce cours est destiné aux étudiants inscrits à la majeure en économie. Introduction aux problèmes liés aux anticipations dans la détermination des prix, de la production et de l'emploi, et des conséquences pour la politique de stabilisation et la contrainte budgétaire du gouvernement. Analyse approfondie des problèmes liés à l'inflation et au chômage. Introduction aux théories modernes du cycle économique et de la croissance. Quelques sujets en théorie de la consommation agrégée, théorie de l'investissement et théorie monétaires. Préalables: ECONE 281 et 282 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 471 Théorie et pratique de l'organisation industrielle**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Éléments de théorie de la firme. Déterminants et mesures des structures de marché. Théories de l'oligopole, de la formation des cartels, de la différenciation des produits et de la publicité. Entrée et barrières stratégiques à l'entrée, innovation et recherche et développement. Préalable: ECONE 281 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 472 Réglementation et comportement de la firme**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse économique du comportement de la firme dans différentes structures de marché et développement des implications sur la concurrence: discrimination de prix, vente liée, fusion, prédation, intégration horizontale et verticale. Étude de la réglementation des entreprises de services publics et des lois favorisant la concurrence (lois antitrust). Préalable: ECONE 281 ou l'accord du Vice-doyen aux affaires académiques.

**ECONE 484 Théorie des jeux et applications**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Présentation des outils de base de la théorie des jeux avec le souci de montrer leurs applications dans différents champs et disciplines. Préalables: ECONE 299 et 384 ou l'accord du Vice-doyen aux affaires académiques.

## 201.61 Education, EDUC

Faculté Saint-Jean

### Cours de 1er cycle

#### EDUC 200 Introduction générale à l'éducation

★3 (fi 6) (l'un ou l'autre semestre, 1-0-4). Ce cours comprend deux parties. Une partie est centrée sur l'étude des thèmes tels que le monde dans lequel nous vivons, le rôle de l'école, les élèves et les objectifs éducatifs. L'autre partie du cours est une expérience pratique d'observation participante vécue dans le milieu scolaire. Corequis: EDUC 201. Ce cours n'est pas accessible aux étudiants ayant des crédits en ENPRQ 200 ou ENPRQ 251. Note: Ce cours occasionne des frais additionnels (voir §§22.2.1 et 22.2.3).

#### EDUC 201 Stratégies générales d'enseignement

★3 (fi 6) (l'un ou l'autre semestre, 3-0-2). Cours pratique de stratégies d'enseignement qui vise à outiller l'apprenant dans les domaines tels que la planification, le questionnement, la participation active, la vérification de la compréhension, les directives, les explications, et le travail de groupe. Ateliers de micro-enseignement. Corequis: EDUC 200

#### EDUC 300 La communication et la gestion en salle de classe

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude et acquisition des habiletés nécessaires à la bonne communication et l'application de cette étude aux différents modèles de gestion en salle de classe. Ce cours n'est pas accessible aux étudiants ayant des crédits en PS ED 465, EDUC 303 ou leurs équivalents.

## 201.62 Education - Adult, EDAE

Department of Educational Policy Studies  
Faculty of Education

**Note:** the course prefix for Education (Adult) has changed from EDADU to EDAE.

### Undergraduate Courses

#### EDAE 223 Adult Education Major

★3 (fi 6) (either term, 3-0-0).

#### EDAE 243 Adult Education Major

★3 (fi 6) (either term, 3-0-0).

#### EDAE 323 Adult Education Major

★3 (fi 6) (either term, 3-0-0).

#### EDAE 343 Adult Education Major

★3 (fi 6) (either term, 3-0-0).

#### EDAE 390 Introduction to Adult Curriculum and Instruction

★3 (fi 6) (either term, 3-0-0). This course focuses on the following topics as they relate to adult education: mastery learning, program goals, and objectives, long range curriculum planning, content analysis processes, and writing performance objectives. May contain alternative delivery sections; see §200.

#### EDAE 404 Developmental Course

★3 (fi 6) (either term, 3-0-0). Content varies as new courses are developed. Topics announced prior to registration. The student's transcript carries title descriptive of content. May be repeated. Prerequisite: consent of Department.

#### EDAE 423 Adult Education Major

★3 (fi 6) (either term, 3-0-0).

#### EDAE 443 Adult Education Major

★3 (fi 6) (either term, 3-0-0).

#### EDAE 445 Trends in Adult Education

★3 (fi 6) (either term, 3-0-0). Examines the social and historical trends of adult education. Laying a foundation for future adult education courses, focuses on events and issues that emerged in the formative years of the field. These will be developed further as they relate to adult education as a growing field of study in the present and in the future.

#### EDAE 460 Facilitating Adult Learning

★3 (fi 6) (either term, 3-0-0). Selected aspects of facilitating adult learning in different settings are explored. Examination of how learning theory influences instruction. Facilitation methods are considered in relation to intended learning outcomes as well as learner and educator characteristics (e.g., Philosophical orientation, values, personality type, teaching style, learning style). Methods that foster group cohesiveness and higher-order thinking skills are emphasized. Participants develop a personal theory of practice in relation to facilitating adult learning. Prerequisite: EDAE 345 or 445. May contain alternative delivery sections; see §200.

#### EDAE 461 Developing Programs for Adults

★3 (fi 6) (either term, 3-0-0). This course will examine theoretical and conceptual principles of developing programs for adult learners. Emphasis will be on the application of these principles both credit and non-credit programs offered in a variety of settings. Prerequisite: EDAE 390. May contain alternative delivery sections; see §200.

#### EDAE 485 Evaluating Adult Learning

★3 (fi 6) (either term, 3-0-0). This course focuses on two types of evaluating adult learning: achievement testing and classroom assessment. Theory and practice of evaluating learning in the cognitive, psychomotor and affective domains are framed around issues associated with learning in formal and non-formal environments. Pre-/corequisite: EDAE 390 or consent of Department. May contain alternative delivery sections; see §200.

#### EDAE 496 Individual Directed Study

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

#### EDAE 498 Individual Directed Laboratory Study

★3 (fi 6) (either term, 0-6L-0). Prerequisite: consent of Department.

## 201.63 Education - Business, EDBU

Department of Secondary Education  
Faculty of Education

**Note:** the course prefix for Education (Business) has changed from EDBUS to EDBU.

### Undergraduate Courses

#### EDBU 341 Teaching of Keyboarding/Typewriting

★3 (fi 6) (either term, 3-0-0). Prerequisite: Keyboarding and Word Processing.

#### EDBU 355 Business Computer Processing

★3 (fi 6) (either term, 0-4L-0). Commercial applications, and the teaching of computer processing in the secondary school.

#### EDBU 357 Teaching of Accounting in Automated Data Processing and Accounting

★3 (fi 6) (either term, 3-0-0). Prerequisite: ACCTG 300 or 311.

## 201.64 Education - Career Technology Studies, EDCT

Department of Secondary Education  
Faculty of Education

**Note:** the course prefix for Education (Career Technology) has changed from EDCTS to EDCT.

### Undergraduate Courses

#### EDCT 207 Drafting for Industrial Arts Teachers

★3 (fi 6) (either term, 2-1s-4). Development of necessary techniques for teaching and applying drafting in an industrial arts setting.

#### EDCT 211 Materials I

★3 (fi 6) (either term, 2-1s-4). Study of the processes and machines inherent in the metal and material-testing technologies.

#### EDCT 213 Materials II

★3 (fi 6) (either term, 2-1s-4). Study of the processes and machines inherent in the wood, plastic and earth technologies.

#### EDCT 220 Career Studies

★15 (fi 30) (variable, unassigned).

#### EDCT 221 Career Studies

★15 (fi 30) (variable, unassigned).

#### EDCT 222 Career Studies

★9 (fi 18) (variable, unassigned).

#### EDCT 233 Technology I

★3 (fi 6) (either term, 2-1s-4). Study of energy conversion systems; and energy transmission and control.

#### EDCT 235 Technology II

★3 (fi 6) (either term, 2-1s-4). Study of the processes, procedures and materials inherent in the graphics technologies.

#### EDCT 237 Technology III

★3 (fi 6) (either term, 2-1s-4). Study of the concepts and practices inherent in the electrical, electronic, and computer technologies.

**EDCT 400 Conference Seminar**

★1-3 (*variable*) (either term, variable). Content varies. Topics are announced prior to registration. The transcript will carry a title descriptive of content. Prerequisite: consent of Department.

**EDCT 412 Materials I-A**

★3 (*fi 6*) (either term, 2-1s-4). Further study of metals. Prerequisite: EDCT 211.

**EDCT 416 Materials II-A**

★3 (*fi 6*) (either term, 2-1s-4). Further study of woods, plastics and earths. Prerequisite: EDCT 213.

**EDCT 436 Technology II-A**

★3 (*fi 6*) (either term, 2-1s-4). Further study of graphics technologies. Prerequisite: EDCT 235.

**EDCT 438 Technology III-A**

★3 (*fi 6*) (either term, 2-1s-4). Further study of electronic and computer technologies. Prerequisite: EDCT 237.

## Graduate Courses

**EDCT 500 Conference Seminar**

★1-3 (*variable*) (either term, variable). Content varies. Topics are announced prior to registration. The transcript will carry a title descriptive of content. Prerequisite: consent of Department.

## 201.65 Education - Elementary, EDEL

Department of Elementary Education  
Faculty of Education

## Undergraduate Courses

**EDEL 300 Introduction to Teaching in the Elementary School**

★3 (*fi 6*) (either term, 3-0-0). This course is an overview of the roles of the teacher in elementary school. Emphasis is placed upon strategies for planning, instruction and assessment within a positive classroom environment. Corequisite: EDPS 310 and EDFX 325. Students may not receive credit for both EDEL 300 and 370.

**EDEL 302 Curriculum and Instruction in Elementary School Art**

★3 (*fi 6*) (either term, 3-0-0). Formerly ED EL 200. This course provides an introduction to visual arts education for elementary schools. It is comprised of lectures, discussions, audio visual presentations, and hands-on media experiences. No visual arts background necessary. Prerequisite: Introductory Professional Term.

**EDEL 305 Language Arts in the Elementary School**

★3 (*fi 6*) (either term, 3-0-0). This course will introduce the language arts curriculum and will give a broad overview of the knowledge and skills required to implement a language arts program in the elementary school, including oral language reading and writing. Prerequisite: Introductory Professional Term.

**EDEL 316 Communication Through Mathematics Education**

★3 (*fi 6*) (either term, 3-0-0). This course provides an introduction to the teaching and learning of mathematics in the elementary classroom. The focus will be on using curriculum, strategies, planning and resources to meet student needs. Prerequisite: Introductory Professional Term.

**EDEL 321 Introduction to Curriculum and Instruction in Elementary School Physical Education**

★3 (*fi 6*) (either term, 3-0-0). This course is designed to prepare students to teach Physical Education effectively in an elementary school setting. The goals to this end integrate understanding of child development, physical education, health, curriculum and instruction and making curricula links. Prerequisite: Introductory Professional Term.

**EDEL 325 Curriculum and Instruction in Elementary School Music**

★3 (*fi 6*) (either term, 3-0-0). An introduction to the theory and practice of teaching music in the elementary classroom. Special emphasis on hands-on experience with techniques, strategies, and materials appropriate for K-6. Prerequisite: Introductory Professional Term.

**EDEL 328 Music Literacy: The Child**

★3 (*fi 6*) (either term, 3-0-0). An introduction to theory and practice of teaching music literacy in the elementary classroom. Special emphasis on strategies employed in the Kodály approach. Prerequisites: Music 151 and 156; or consent of Department. Note: priority given to students in the Music Education Minor.

**EDEL 330 Curriculum and Instruction in Elementary School Science**

★3 (*fi 6*) (either term, 3-0-0). This course provides an introduction to teaching elementary children about science and 'design and make' technology. Such themes as children's learning, science/technology/society connections, the Alberta program, planning and instruction and assessing children's progress will be explored. Prerequisite: Introductory Professional Term. Students may not receive credit for both EDEL 330 and EDEL 372.

**EDEL 335 Curriculum and Instruction in Elementary School Social Studies**

★3 (*fi 6*) (either term, 3-0-0). An introduction to planning, resources, curriculum and strategies for meeting students needs through social studies. Prerequisite: Introductory Professional Term.

**EDEL 355 Program Environments in Early Childhood Education**

★3 (*fi 6*) (either term, 3-0-3). An introduction to Early Childhood Education with an emphasis on the learning environment and the roles of the teacher within that environment. Observations and interactions in early childhood classrooms constitute the lab component of this course. Restricted to students in the Early Childhood Education minor. Prerequisite: Education Core I.

**EDEL 395 Group Project I Elementary Education**

★1-12 (*variable*) (either term, variable). Prerequisite: consent of Department.

**EDEL 400 Design of Elementary Art Curriculum**

★3 (*fi 6*) (either term, 1-0-2). Application of current art education research, curriculum, and technology to program planning in art and art across the curriculum. Prerequisite: An introductory curriculum and instruction course in Art Education, or consent of Department.

**EDEL 404 Developing Literacy: Pre-School to Grade Three**

★3 (*fi 6*) (either term, 3-0-0). This senior education course focuses on the teaching and learning of literacy in Early Childhood settings (pre-school to grade three). The course explores instructional strategies, materials and classroom organization, based on contemporary theory and research. Prerequisite: EDEL 305 or equivalent introductory course in language arts education.

**EDEL 405 Connecting Theory and Practice in the Language Arts Classroom**

★3 (*fi 6*) (either term, 3-0-0). This course provides a theoretical basis for understanding how children acquire and process oral and written language. It also focuses on the implications of social context for language learning. Prerequisite: An introductory curriculum and instruction course in language learning; or consent of Department.

**EDEL 406 Diagnostic Teaching of Reading and Writing**

★3 (*fi 6*) (either term, 3-0-0). This course focuses on assessment techniques for reading and writing, provides information on administering these techniques to elementary school children and develops an understanding of how to interpret the information collected. Planning and implementing reading and writing instruction and selecting materials from a diagnostic perspective are also included in the course. Prerequisite: An introductory curriculum and instruction course in language learning; or consent of Department.

**EDEL 407 Reading in the Elementary School**

★3 (*fi 6*) (either term, 3-0-0). This course addresses the nature of the reading process. The development of children's reading abilities, organizing an environment for instruction in reading, teaching, reading strategies, the reading-writing connections, reading across curriculum, and the assessment of reading. Prerequisite: An introductory curriculum and instruction course in language learning; or consent of Department.

**EDEL 408 Writing in the Elementary School**

★3 (*fi 6*) (either term, 3-0-0). Topics include the development of children's writing abilities, the nature of the writing process, organizing an environment for instruction in writing, teaching strategies, the reading-writing connection, writing across the curriculum, and the assessment of writing. Prerequisite: An introductory curriculum and instruction course in language learning; or consent of Department.

**EDEL 409 Teaching Literature in Elementary Schools**

★3 (*fi 6*) (either term, 3-0-0). Topics include an exploration of the various genres of children's literature, authors and illustrators, strategies for planning and implementing a literature-based program across the elementary curriculum, response activities, and resources for teaching. Prerequisite: An introductory curriculum and instruction course in language learning; or consent of Department.

**EDEL 411 Literacy Development through Drama and Literature**

★3 (*fi 6*) (either term, 3-0-0). This course elucidates the role of drama as a teaching/learning medium in an elementary school program studies. Students sample and question current writing in the field and actively participate in various drama modes. Prerequisite: An introductory curriculum and instruction course in language learning; or consent of Department.

**EDEL 415 Exploring Technology in the Elementary Mathematics Classroom**

★3 (*fi 6*) (either term, 3-0-0). A major focus in this course is the use of calculators and computers in the elementary mathematics classroom. Students have the opportunity to view and assess current software. Prerequisite: An introductory curriculum and instruction course in mathematics education; or consent of Department.

**EDEL 416 Assessing Children's Understanding of Mathematics**

★3 (*fi 6*) (either term, 3-0-0). This course will focus on how children learn mathematics along with related assessment practices such as performance based assessment, writing, portfolios, observation and questioning. Prerequisite: An introductory curriculum and instruction course in mathematics education; or consent of Department.

**EDEL 420 Curriculum and Instruction in Elementary School Physical Education**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: An introductory curriculum and instruction course in elementary school physical education; or consent of Department.

**EDEL 425 The Child's Voice: Techniques for the Children's Choir**

★3 (*fi 6*) (either term, 3-0-0). This course focuses on the development of healthy and artistic singing in the children's choir. Students will analyze and conduct choral literature and observe choral rehearsals. Pre- or corequisite: MUSIC 230; or consent of Department. Note: Priority given to students in the Music Education Minor.

**EDEL 427 Music Creativity: Teaching and Learning**

★3 (*fi 6*) (either term, 3-0-0). An introduction to the philosophy and pedagogical principles of Carl Orff's Schulwerk. The course focuses on Orff orchestration skills and the application of the Orff Approach in curricular planning. Prerequisites: MUSIC 151 and 156. Pre-/corequisite: MUSIC 207. Note: Priority given to students in the Music Education Minor.

**EDEL 428 Music in the Elementary School**

★3 (*fi 6*) (either term, 3-0-2). This course focuses on curricular planning and selection of resources for the elementary music program. Methodologies are applied in field-based experiences with elementary school children. Lab hours require scheduled visits to elementary classrooms. Prerequisite: MUSIC 101; EDEL 328 and 427; or consent of Department. Note: Priority given to students in the Music Education Minor.

**EDEL 432 Pedagogical Content Knowledge for Elementary Science I**

★3 (*fi 6*) (either term, 3-0-0). An exploration of energy and how humans change energy to meet a need. Emphasis is on children's conceptions and designing appropriate teaching strategies. Specific topics include electricity and magnetism; hearing and sound; wheels and levers; mechanisms using electricity; and building devices and vehicles that move. Prerequisite: EDEL 330.

**EDEL 433 Pedagogical Content Knowledge for Elementary Science II**

★3 (*fi 6*) (either term, 3-0-0). This course consists of children's conceptions of the earth and sky and ways teachers can design teaching strategies to assist children in restructuring these conceptions. Specific topics include air and aerodynamics; sky science; weather watch; and rocks and minerals. Prerequisite: EDEL 330.

**EDEL 435 Instruction in Elementary School Social Studies**

★3 (*fi 6*) (either term, 3-0-0). An investigation of the underlying principles and practical applications of curriculum and instruction in social studies. Prerequisite: An introductory curriculum and instruction course in elementary Social Studies; or EDEL 335; or consent of Department.

**EDEL 445 Teaching Second Languages in the Elementary School**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: A working knowledge of the language to be taught or consent of Department. Note: Priority given to students in the Second Languages Minor.

**EDEL 451 Methods and Programs in the Teaching of English as a Second Language**

★3 (*fi 6*) (either term, 3-0-0). This course is designed for those interested in ESL teaching at the K-6 levels. Course focuses include orientation and assessment of ESL students, program planning, ESL teaching methods and techniques, integrating language and content, and ESL materials and resources. This course will include a field placement in an off-campus ESL classroom one morning per week. Prerequisite: EDPY 416; or consent of Department. Note: Priority given to students in Teaching English as a Second Language Minor. [Coordinated by Department of Educational Policy Studies]

**EDEL 455 Play as a Teaching Strategy**

★3 (*fi 6*) (either term, 3-0-0). This course examines how choice and self direction can enhance children's learning and thinking in the elementary school. Students will be involved in planning, implementing, and evaluating integrated curriculum projects in the elementary classroom.

**EDEL 456 Integrating Theory and Practice in Early Childhood Education**

★3 (*fi 6*) (either term, 3-0-3). This course examines how choice and self direction can enhance children's learning and thinking in the elementary school. Students will be involved in planning, implementing, and evaluating integrated curriculum projects in the elementary classroom.

**EDEL 460 The Teacher's Role in Curriculum Development**

★3 (*fi 6*) (either term, 3-0-0).

**EDEL 461 Individualizing Curriculum in the Elementary School**

★3 (*fi 6*) (either term, 0-3L-0).

**EDEL 490 Supervised Independent Study in Elementary Education II**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

**EDEL 495 Seminar in Group Projects in Elementary Education II**

★1-12 (*variable*) (either term, variable). Prerequisite: consent of Department.

**EDEL 496 Group Projects in Elementary Education II**

★3 (*fi 6*) (either term, 0-3s-0). Prerequisite: consent of Department.

**Graduate Courses****EDEL 505 Theory and Practice in Language Arts**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: Equivalent to ★3 in language arts education, or consent of Department.

**EDEL 508 Diagnosis and Remediation of Reading and Writing Problems I**

★3 (*fi 6*) (either term, 3-0-3). Prerequisite or corequisite: EDEL 505 or equivalent.

**EDEL 509 Diagnosis and Remediation of Reading and Writing Problems II**

★3 (*fi 6*) (either term, 3-0-3). Prerequisite EDEL 508.

**EDEL 510 Curriculum and Instruction in Children's Literature for Elementary Schools**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: Equivalent to ★3 in language arts education, or consent of Department.

**EDEL 511 Leadership in Language Arts**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: Equivalent to ★3 in language arts education, or consent of Department.

**EDEL 514 Early Literacy Development**

★3 (*fi 6*) (either term, 3-0-0). This course explores contemporary issues and concerns pertaining to the literacy development of young children. Aspects of theory, research, policy and practice are examined. Students will acquire a depth and breadth of understanding of how young children (up to eight years) become successful readers and writers.

**EDEL 515 Developing Writing Abilities**

★3 (*fi 6*) (either term, 3-0-0). This course explores current issues in writing theory and pedagogy. The focus is on the development of writing abilities of elementary and middle years students, in a variety of forms and media, in school and home/community contexts. Prerequisite: EDEL 505 or consent of Department.

**EDEL 517 Research in Mathematics Education I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDEL 415 or consent of Department.

**EDEL 518 Literacy in Adult Education**

★3 (*fi 6*) (either term, 3-0-0). Not available to students with credit in EDAE 530 or EDADU 530.

**EDEL 519 Assessment of the Language Arts**

★3 (*fi 6*) (either term, 3-0-0). Aspects of theory, research, policy, and practice within the assessment of student performance in the language arts will be examined. The course explores contemporary issues and concerns in the conduct and interpretation of classroom-based language arts with a view to facilitating informed professional and instructional decisions. Prerequisite: EDEL 505 or consent of Department.

**EDEL 530 Research in Elementary School Science**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDEL 430 or 431 or consent of Department.

**EDEL 555 Early Childhood Education: Home/School/Community Relations**

★3 (*fi 6*) (either term, 3-0-0). This course is designed to investigate the teacher's role in improving communication among the school, home, and community.

**EDEL 556 Program Development in Early Childhood Education**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDEL 457 or consent of Department.

**EDEL 557 Research in Program Development in Early Childhood Education**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDEL 556 or consent of Department.

**EDEL 558 Curriculum and Instruction in Early Childhood Education**

★6 (*fi 12*) (two term, 3-0-3; 3-0-0). A basic course on programming in early childhood classrooms for teachers requiring a background in this field of study.

**EDEL 560 Foundations of Curriculum Development**

★3 (*fi 6*) (either term, 3-0-0). A study of educators' views of knowledge, society, and the learner and the effect of those views on curriculum development.

**EDEL 561 Processes of Curriculum Development**

★3 (*fi 6*) (either term, 3-0-0). A study of the ways in which curricula are produced, implemented, and evaluated.

**EDEL 565 Research and Support Services and Skills**

★3 (*fi 6*) (either term, 0-3s-0). Reports and discussion by staff and graduate students to provide candidates for advanced degrees with experience in the selection and evaluation of research problems and procedures.

**EDEL 567 Introduction to Educational Research**

★3 (*fi 6*) (either term, 0-3s-0). Prerequisite: consent of Department.



**EDEL 568 Introduction to Qualitative Research Methods in Education**

★3 (fi 6) (either term, 3-0-0).

**EDEL 570 Instructional Practices in the Elementary Classroom**

★3 (fi 6) (either term, 3-0-0).

**EDEL 571 Models of Teaching**

★3 (fi 6) (either term, 3-0-0).

**EDEL 590 Directed Individual Study in Elementary Education**

★3 (fi 6) (variable, variable). Prerequisite: consent of Department.

**EDEL 591 Directed Individual Study in Elementary Education**

★6 (fi 12) (two term, variable). Prerequisite: consent of Department.

**EDEL 595 Special Seminar in Elementary Education: Selected Topics**

★3 (fi 6) (either term, 0-3s-0).

**EDEL 596 Special Seminar in Elementary Education**

★6 (fi 12) (either term, 0-6s-0).

**EDEL 597 Special Seminar in Elementary Education**

★1-12 (variable) (variable, variable).

**EDEL 605 Theories and Models of Language**

★3 (fi 6) (either term, 3-0-0). Prerequisite: EDEL 505 or consent of Department.

**EDEL 690 Individual Project**

★3 (fi 6) (variable, variable). Comprehensive problems in Curriculum and Instruction-Elementary. Prerequisite: consent of Department.

**EDEL 691 Individual Project**

★6 (fi 12) (variable, variable). Comprehensive problems in Curriculum and Instruction-Elementary. Prerequisite: consent of Department.

**EDEL 697 Symposium in Elementary Education**

★6 (fi 12) (two term, 0-3s-0). Research reports by staff and students. Compulsory for all doctoral students.

**EDEL 900 Directed Research Project**

★3 (fi 6) (variable, unassigned).

## 201.66 Education - Elementary and Secondary, EDES

Departments of Elementary and Secondary Education  
Faculty of Education

### Undergraduate Courses

**EDES 145 Mixed Chorus**

★0 (fi 2) (two term, 0-0-4). A music ensemble designed to provide education students with practical experience in the organization, administration and literature of the mixed chorus. Note: This is a credit/no credit course.

**EDES 251 Education Handbell Ringers I**

★3 (fi 6) (two term, 0-2L-0). This course examines repertoire, performance practice, rehearsal techniques and program administration of the handbell choir through a process of practical application. Prerequisite: successful completion of an audition of music reading skills.

**EDES 301 Introduction to Teaching in the Middle Years**

★3 (fi 6) (either term, 3-0-0). This course is an overview of the roles of the teacher in middle years and provides an overview of the middle level curriculum. This course will provide an analysis of the unique nature of middle years education and middle years student. Emphasis is placed upon strategies for planning instruction and assessment within a positive classroom environment. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 340 Active and Interactive Curriculum and Instruction in the Middle Years**

★3 (fi 6) (either term, 3-0-0). Based on the distinct developmental and societal needs of adolescents, this course will examine the social and curricular frameworks for learning and teaching. It will include theoretical and practical implications of the active and interactive nature of adolescent learning, incorporating a wide range of process and strategies. Prerequisite: Introductory Professional Term. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 346 Resource-Based Teaching**

★3 (fi 6) (either term, 3-0-0). An introduction to planning active learning experiences using school library materials and other resources, with a focus on how teachers and teacher-librarians cooperatively implement the curriculum.

**EDES 348 Reading in the Junior and Senior High School**

★3 (fi 6) (either term, 3-0-0).

**EDES 351 Education Handbell Ringers II**

★3 (fi 6) (two term, 0-2L-0). This course examines repertoire, performance practice, rehearsal techniques and program administration of the handbell choir through a process of practical application. Prerequisite: EDES 251

**EDES 361 Introduction to Curriculum and Instruction in Middle Years Art**

★3 (fi 6) (either term, 3-0-0). This course provides an introduction to visual arts education for middle years. It is comprised of lectures, discussions, audio-visual presentations, and hands-on media experiences. No visual arts background necessary. Prerequisite: Introductory Professional Term. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 362 Language Arts in the Middle Years**

★3 (fi 6) (either term, 3-0-0). This course will introduce the language arts curriculum and will give a broad overview of the knowledge and skills required to implement a language arts program in middle years classrooms. Prerequisite: Introductory Professional Term. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 363 Communication Through Mathematics in Middle Years Education**

★3 (fi 6) (either term, 3-0-0). This course provides an introduction to the teaching and learning of mathematics in the middle years. The focus will be on using curriculum, strategies, planning and resources to meet student needs. Prerequisite: Introductory Professional Term. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 364 Curriculum and Instruction in Middle Years Physical Education**

★3 (fi 6) (either term, 3-0-0). This course is designed to prepare students to teach Physical Education effectively in the middle years. The goals to this end integrate understanding of child development, physical education, health, curriculum and instruction and making curricula links. Prerequisite: Introductory Professional Term. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 365 Curriculum and Instruction in Middle Years Science Education**

★3 (fi 6) (either term, 3-0-0). Provides an introduction to teaching middle years children about science and 'design and make' technology. Such themes as children's learning, science/technology/society connections, the Alberta program, planning and instruction and assessing children's progress will be explored. Prerequisite: Introductory Professional Term. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 366 Curriculum and Instruction in Middle Years Social Studies**

★3 (fi 6) (either term, 3-0-0). An introduction to planning, resources, curriculum and strategies for meeting middle years students' needs through social studies. Prerequisite: Introductory Professional Term. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 401 Conference Seminar**

★3 (fi 6) (either term, 0-3s-0).

**EDES 402 Conference Seminar**

★6 (fi 12) (either term, 0-6s-0).

**EDES 403 Conference Seminar**

★1-12 (variable) (variable, variable).

**EDES 404 Special Topics in Art Process**

★3 (fi 6) (either term, 1-0-4). This course combines a specific studio focus and an exploration of performance art traditions with the goal of guiding students toward an understanding of the role that the audience plays in art. This course is open to all Art Education majors and minors. Other Education and Fine Art majors may also register by consent of Department. Prerequisite: ★6 ART and ★3 ART H, or comparable experience before taking this course.

**EDES 440 Constructing Integrated Curriculum in the Middle Years**

★3 (fi 6) (either term, 3-0-0). Focuses on constructing integrated curriculum for middle years classrooms. Includes the examination of resources and existing middle years curriculum with a view to implementation and assessment. Prerequisite: Introductory Professional Term. (Restricted to students in the Middle Years Program offered at Red Deer.)

**EDES 451 Education Handbell Ringers III**

★3 (fi 6) (two term, 0-2L-0). This course examines repertoire, performance practice, rehearsal techniques and program administration of the handbell choir through a process of practical application. Prerequisite: EDES 351.

### Graduate Courses

**EDES 501 Conference Seminar**

★3 (fi 6) (either term, 0-3s-0).

**EDES 502 Conference Seminar**

★6 (fi 12) (either term, 0-6s-0).

**EDES 503 Conference Seminar**

★1-12 (variable) (variable, variable).

**EDES 504 Special Topics in Art Process**

★3 (fi 6) (either term, 1-0-4). This course combines a specific studio focus and an exploration of performance art traditions with the goal of guiding students

toward an understanding of the role that the audience plays in art as a form of communication and a way of learning. Prerequisite: ★6 in ART and ★3 in ART H, or consent of Department.

#### **EDES 506 Searching Issues of Pedagogy in Practice: Race, Gender and Culture**

★3 (*fi 6*) (either term, 0-3s-0). This course will draw upon a wide range of conceptual frameworks to consider issues of race, gender and culture within a variety of locations. Based on the work of feminist, postcolonial and critical theorists, and the analyses of various contemporary curriculum theorists, we will explore research issues relevant to questions of race, gender and culture and consider how such research and theory can contribute to the practice of a pluralistic and inclusive pedagogy. In particular, we will consider dilemmas of feminist theory and pedagogy and intersections of gender with race, class and culture, questions of identity, subjectivity and representation, and practical strategies for developing a pluralistic pedagogy in a number of sites of practice.

#### **□ EDES 509 Teaching Science in Elementary and Secondary Schools**

★3 (*fi 6*) (either term, 3-0-0). This course allows students to consider at the graduate level current trends in learning theory, teaching strategies, program development and assessment which affect teaching science in schools.

#### **EDES 541 School Library Collection Development**

★3 (*fi 6*) (either term, 3-0-0).

#### **EDES 542 Resource-Based Instruction**

★3 (*fi 6*) (either term, 3-0-0). Planning, implementing and evaluating resource-based instructional programs including the instructional component of the school library program. Includes media and information literacy, the process approach to student research, collaborative planning, and school-wide instructional plans.

#### **EDES 545 Information Technologies for Learning**

★3 (*fi 6*) (either term, 3-0-0). Focus on the integration of information technologies, including the Internet, into the K-12 curriculum to enhance student learning outcomes and to develop information literacy and critical thinking skills. Consideration of the management of information technologies in schools and the provision of staff development programs in technology-related areas.

#### **EDES 546 School Library Information Materials**

★3 (*fi 6*) (either term, 3-0-0).

#### **EDES 547 Organization of School Library Materials**

★3 (*fi 6*) (either term, 3-0-0).

#### **EDES 548 Directed Study in School Library Research**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

#### **EDES 573 Social Studies and Citizenship Education in Global Times**

★3 (*fi 6*) (either term, 3-0-0). This course will inquire into the meaning of citizenship in an era of globalization of communications, cultures and the economy. Citizenship education has traditionally been predicated on the primacy of the nation state. This course explores the implications for social studies curriculum and teaching in a post-national environment.

#### **EDES 601 Conference Seminar**

★3 (*fi 6*) (either term, 0-3s-0).

#### **EDES 602 Conference Seminar**

★6 (*fi 12*) (either term, 0-6s-0).

#### **EDES 603 Conference Seminar**

★1-12 (*variable*) (variable, variable).

#### **EDES 690 Doctoral Seminar in Teacher Education**

★3 (*fi 6*) (either term, 0-3s-0).

## 201.67 Education - Field Experience, EDFX

Division of Field Experiences  
Faculty of Education

#### **Notes**

- (1) Field Experience courses other than EDFX 200, 475 and 476 are normally not offered in Spring/Summer.
- (2) The Fee Index for these courses is one unit higher due to the practicum placement fees. See §22.2.1 for details.
- (3) The course prefix for Education (Field Experience) courses has changed from EDFXP to EDFX.

### Undergraduate Courses

#### **EDFX 200 Introduction to the Profession of Teaching**

★3 (*fi 6*) (either term, 3-0-4). This course explores the complex roles of teachers as professionals in contemporary schools. Through a combination of field-based and classroom experiences students will become familiar with the scope and expectations of the role of the teacher and the framework within which teachers work. Students may not receive credit for both EDFX 200 and EDFXP 151. Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 325 Elementary Route Field Experience for the Introductory Professional Term**

★3 (*fi 6*) (either term, 4 weeks full-time in schools). Prerequisites: EDFX 200 and EDPY 200. Note: These prerequisites do not apply to After Degree students. Corequisites: EDPS 310 and EDEL 300. Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 350 Secondary Route Field Experience for the Introductory Professional Term**

★3 (*fi 6*) (either term, 4 weeks full-time in schools). Prerequisites: EDFX 200 and EDPY 200. Note: These prerequisites do not apply to After Degree students. Corequisites: EDPS 310 and Education Minor. Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 420 Student Teaching in the Elementary School**

★12 (*fi 24*) (either term, 12 weeks). Prerequisite: Completion of ★18 of EDEL courses. Note: last offered 1997/98. Restricted to students in Year 4 of old program. Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 425 Elementary Route: Generalist Field Experience for the Advanced Professional Term**

★9 (*fi 18*) (either term, 9 weeks full-time in schools). Prerequisites: Introductory Professional Term and ★15 of EDEL courses. Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 426 Elementary Route: Special Education Field Experience for the Advanced Professional Term**

★9 (*fi 18*) (either term, 9 weeks full-time in schools). Prerequisites: Introductory Professional Term ★15 of EDEL courses, and completion of all courses in the Special Education Minor. Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 430 Student Teaching in the Elementary School (Special Education)**

★6 (*fi 12*) (either term, 6 weeks). Special Education focus area only. Prerequisite: Completion of ★18 of EDEL courses. Corequisite: EDPSY 461. Note: Last offered in 1997/98. Restricted to students in Year 4 of the old program. Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 440 Student Teaching in Special Education Programs in the Elementary School**

★6 (*fi 12*) (either term, 6 weeks). Special Education focus area only. Prerequisites: EDFX 430, EDPY 461, and completion of ★18 of EDEL courses. Note: last offered in 1997/98. Restricted to students in Year 4 or the old program.

#### **EDFX 450 Secondary Route Field Experience for the Advanced Professional Term**

★6 (*fi 12*) (either term, 9 weeks full-time in schools). Prerequisites: Introductory Professional Term and ★24 in the Major. Corequisite: EDFX 451. Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 451 Integrating Theory and Classroom Practice in the Advanced Professional Term**

★3 (*fi 6*) (either term, 3-0-1). Prerequisites: Introductory Professional Term and ★24 in the Major subject area. Corequisites: EDFX 450 and EDSE (Major) courses. (Offered by the Department of Secondary Education.)

#### **EDFX 475 Field Experience at the Postsecondary Level I**

★3 (*fi 6*) (either term, 3 weeks full-time in schools). May contain alternative delivery sections; see §200.

#### **EDFX 476 Field Experience at the Postsecondary Level II**

★3 (*fi 6*) (either term, 3 weeks full-time in schools). Course requires payment of additional miscellaneous fees (see §22.2.3).

#### **EDFX 497 Field Experience in Adult Education**

★1-12 (*variable*) (variable, variable). Prerequisite: permission of Professional Officer, Field Experiences.

#### **EDFX 498 Field Experience in the Elementary School**

★1-12 (*variable*) (variable, variable). Prerequisite: permission of Professional Officer, Field Experiences.

#### **EDFX 499 Field Experience in the Secondary School**

★1-12 (*variable*) (variable, variable). Prerequisite: permission of Professional Officer, Field Experiences.

## 201.68 Education - Instructional Technology, EDIT

Department of Educational Psychology  
Faculty of Education

### Undergraduate Courses

#### **□ EDIT 202 Technology Tools for Teaching and Learning**

★3 (*fi 6*) (either term, 3-0-3). Provides undergraduate Education students with the basic skills for using the most common information technology tools currently

applied in schools. The types of tools include internet tools, digital media processing, multimedia/hypermedia presentations, spreadsheets, and databases. The course offers a number of advanced modules dealing with more complex topics in these areas plus additional tools such as those for editing digital video and sound. Students may not receive credit for both EDIT 202 and any of EDPY 202, EDPY 302, EDPY 485 or EDIT 485. Students are encouraged to register in this course as early in their program as possible. May contain alternative delivery sections; see \$200. Prerequisite: Basic computer skills within a Macintosh or MS Windows environment including word processing, e-mail, and use of a Web browser.

**EDIT 434 Introduction to Computer Networks and Data Communication in an Educational Environment**

★3 (fi 6) (either term, 3-0-3). This course is designed as an introduction to computer networking and data communication concepts. Emphasis will be placed on the design, operation and maintenance of a network in an educational environment.

**EDIT 435 The Internet: Communicating, Accessing and Providing Information**

★3 (fi 6) (either term, 3-0-3). An introduction to the Internet and to the use of basic Internet tools. Prerequisites: Experience with either Microsoft Windows or the Macintosh OS, basic file creation and management, and a word processor is required. Students may not receive credit for both EDIT 435 and EDPY 435.

**EDIT 480 Introduction to Computer-Based Instruction**

★3 (fi 6) (either term, 3-0-3). Prerequisite: EDIT 202 or EDIT 485 or an introductory course in computing science. Students may not receive credit for both EDIT 480 and EDPY 479 or EDPY 480.

**EDIT 485 Technology Tools for Teaching and Learning**

★3 (fi 6) (either term, 3-0-3). EDIT 485 provides undergraduate Education students with the basic skills for using the most common information technology tools currently applied in schools. The types of tools include internet tools, digital media processing multimedia/hypermedia presentations, spreadsheets, and databases. The course offers a number of advanced modules dealing with more complex topics in these areas, and tools such as those for editing digital video and sound, and those for desktop publishing. Students may not receive credit for EDIT 485 and any of EDIT 202, EDPY 202, EDPY 302, or EDPY 485. Prerequisite: Basic computer skills within a Macintosh or MS Windows environment including word processing, e-mail, and use of a Web browser.

**EDIT 486 Interactive Multimedia**

★3 (fi 6) (either term, 3-0-3). This lab course emphasizes the design and development of instructional lessons which incorporate learning with multimedia. Students create lessons to meet a defined instructional need or goal for a specified population of learners. The lessons employ principles of interactive design plus the multimedia elements of static and dynamic visual displays, audio, and color. They are synthesized into a coherent and tested lesson using one of several multimedia authoring systems. Final projects are distributed on CD-ROM. Prerequisite: EDIT 202 or EDIT 485 or an introductory course in computing science. Credit will not be granted for both EDIT 486 and EDIT 568 or EDPY 486.

**EDIT 487 Curricular Integration of Learning Technology**

★3 (fi 6) (either term, 3-0-0). Note: Instructional technology minors - Secondary Route only. Corequisite: EDPS 310 and EDFX 350. Prerequisite: EDIT 202 or EDIT 485 or an introductory course in computing science. Students will not be granted credit for both EDIT 487 and EDPY 487.

**EDIT 488 Instructional Technology and Communication**

★3 (fi 6) (either term, 3-0-0). This course treats instructional technology as a communications system for teaching and learning. In addition to exploring communication concepts, the course examines the communications components of visual learning and the specific tools and techniques of digital presentation and interaction. Overviews of current and future practice plus research on communication are included. Students have flexibility with respect to choice of specific topics as this course is taught using an alternative delivery format. Prerequisite: EDIT 202 or EDIT 485 or an introductory course in computing science. Students will not be granted credit for both EDIT 488 and EDPY 488.

**EDIT 489 Virtual Schools: Designing and Teaching Lessons Online**

★3 (fi 6) (either term, 3-0-3). Techniques and concepts of instructional design in the school setting, especially for distance/alternate delivery and individualized instruction. Included are techniques for designing instruction for cyber schools, virtual schools, home schooling, and other forms of distance and alternate delivery. Prerequisite: EDIT 485 or EDPY 485 or consent of Department. Students will not be granted credit for EDIT 489 and EDPY 489 or EDMDA 473.

## Graduate Courses

**EDIT 534 Introduction to Computer Network Concepts**

★3 (fi 6) (first term, 3-0-3). This course is designed as an introduction to computer networking and data communication concepts. Emphasis will be placed on the design, operation and maintenance of a network in an educational environment.

**EDIT 535 The Internet: Communicating, Accessing, and Providing Information**

★3 (fi 6) (either term, 3-0-3). An introduction to the Internet and to use of basic

Internet tools. Prerequisite: Experience with either Microsoft Windows or the Macintosh OS, basic file creation and management, and a Word Processor are required.

**EDIT 537 Internet/Intranet Server Management**

★3 (fi 6) (either term, 3-0-3). Managing the school/organization network. Prerequisites: EDPY 497/EDIT 535 The Internet: Communicating, Accessing, and Providing Information or EDPY 434/EDIT 534 Computer Networking in Education or equivalent experience or consent of Instructor. Access to an NT 4.0 server, Internet or an Intranet and working knowledge of TCP/IP networking and basic HTML.

**EDIT 568 Exploring Computer Based Instruction**

★3 (fi 6) (either term, 3-0-3). An introduction to the principles, foundations, and techniques of all types of computer-based instruction including multimedia development with Authorware; web-based instruction; computer mediated communication; and others.

**EDIT 571 Instructional Technology and Communication**

★3 (fi 6) (either term, 3-0-0). Instructional technology extends the ability of the instructor and students to communicate. Multimedia elements of computer-based instruction possess strengths and limitations as communication tools. This course examines various theories of communication and their application to the multimedia world of instructional technology to traditional and non-traditional learning settings. Research in the field as it applies to various learning outcomes is emphasized.

**EDIT 572 Topics in Computer-Based Instruction**

★3 (fi 6) (either term, 3-0-3). Prerequisite: EDIT 568 or consent of Department.

**EDIT 573 Designing Technology-Based Instruction**

★3 (fi 6) (second term, 3-0-0). This course explores contemporary approaches to the instructional design process in education and training. Emphasis is placed on the application of research and practice related to a number of topics including planning models, learning and performance issues, instructional strategies, and message design and evaluation. The course also deals with newer alternatives to conventional ISD especially constructivist approaches.

**EDIT 574 Planning the Technology Program**

★3 (fi 6) (either term, 3-3s-0).

**EDIT 575 Advanced Computer-Based Instruction**

★3 (fi 6) (either term, 3-0-3). Prerequisites: EDIT 568 and 572 or consent of Department.

**EDIT 578 Internship in Instructional Technology**

★3 (fi 6) (either term, 3-0-3). Note: credit cannot be earned for both EDIT 578 and EDIT 579.

**EDIT 583 Digital Elements for Multimedia Production**

★3 (fi 6) (either term, 3-0-3). Pre- or corequisites: EDIT 568 and 572, consent of Department.

**EDIT 585 Introduction to Educational Programming Environments**

★3 (fi 6) (either term, 3-0-3). A course in computer programming for education graduate students in instructional technology, career technology studies, measurement and evaluation, and curriculum. Prerequisite: EDIT 568 or equivalent, or consent of Department.

**EDIT 587 Programming Environments for Developing Interactive Learning Materials**

★3 (fi 6) (either term, 3-0-3). A second course in computer programming specifically for the development of interactive learning materials. Prerequisite: EDIT 585 or equivalent.

## 201.69 Education - Policy Studies, EDPS

Department of Educational Policy Studies  
Faculty of Education

### Undergraduate Courses

**EDPS 310 Managing the Learning Environment**

★3 (fi 6) (either term, 3-0-1). This course will assist students in clarifying the influence of social and organizational contexts and structures and help them explore the ways in which teachers can participate as professionals in the process of managing the learning environment. Prerequisites: EDFX 200 and EDPY 200 except for After Degree students. Corequisite: EDEL 300 and EDFX 325 (Elementary), Education Minor and EDFX 350 (Secondary). Students may not receive credit for both EDPS 310 and EDSEC 200.

**EDPS 311 Anthropology and Canadian Education**

★3 (fi 6) (either term, 3-0-0). A review of the organization of schooling in Canada and of selected educational issues, from perspectives provided by socioculture, symbolic and biological anthropology. Students may not receive credit for both EDPS 311 and EDFDN 310.

**EDPS 341 Concepts of Childhood in History**

★3 (fi 6) (either term, 3-0-0). A study of those views of childhood which have exerted a significant influence on educational theory and practice over the last 200 years. Students may not receive credit for both EDPS 341 and EDFDN 341.

**EDPS 360 Society and Education**

★3 (fi 6) (either term, 3-0-0). The changing function and structures of education, with special reference to contemporary Canadian society. Students may not receive credit for both EDFN 360 and EDPS 360.

**EDPS 401 Selected Topics in Educational Policy Studies**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**EDPS 402 Directed Study in Educational Policy Studies**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**EDPS 403 Development Course in Educational Policy Studies**

★3 (fi 6) (either term, 3-0-0). Prerequisite: Consent of Department.

**EDPS 410 Ethics and Law in Teaching**

★3 (fi 6) (either term, 3-0-0). This course will examine the ethical and legal responsibilities of teachers. Among the topics addressed will be the following: punishment and child abuse; freedom of speech and academic freedom in schools; parents' rights and teachers' professional autonomy; issues of quality such as inclusive education and the problems of racism and sexism; fairness in assessment and evaluation; teachers' private lives and public obligations; indoctrination and the teaching of value. Prerequisite: Completion of the Introductory Professional Term. Students may not receive credit for both EDPS 410 and EDADM 401. May contain alternative delivery sections; see §200.

**EDPS 411 Cross Cultural Studies in Education**

★3 (fi 6) (either term, 3-0-0). The ethnographic study of education and cultural change. Prerequisite: ANTHR 101, or ANTHR 207, or ANTHR 250, or consent of Department. Students may not receive credit for both EDPS 411 and EDFDN 410.

**EDPS 422 Education and National Development in South Regions**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDPS 422 and EDFDN 422.

**EDPS 425 Global Education: Issues and Strategies for Teachers**

★3 (fi 6) (either term, 3-0-0). This course explores, in theory and practice, how global education in schools can facilitate critical understanding and develop skills and values for building more peaceful futures in local, national, and global contexts. It draws on North and South scholars and educators to clarify underlying conceptual and pedagogical principles of global education and related fields (education for peace, justice, development, human rights, cultural solidarity, environmental care). Exemplars of creative curriculum content and teaching-learning strategies for global literacy will be included. Students may not receive credit for both EDPS 425 and EDFDN 425.

**EDPS 432 The Education of Native Peoples in Canada: An Historical Study**

★3 (fi 6) (either term, 3-0-0). An historical examination of the formal education provided Indian, Metis, and Inuit peoples with special attention to Aboriginal, missionary, and federal-provincial educational programs. Students may not receive credit for both EDPS 432 and EDFDN 432.

**EDPS 456 The Philosophy of Moral Education**

★3 (fi 6) (either term, 3-0-0). An examination of the philosophical problems that arise in the moral education of students. Students may not receive credit for both EDPS 456 and EDFN 456.

**EDPS 474 Contemporary Issues in the Education of Native Peoples: A Social Science Perspective**

★3 (fi 6) (either term, 3-0-0). An analysis of current issues of debate in Indian, Metis and Inuit education, with special reference to their social origins. Students may not receive credit for both EDPS 474 and EDFDN 474.

## Graduate Courses

**EDPS 501 Conference Course on Selected Topics**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**EDPS 502 Conference Course on Selected Topics**

★6 (fi 12) (two term, 3-0-0). Prerequisite: consent of Department.

**EDPS 503 Research Projects I**

★3 (fi 6) (either term, 3-0-2). Prerequisite: consent of Department.

**EDPS 505 Individual Directed Laboratory Study**

★1-12 (variable) (either term, 0-6L-0). Prerequisite: consent of Department.

**EDPS 506 Individual Directed Study**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**EDPS 507 Individual Directed Study**

★3 (fi 6) (either term, 3-0-0).

**EDPS 508 Research Design**

★3 (fi 6) (either term, 3-0-0). The purpose of this course is to introduce students to the concepts of social science research. The purpose of the course is not to

provide total operational competence in any one method of research but rather to provide an understanding of the nature of the various approaches to research that may be used in studying educational phenomena.

**EDPS 509 Research Design and Data Analysis**

★3 (fi 6) (either term, 3-0-0). This course is a survey course of research design principles, concepts, and applications. Emphasis is on developing research methodologies and understanding data analyses for conducting various types of research. Prerequisite EDPS 508.

**EDPS 510 Education from an Anthropological Perspective**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDFN 510 and EDPS 510.

**EDPS 511 Evolving Concepts in Educational Administration and Leadership**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 501 and EDPS 511.

**EDPS 512 Administrative and Leadership Process in Education**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 502 and EDPS 512.

**EDPS 521 Learning and Teaching at the Adult Level**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAE 521 and EDPS 521.

**EDPS 522 Education and Development in South and International Contexts**

★3 (fi 6) (either term, 3-0-0). Focuses on the development of and the current problems in education in South countries. The influence of international relationships and factors on South educational development will also be examined. Students may not receive credit for both EDFN 522 and EDPS 522.

**EDPS 523 Societal Development Theory and Education**

★3 (fi 6) (either term, 3-0-0). Explores the various explanations for Societal Development put forward by selected writers. Analyzes the role of education in the development process from a global perspective, with particular attention paid to Asia, Africa, and Latin America. Prerequisite: consent of Department. Students may not receive credit for both EDFN 523 and EDPS 523.

**EDPS 525 Global Education: Theory and Practice**

★3 (fi 6) (either term, 3-0-0). Includes critical reflections on theoretical, curriculum, and research themes in global education, peace education, development education, and other related fields. Global literacy in South and North contexts will be studied and implications drawn for creative curriculum and pedagogical strategies. The state of research on issues and problems of global education will be examined and students encouraged to develop possible proposals for assessing how teaching and learning global issues for peaceful features may be enhanced. Prerequisite: consent of Department. Students may not receive credit in both EDFN 525 and EDPS 525.

**EDPS 530 History of Education**

★3 (fi 6) (either term, 3-0-0). A survey of studies in the history of formal informal educational institutions and their relationship with Canadian society in a global context. Students may not receive credit for both EDFN 530 and EDPS 530.

**EDPS 531 Supervision of Educational Personnel**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 521 and EDPS 531.

**EDPS 532 Selected Topics in Educational Supervision**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 522 and EDPS 532.

**EDPS 533 Principalship Practicum I**

★3 (fi 6) (either term, 3-0-1). This practicum course provides opportunities to examine issues of educational leadership in a variety of school settings. Students are engaged in exploring these issues through readings, seminars, and school-based activities. Students develop skills in observation, shadowing, interviewing, group facilitation, and reflection through data gathering at specific school sites. Students may not receive credit for both EDAL 533 and EDPS 533.

**EDPS 534 Principalship Practicum II**

★3 (fi 6) (either term, 3-0-1). Normally, students take this course in the term following their enrolment in EDPS 533. This course is designed to continue the exploration, begun in EDPS 533, of issues in educational leadership. As in EDPS 533, students are engaged in exploring these issues through readings, seminars, and school-based activities. Students may not receive credit for both EDAL 534 and EDPS 534.

**EDPS 540 Introduction to Human Resource Development**

★3 (fi 6) (either term, 3-0-0). This course focuses on concepts and strategies for the development of human resources within organizational contexts. Students may not receive credit for both EDAE 540 and EDPS 540.

**EDPS 543 Research Methods and Theory in the History of Education**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDFN 543 and EDPS 543.

**EDPS 545 Adult Education in the Workplace**

★3 (fi 6) (either term, 3-0-0). Designed for trainers and developers, community-based adult educators, counsellors and planners, this course will focus on informal learning and critical analysis of issues in the workplace. Students may not receive credit for both EDAE 545 and EDPS 545.

**EDPS 546 Childhood and Childrearing in Western Culture: An Historical Perspective**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDFN 546 and EDPS 546.

**EDPS 547 Administrative Applications of Computing**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 547 and EDPS 547.

**EDPS 551 Governance and Administration of Education in Canada**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 551 and EDPS 551.

**EDPS 553 Legal Aspects of Educational Administration**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 553 and EDPS 553.

**EDPS 557 Epistemology and Education**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDFN 557 and EDPS 557.

**EDPS 560 Instructional Methods in Adult and Higher Education**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAE 560 and EDPS 560.

**EDPS 561 Curriculum Planning in Adult and Higher Education**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAE 561 and EDPS 561.

**EDPS 562 Social Theory and Education**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDFN 562 and EDPS 562.

**EDPS 563 Education from a Sociological Perspective**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDFN 560 and EDPS 563.

**EDPS 564 Education and Social Change**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDFN 564 and EDPS 564.

**EDPS 565 Sociology of Higher Education**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDFN 565 and EDPS 565.

**EDPS 566 Sociology of Women, Education and Work**

★3 (fi 6) (either term, 3-0-0). This course explores the complex pattern of gender stratification, education, and employment in Canada, with a focus on education and the experience of women. The course draws on current empirical literature and sociological and feminist theory. Discussion includes consideration of formal education (certification), nonformal education, informal education, activity in a market economy, and unpaid labor. Consideration will be given to research related to women and development in other countries. Prerequisite: consent of Department. Students may not receive credit for both EDFN 566 and EDPS 566.

**EDPS 567 Education and Community**

★3 (fi 6) (either term, 3-0-0). The organization and processes of community education at the local, provincial and national levels of social interaction as seen from the theory and research of contemporary sociology. Students may not receive credit for both EDFN 561 and EDPS 567.

**EDPS 571 The Organization of Postsecondary Education**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 571 and EDPS 571.

**EDPS 572 Administration of Postsecondary Institutions**

★3 (fi 6) (either term, 3-0-0). Prerequisite: EDAL 571 or EDPS 571 or consent of Department. Students may not receive credit for both EDAL 572 and EDPS 572.

**EDPS 574 Current Developments in Native Education: A Social Science Perspective**

★3 (fi 6) (either term, 3-0-0). A discussion of theoretical and methodological issues relating to Native education in Alberta together with an examination of relevant data-based studies. Prerequisite: EDPS 432 or EDPS 474 or consent of Instructor. Students may not receive credit for both EDFN 574 and EDPS 574.

**EDPS 577 Foundations of Adult and Higher Education**

★3 (fi 6) (either term, 3-0-0). This survey course examines the various interpretations and paradigms of adult and higher education. Ways of studying adult and higher education are presented using concepts, analysis, theories, and methodologies from the various foundational disciplines. Students may not receive credit for both EDAE 577 and EDPS 577.

**EDPS 585 Needs Assessment and Program Evaluation**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAE 585 and EDPS 585.

**EDPS 594 Group Processes in Educational Leadership**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department. May contain alternative delivery sections; see §200. Students may not receive credit for both EDAL 594 and EDPS 594.

**EDPS 595 The School Principalship: Seminars and Simulations**

★3 (fi 6) (either term, 3-0-1). Applied activities and academic studies which enable the student to learn skills and knowledge pertinent to the responsibilities of the principal, by disciplined reflection on their performance in simulated administrative situations. Prerequisites: EDAL 501 and 502 or EDPS 511 and 512 or consent of Department. Students may not receive credit for both EDAL 595 and EDPS 595.

**EDPS 601 Selected Topics in Educational Policy Studies**

★3 (fi 6) (either term, 3-0-0).

**EDPS 606 Supervised Individual Study I**

★3 (fi 6) (either term, 3-0-0).

**EDPS 607 Supervised Individual Study II**

★3 (fi 6) (either term, 3-0-0).

**EDPS 608 Field Experiences in Educational Administration I**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 605 and EDPS 608.

**EDPS 609 Field Experiences in Educational Administration II**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 606 and EDPS 609.

**EDPS 611 Research Methods I**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 611 and EDPS 611.

**EDPS 612 Research Methods II**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 612 and EDPS 612.

**EDPS 613 Research Methods in Anthropology and Education**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit in both EDFN 611 and EDPS 613.

**EDPS 620 International/Intercultural Education: Disciplinary Geographic/Cultural Focus**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit for both EDFN 620 and EDPS 620.

**EDPS 621 International/Intercultural Education: Methods and Substantive Research Paper**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit for both EDFN 621 and EDPS 621.

**EDPS 625 Administrative Behavior I**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 625 and EDPS 625.

**EDPS 626 Administrative Behavior II**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 626 and EDPS 626.

**EDPS 635 Organization Theory I**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 635 and EDPS 635.

**EDPS 640 History of Education**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit for both EDFN 640 and EDPS 640.

**EDPS 641 History of Education: Historiography**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit for both EDFN 641 and EDPS 641.

**EDPS 642 History of Education: Selected Areas**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit for both EDFN 642 and EDPS 642.

**EDPS 645 Policy Analysis in Education I**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 645 and EDPS 645.

**EDPS 650 The Nature of Philosophy in Education**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit in both EDFN 650 and EDPS 650.

**EDPS 651 Traditional Philosophies of Education**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit for both EDFN 651 and EDPS 651.

**EDPS 652 Recent Philosophy of Education**

★6 (fi 12) (either term, 0-3s-0). Students may not receive credit for both EDFN 652 and EDPS 652.

**EDPS 655 Politics of Education I**

★3 (fi 6) (either term, 3-0-0). Students may not receive credit for both EDAL 655 and EDPS 655.

**EDPS 656 Politics of Education II**

★3 (*fi 6*) (either term, 3-0-0). Students may not receive credit for both EDAL 656 and EDPS 656.

**EDPS 660 Sociology of Education**

★6 (*fi 12*) (either term, 0-3s-0). Students may not receive credit for both EDFN 660 and EDPS 660.

**EDPS 661 Sociological Theory in Education**

★6 (*fi 12*) (either term, 0-3s-0). Students may not receive credit for both EDFN 661 and EDPS 661.

**EDPS 662 Sociology of Education: Research Methodology**

★6 (*fi 12*) (either term, 0-3s-0). Students may not receive credit for both EDFN 662 and EDPS 662.

**EDPS 671 Issues in Administration of Postsecondary Education I**

★3 (*fi 6*) (either term, 3-0-0). Students may not receive credit for both EDAL 671 and EDPS 671.

**EDPS 672 Issues in Administration of Postsecondary Education II**

★3 (*fi 6*) (either term, 3-0-0). Students may not receive credit for both EDAL 672 and EDPS 672.

**EDPS 900 Directed Research Project**

★3-6 (*variable*) (variable, unassigned).

## 201.70 Education - Psychology, EDPY

Department of Educational Psychology  
Faculty of Education

**Note:** The course prefix for Education (Psychology) courses has changed from EDPSY to EDPY.

### Undergraduate Courses

**EDPY 200 Educational Psychology for Teaching**

★3 (*fi 6*) (either term, 3-0-0). This course deals with the teaching learning process and student behavior. It includes theory, research, and illustrations, all dealing with the classroom application of psychological principles. Topics typically covered are student development, student learning and instruction, individual and group differences in student abilities, and student motivation. The course presents the basic principles of effective teaching and learning using a balanced theoretical orientation. Students may not receive credit for both EDPY 200 and EDPSY 371.

**EDPY 301 Inclusive Education: Adapting Instruction for Students with Special Needs**

★3 (*fi 6*) (either term, 3-0-0). This course reviews educationally relevant characteristics of students exhibiting mild, moderate, and severe disabilities, and exceptional educational gifts and talents. In addition, the needs of students with diverse educational, cultural, and linguistic backgrounds will be discussed. The major focus is on planning Individual Program Plans and adapting regular classroom instruction and management to the diversity of individual needs. More specialized techniques are reviewed as needed. **Note:** This course is part of the Introductory Professional Term. Prerequisites: EDPY 200 and EDFX 200, except for After Degree students. Corequisite: EDFX 325 or 350 and EDPS 310. Students may not receive credit for both EDPY 301 and EDPSY 151 or EDPSY 341.

**EDPY 303 Educational Assessment**

★3 (*fi 6*) (either term, 3-0-0). The intent of this course is to develop an understanding of important concepts and issues in the evaluation of a learner's knowledge and skills, and to develop competence in constructing instruments and processes to evaluate learner performance. **Note:** This course is part of the Introductory Professional Term.

**EDPY 397 Educational Psychology Seminars**

★1-3 (*variable*) (either term, variable). Prerequisite: consent of Department.

**EDPY 402 Child Development for Educators**

★3 (*fi 6*) (either term, 3-0-0). The course will include theoretical and practical aspects of physical, cognitive, psychological, moral, social, and emotional development of children. Prerequisite: EDPY 200 or consent of Department.

**EDPY 404 Adolescent Development for Educators**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDPY 200. Students may not receive credit for both EDPY 404 and EDPSY 329.

**EDPY 410 Individual Differences in Education**

★3 (*fi 6*) (either term, 3-0-1). Prerequisite: EDPY 200. Students may not receive credit for both EDPY 410 and EDPSY 475.

**EDPY 412 Language and Cognition in the Education of the Child**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDPY 200. Students may not receive credit for both EDPY 412 and EDPSY 473.

**EDPY 414 Bilingualism and Cognition in the Education of the Child**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDPY 200. Students may not receive credit for both EDPY 414 and EDPSY 471.

**EDPY 416 Introduction to the Teaching of English as a Second Language**

★3 (*fi 6*) (either term, 3-0-0). This course focuses on principles of language learning, language learners, and learning contexts. Prerequisite: Successful completion of practicum requirements or teaching experience; or consent of Department. Prerequisite/Corequisite: An approved introductory course in Linguistics. Students may not receive credit for both EDPY 416 and EDACT 430.

**EDPY 418 Methods and Programs in the Teaching of English as a Second Language to Adults**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDPY 416. Students may not receive credit for both EDPY 418 and EDADU 439.

**EDPY 432 Interpersonal Communication for Teachers**

★3 (*fi 6*) (either term, 1.5-1.5s-0). Prerequisite: EDPY 200. Students may not receive credit for both EDPY 432 and EDPSY 495.

**EDPY 442 Introduction to Counselling**

★3 (*fi 6*) (either term, 1.5-1.5s-0). Prerequisite: EDPY 200. Students may not receive credit for both EDPY 442 and EDPSY 413.

**EDPY 452 Assessment and Instruction of Exceptional Learners**

★3 (*fi 6*) (either term, 3-0-1). **Note:** Special Education Minor-Elementary Route only. Prerequisite: Introductory Professional Term. Students may not receive credit for EDPY 452 and any of EDPSY 355, EDPSY 307 or EDPY 468.

**EDPY 454 Behavioral Management of Severely Disruptive Children**

★3 (*fi 6*) (either term, 3-0-1). **Note:** Special Education Minor-Elementary Route and Secondary Route only. Prerequisite: Introductory Professional Term. Students may not receive credit for both EDPY 454 and EDPSY 307 or EDPSY 357.

**EDPY 456 Consultation and Collaboration in Special Education**

★3 (*fi 6*) (either term, 3-0-1). **Note:** Special Education Minor-Elementary Route only. Prerequisite: Introductory Professional Term.

**EDPY 458 Advanced Assessment and Instruction of Exceptional Learners**

★3 (*fi 6*) (either term, 3-0-0). **Note:** Restricted to Special Education Minors in the Elementary Route only. Prerequisite: EDPY 452. Students may not receive credit for both EDPY 458 and EDPSY 359.

**EDPY 468 Individualizing Instruction for Adolescents with Special Needs**

★3 (*fi 6*) (either term, 3-0-1). **Note:** Special Education Minors-Secondary Route only. Corequisite: Introductory Professional Term. Students may not receive credit for EDPY 468 and any of EDPY 452 or EDPSY 309.

**EDPY 470 Deafness: An Introduction and Survey**

★3 (*fi 6*) (either term, 3-0-2). A basic survey of the field of education of the hearing impaired. Covers theory and practice from an historical and a current perspective. A desirable prerequisite for uninitiated students entering the hearing impaired program. Students may not receive credit for both EDPY 470 and EDPSY 449.

**EDPY 472 Introduction to Language Development**

★3 (*fi 6*) (either term, 3-0-1). The course content includes cognitive and social basis for language, as well as an overview of recent developments in semantic, syntactic, pragmatic and phonological development. The course focuses specifically on the impact of hearing loss on language development. Students may not receive credit for both EDPY 472 and EDPSY 450.

**EDPY 474 Basic Manual Communication**

★3 (*fi 6*) (either term, 2-1s-1). This is a practical course to develop basic skills in manual communication. Students may not receive credit for both EDPY 474 and EDPSY 451.

**EDPY 478 Psychology and Education of Gifted Children**

★3 (*fi 6*) (either term, 3-0-3). Prerequisite: EDPY 200.

**EDPY 497 Senior Seminars**

★1-3 (*variable*) (either term, variable). Content varies from year to year. Topics announced prior to registration period. Prerequisite: consent of Department.

**EDPY 499 Directed Individual Study in Educational Psychology**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

### Graduate Courses

**Note:** consent of Department is required for all 500- and 600-level courses.

**EDPY 500 Introduction to Data Analysis in Educational Research**

★3 (*fi 6*) (either term, 3-0-3). Prerequisite: consent of Department. May contain alternative delivery sections; see \$200.

**EDPY 501 Introduction to Methods of Educational Research**

★3 (*fi 6*) (either term, 3-0-3). Prerequisite: consent of Department.

**EDPY 502 Single Subject Research Design**

★3 (*fi 6*) (first term, 3-0-0). Relates to profoundly or severely mentally retarded, multiply handicapped persons. Offered alternate years. Prerequisite: consent of Department.

**EDPY 503 Qualitative Methods of Education Research**

★3 (*fi 6*) (either term, 3-0-3). Prerequisite: EDPY 501 or equivalent or consent of Department.

**EDPY 505 Advanced Univariate Statistics in Educational Research**

★3 (*fi 6*) (either term, 3-0-3). Prerequisites: EDPY 500 or equivalent and consent of Department.

**EDPY 507 Test Theory**

★3 (*fi 6*) (first term, 3-0-0). Prerequisites: EDPY 500 or equivalent, and consent of Department.

**EDPY 508 Item Response Theory**

★3 (*fi 6*) (either term, 3-0-0). Topics in educational and psychological measurement will be covered using an item response theory framework. Basic issues in model selection, parameter estimation, and model-data fit will be studied for both unidimensional and multidimensional models. Selecting topics such as test construction, equating, differential item functioning, and computerized adaptive testing will also be discussed. Prerequisites: EDPY 507 or equivalent and consent of Department.

**EDPY 509 Child Development: Theories and Issues**

★3 (*fi 6*) (either term, 3-0-0). Emphasis is on understanding child development from the combined perspectives of research, theory and practical experience. Stages from prenatal to the teenage years will be studied. Intended for both masters and doctoral level students. Practitioners or theoreticians from related disciplines are welcome. Prerequisite: consent of Department.

**EDPY 510 Learning, Cognition and Education**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

**EDPY 516 Education and Psychology in Developing Countries**

★3 (*fi 6*) (second term, 3-0-0). Prerequisite: consent of Department.

**EDPY 517 Adolescent Development: Theories and Issues**

★3 (*fi 6*) (either term, 3-0-0). Emphasis is on understanding adolescent development from the combined perspectives of research, theory and practical experience. Stages from early adolescence until emerging adulthood will be studied. Intended for both masters and doctoral level students. Practitioners or theoreticians from related disciplines are welcome. Prerequisite: consent of Department.

**EDPY 528 Patterns of Interpersonal Relating**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

**EDPY 532 Systems of Counselling**

★3 (*fi 6*) (either term, 3-0-0). This course introduces students, with interests in counselling, to the major theories used in the counselling/psychotherapy area. Prerequisite: consent of Department.

**EDPY 533 Basic Skills, Issues and Attitudes in Counselling I**

★3 (*fi 6*) (either term, 3-3s-4). This course focuses on generic counselling skills and the enhancement of counsellor self-awareness. Prerequisite: consent of Department.

**EDPY 534 Basic Skills, Issues and Attitudes in Counselling II**

★3 (*fi 6*) (either term, 3-3s-4). Prerequisites: EDPY 533 or equivalent and consent of Department.

**EDPY 535 Family Counselling: Advanced Practicum**

★3 (*fi 6*) (either term, 3-0-3). Prerequisites: EDPY 533 or equivalent and consent of Department.

**EDPY 536 Ethical and Professional Issues in Psychological Practice**

★3 (*fi 6*) (either term, 3-1.5s-0). Prerequisite: consent of Department.

**EDPY 538 Theory and Practice in Group Counselling**

★3 (*fi 6*) (either term, 3-0-3). This course is designed to develop an understanding of group theory and process and to acquire skills needed in leading a counselling group. The main goals of the course are to establish a theoretical and practical understanding of group process and to develop group facilitation skills through intensive group participation and supervised group counselling leadership experiences. Prerequisites or corequisites: EDPY 533/534.

**EDPY 544 Principles of Psychological Testing and Assessment**

★3 (*fi 6*) (either term, 3-0-1). Prerequisite: consent of Department.

**EDPY 545 Individual Psychological Assessment**

★6 (*fi 12*) (two term, 3-0-3). Prerequisite: consent of Department.

**EDPY 549 Advanced Course in Psychoeducational Assessment and Instruction**

★3 (*fi 6*) (first term, 3-0-1). To provide skill in administration and interpretation of a variety of psychoeducational measures which show potential in advancing our understanding of exceptional children. Prerequisites: EDPY 452 and consent of Department.

**EDPY 553 Practicum and Capping Exercise: General Special Education**

★3 (*fi 6*) (either term, 0-1s-3). Supervised practicum in a variety of special

education settings. Normally taken near the end of the course-based Master's program; capping exercise will be a paper or other product prepared in conjunction with the practicum. Prerequisite: consent of Department.

**EDPY 554 Behavior Management for Exceptional Individuals**

★3 (*fi 6*) (either term, 0-4L-0). To provide skill in implementing behavior management practices in classroom settings as well as skills for assisting teachers to implement behavior management techniques. Prerequisite: consent of Department.

**EDPY 556 Problems and Issues in Special Education: Prevalence of Exceptionalities and Professional Practice**

★3 (*fi 6*) (first term, 3-0-0). Aspects of theory, research and professional practice within the field of special education will be examined in this class. All special needs and developmental disorders are considered, particularly in the realm of theory/practice relationships. Such issues as program evaluation, integration, personnel preparation, and the identification of special needs will be considered. Validity of current practices and beliefs will be addressed through reviews of research, theory, and legislation/policy and the relationship between these areas and professional practice. Prerequisite: consent of Department.

**EDPY 560 Seminar on Research in Special Education**

★3 (*fi 6*) (either term, 0-3s-0). Contemporary research and applications regarding children exhibiting exceptionalities are reviewed from the perspectives of current research paradigms and methods. Students apply these qualitative and quantitative models of exploration and knowledge development in terms of better informed practice and more adequate theory development. Pre-/corequisites: EDPY 501 or equivalent and consent of Department.

**EDPY 561 Behavior Disorders of Childhood and Adolescence**

★3 (*fi 6*) (either term, 2-1s-0). In depth treatment of basic topics, including definition, classification, models, assessment, education, treatment and prevention. Prerequisites: EDPY 301 or equivalent and consent of Department.

**EDPY 562 Research Project in Special Education**

★3 (*fi 6*) (either term, 0-3s-0). Following the prerequisite course on research on exceptionalities (EDPY 560), participants develop, pilot and report upon a research plan of their own in the field of exceptionalities. This project is often the precursor to master's thesis projects. Prerequisites: EDPY 560 or equivalent and consent of Department.

**EDPY 564 Oral Communication in the Instruction of Hearing Impaired Students**

★3 (*fi 6*) (either term, 2-1s-2). A practical course to develop speech teaching skills in intending teachers of hearing impaired students. Focuses on analytical and synthetical approaches to teaching speech and speech reading. Note: Limited to Special Education students in the Hearing Impaired Program or practising teachers of the hearing impaired. Prerequisite: consent of Department.

**EDPY 565 Manual Communication in the Instruction of Hearing Impaired Students**

★3 (*fi 6*) (either term, 2-1s-1). Develops skills in expressive and receptive manual communication in intending teachers of hearing impaired students. Focuses on the use of these skills in a classroom setting, rather than on the training of interpreters. Limited to Special Education students in the Hearing Impaired Program or practising teachers of the hearing impaired. Prerequisite: consent of Department.

**EDPY 566 Curriculum Design and Instructional Strategies for Hearing Impaired Students**

★3 (*fi 6*) (either term, 2-1s-1). Explores the need for an integrated approach in planning and adapting existing curricula to meet the needs of hearing impaired students. The course will also explore the use of different instructional techniques with hearing impaired students. Prerequisite: consent of Department.

**EDPY 567 Social Psychology of Hearing Impairment**

★3 (*fi 6*) (either term, 2-0-2). A course designed to develop an understanding of basic psychological social processes associated with deafness. It will emphasize preventative techniques in mental health and will foster empathy with the personal and social needs of deaf students. Prerequisite: consent of Department.

**EDPY 568 Audiology for Educators of the Deaf and Hard of Hearing**

★3 (*fi 6*) (either term, 3-0-2). An introduction to audiology including anatomy and physiology of the auditory system, acoustics of speech, basic audiometric tests, amplification systems and habilitative procedures used by the classroom teacher. Restricted to students enrolled in the Faculty of Education Program for Deafness Studies Education. Prerequisite: consent of Department.

**EDPY 569 Language Development and Remediation with Hearing Impaired Students**

★3 (*fi 6*) (either term, 1-1s-3). Application and development of the skills acquired in the two first level communication courses. Focuses on evaluation and analytical skills and on a diagnostic/prescriptive approach. Prerequisites: A basic course in communication processes and consent of Department.

**EDPY 570 Practicum in Education of Hearing Impaired Students**

★1-12 (*variable*) (variable, variable). Supervised placement in a classroom for hearing impaired students. Prerequisite: consent of Department.

**EDPY 571 Internship and Capping Exercise: Hearing Impaired Students**

★1-12 (*variable*) (variable, variable). Supervised placement with hearing impaired students. Normally taken near the end of the course-based Master's program: capping exercise will be a paper or other product prepared in conjunction with the practicum. Prerequisite: consent of Department.

**EDPY 574 Oral/Auditory Rehabilitation in the Instruction of Hearing Impaired Students**

★3 (*fi 6*) (either term, 2-1s-2). A practical course to develop speech teaching skills for teachers of hearing impaired students. This course incorporates auditory training techniques and is intended for students specializing in working with students who have impaired hearing. Prerequisites: EDPY 564 or equivalent, and consent of Department.

**EDPY 582 Severe Disabilities: Assessment and Communications**

★3 (*fi 6*) (second term, 3-0-0). Relates to profoundly or severely mentally/multiply handicapped persons. Alternates between second and spring term. Prerequisite: consent of Department.

**EDPY 584 Severe Disabilities: Physical Aspects**

★3 (*fi 6*) (either term, 3-0-0). Relates to profoundly or severely mentally/multiply handicapped persons. Prerequisite: consent of Department.

**EDPY 589 Early Intervention Programs**

★3 (*fi 6*) (either term, 0-0-4). An in-depth review and analysis of early intervention programs with at-risk and established-risk infants and young preschool children with a special emphasis upon family-based programs. Prerequisite: consent of Department.

**EDPY 591 Teaching Literacy and Reading to ESL Learners**

★3 (*fi 6*) (either term, 3-0-0). Theory and practice in the instruction of literacy and reading to ESL students. Prerequisite: LING 101 and EDPY 416.

**EDPY 592 Psychology and Education of Gifted Children**

★3 (*fi 6*) (either term, 3-0-3). Prerequisite: consent of Department.

**EDPY 593 ESL Assessment and Evaluation**

★3 (*fi 6*) (either term, 3-0-0). Introduction to assessment practices and procedures in ESL/EFL. Prerequisite: LING 101.

**EDPY 594 Teaching Pronunciation to ESL Learners**

★3 (*fi 6*) (either term, 3-0-0). Introduction to relevant research and specific classroom teaching strategies. Prerequisite: LING 101 and EDPY 416.

**EDPY 595 Settlement Adjustment Issues for ESL Immigrants to Canada**

★3 (*fi 6*) (either term, 3-0-0). Focuses on political, curricular, social, cultural, and linguistic factors that have an impact on immigrants to Canada.

**EDPY 596 Program Development in the Teaching of ESL**

★3 (*fi 6*) (either term, 3-0-0). This course encompasses, planning, needs analysis, syllabus design, program implementation, classroom implementation and evaluation in ESL/EFL programs. Prerequisite: LING 101, EDPY 416, and EDPY 418.

**EDPY 597 Special Seminars**

★1-6 (*variable*) (either term, variable). Content varies from year to year. Topics announced prior to registration period. The student's transcript carries title descriptive of content. May be repeated. Prerequisite: consent of Department.

**EDPY 599 Individual Directed Reading and Research**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

**EDPY 605 Multivariate Statistical Methods in Education Research**

★3 (*fi 6*) (second term, 3-0-3). Prerequisites: EDPY 505 or equivalent and consent of Department. Formerly EDPY 506.

**EDPY 606 Doctoral Research Seminar in Educational Psychology**

★3 (*fi 6*) (two term, 0-1.5s-0). Prerequisite: consent of Department.

**EDPY 608 Selected Topics in Educational Measurement**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDPY 507 or equivalent.

**EDPY 609 Selected Topics in Human Development**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDPY 509 or EDPY 517 or equivalent.

**EDPY 610 Selected Topics in Learning, Cognition and Instruction**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EDPY 510 or equivalent.

**EDPY 615 Program Evaluation**

★3 (*fi 6*) (either term, 3-0-0). This course will introduce students to the theoretical ideas and practical applications of program evaluation. Prerequisites: EDPY 501 or equivalent and consent of Department.

**EDPY 630 Doctoral Internship**

★6 (*fi 12*) (two term, 0-6L-3). Students in the Doctoral Counselling Program must successfully complete a 1,600 hour internship accredited by the Canadian Psychological Association (or equivalent). Students must participate in the Association of Psychology Postdoctoral and Internship Centers (APPIC) matching process. Prerequisites: Consent of Department, completion of required coursework and completion of doctoral candidacy exam.

**EDPY 632 History and Systems**

★3 (*fi 6*) (first term, 3-0-0). Prerequisite: consent of Department.

**EDPY 633 Advanced Counselling Practicum I**

★3 (*fi 6*) (first term, 3-3s-3). This doctoral level practicum is designed to provide students with an opportunity to develop an approach to counselling that is congruent with professional, social and scientific standards, is sufficiently flexible to address the range of human variability, and is facilitative of client change. Prerequisite: EDPY 533 and 534 or equivalent. Pre- or corequisites: EDPY 632 and consent of Department.

**EDPY 634 Advanced Counselling Practicum**

★3 (*fi 6*) (either term, 3-3s-3). This doctoral level practicum is a continuation of EDPY 633. Prerequisite: EDPY 633 and consent of Department.

**EDPY 635 Counselling Speciality: Theory and Practice**

★3 (*fi 6*) (either term, 3-3s-3).

**EDPY 640 Theories and Models of Diagnostic Assessment**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: EDPY 545 or equivalent, and consent of Department.

**EDPY 641 Advanced Personality Assessment**

★3 (*fi 6*) (either term, 3-0-3). Prerequisites: EDPY 545 and EDPY 640 or equivalent, and consent of Department.

**EDPY 642 Applied Neuropsychological Assessment: Clinical Counselling and School**

★3 (*fi 6*) (either term, 3-0-3). Prerequisites: EDPY 545 and one of EDPY 640 or 641, or equivalent, and consent of Department.

**EDPY 697 Special Seminars**

★1-6 (*variable*) (either term, variable). Prerequisite: consent of Department. Content varies from year to year. Topics announced prior to registration period. The student's transcript carries title descriptive of content. May be repeated.

**EDPY 699 Individual Directed Reading and Research**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

**EDPY 900 Research Project**

★3 (*fi 6*) (variable, unassigned).

**201.71 Education - Secondary, EDSE**

(Curriculum and Instruction)  
Department of Secondary Education  
Faculty of Education

**Note:** The course prefix for Education (Secondary) courses has changed from EDSEC to EDSE.

**Undergraduate Courses****EDSE 245 Education Band I**

★3 (*fi 6*) (either term, 3-0-0). This course examines school band literature, rehearsal techniques, instrumental techniques, conducting and school music program administration through a process of practical application. Prerequisite: successful completion of an audition on a band instrument during the first week of classes, and MUSIC 140 or 141.

**EDSE 312 Curriculum and Teaching for Secondary School Art Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDPX 350. Students may not receive credit for both EDSE 312 and EDSEC 214.

**EDSE 317 Curriculum and Teaching for Secondary School Career and Technology Studies: Business and Technology**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: ★9 in the Minor subject area, and Keyboarding and Word Processing and ACCTG 300 or 311; or consent of Department. Corequisite: EDPS 310 and EDPX 350. Students may not receive credit for both EDSE 317 and EDSEC 219.

**EDSE 322 Curriculum and Teaching for Secondary School Drama Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDPX 350. Students may not receive credit for both EDSE 322 and EDSEC 224.

**EDSE 327 Curriculum and Teaching for Secondary School English Language Arts Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDPX 350. Students may not receive credit for both EDSE 327 and EDSEC 229.

**EDSE 332 Curriculum and Teaching for Secondary School Career and Technology Studies: Human Ecology Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDPX 350. Students may not receive credit for both EDSE 332 and EDSEC 234.



**EDSE 333 Curriculum and Teaching for Secondary School Health Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350.

**EDSE 337 Curriculum and Teaching for Secondary School Mathematics Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 337 and EDSEC 239.

**EDSE 343 Curriculum and Teaching for Secondary School Music Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 343 and EDSEC 244.

**EDSE 345 Education Band II**

★3 (*fi 6*) (either term, 3-0-0). This course examines school band literature, rehearsal techniques, instrumental techniques, conducting and school music program administration through a process of practical application. Prerequisite: EDSE 245.

**EDSE 347 Curriculum and Teaching for Secondary School Physical Education Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 347 and EDSEC 249.

**EDSE 352 Curriculum and Teaching for Secondary School Biological Sciences Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 352 and EDSEC 254.

**EDSE 360 Curriculum and Teaching for Secondary School General Sciences Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350.

**EDSE 364 Curriculum and Teaching for Secondary School Physical Sciences Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 364 and EDSEC 266.

**EDSE 365 Curriculum and Teaching for Secondary School Environment Education Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 463 and EDSE 365.

**EDSE 368 Curriculum and Teaching for Secondary School Second Language Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 368 and EDSEC 270.

**EDSE 369 Curriculum and Teaching for Secondary School ESL Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 369 and EDSEC 271.

**EDSE 373 Curriculum and Teaching for Secondary School Social Studies Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 373 and EDSEC 275.

**EDSE 378 Curriculum and Teaching for Religious and Moral Education Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350. Students may not receive credit for both EDSE 378 and EDSEC 280.

**EDSE 388 Curriculum and Teaching for Secondary School Career and Technology Studies Technology Education and Instructional Technology Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350.

**EDSE 393 Curriculum and Teaching for Secondary School Career and Technology Studies: Resources Minors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Corequisite: EDPS 310 and EDFX 350.

**EDSE 400 Conference Seminar**

★1-3 (*variable*) (either term, variable).

**EDSE 401 Conference Seminar**

★1-3 (*variable*) (either term, variable).

**EDSE 402 Guided Individual Study in Secondary Education**

★3 (*fi 6*) (either term, 3-0-0). May be offered over two terms. Prerequisites: consent of instructor and Department.

**EDSE 412 Curriculum and Teaching in Secondary School Art I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term and ★24 in the Major Subject area. Students may not receive credit for both EDSE 412 and EDSEC 314.

**EDSE 413 Curriculum and Teaching in Secondary School Art II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 412. Students may not receive credit for both EDSE 413 and EDSEC 315.

**EDSE 417 Curriculum and Teaching in Secondary School Career and Technology Studies: Business and Technology I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in the Major subject area to include EDBU 341. Students may not receive credit for both EDSE 417 and EDSEC 319.

**EDSE 418 Curriculum and Teaching in Secondary School Career and Technology Studies: Business and Technology II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 417. Students may not receive credit for both EDSE 418 and EDSEC 320.

**EDSE 422 Curriculum and Teaching in Secondary School Drama I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term and ★24 in the Major subject area to include DRAMA 383. Students may not receive credit for both EDSE 422 and EDSEC 319.

**EDSE 423 Curriculum and Teaching Secondary School Drama II**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite or corequisite: EDSE 422. Students may not receive credit for both EDSE 423 and EDSEC 325.

**EDSE 424 Theory and Practice of Drama/Theatre in Education**

★3 (*fi 6*) (either term, 3-0-3). This course is designed to give students experience in the creation of shows which can tour schools for educational purposes. They will a) examine recent examples of Theatre in Education and Drama in Education experiences and the theories upon which they are based; b) design their own shows which will be taken to schools; c) design workshops with the students; and d) create their own theory of Theatre in Education and Drama in Education. The course will emphasize the use of drama as a learning medium, focusing on the curricular content and social issues experienced by students throughout their schooling. Prerequisite: Introductory Professional Term or DRAMA 359.

**EDSE 427 Curriculum and Teaching in Secondary School English Language Arts I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in the Major subject area. Students may not receive credit for both EDSE 427 and EDSEC 329.

**EDSE 428 Curriculum and Teaching in Secondary School English Language Arts II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 427. Students may not receive credit for both EDSE 428 and EDSEC 330.

**EDSE 429 Teaching Print and Media Texts to Adolescents**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★12 in English.

**EDSE 430 Teaching Composition, Language and Culture to Adolescents**

★3 (*fi 6*) (either term, 3-0-0).

**EDSE 432 Curriculum and Teaching in Secondary School Career and Technology Studies: Human Ecology I**

★3 (*fi 6*) (either term, 3-0-1). Prerequisites: Introductory Professional term, and ★24 in the Major subject area. Students may not receive credit for both EDSE 432 and EDSEC 334.

**EDSE 433 Curriculum and Teaching in Secondary School Career and Technology Studies: Human Ecology II**

★3 (*fi 6*) (either term, 3-0-1). Prerequisite or corequisite: EDSE 432. Students may not receive credit for both EDSE 433 and EDSEC 335.

**EDSE 437 Curriculum and Teaching in Secondary School Mathematics I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in the Major subject area. Students may not receive credit for both EDSE 437 and EDSEC 339.

**EDSE 438 Curriculum and Teaching in Secondary School Mathematics II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 437. Students may not receive credit for both EDSE 438 and EDSEC 340.

**EDSE 439 Specialized Methods in Secondary School Mathematics Teaching**

★3 (*fi 6*) (either term, 3-0-0).

**EDSE 442 The Use of Computers in the Teaching and Learning of Mathematics**

★3 (*fi 6*) (either term, 3-0-1).

**EDSE 443 Curriculum and Teaching in Secondary School Music I**

★3 (*fi 6*) (second term, 3-0-0). Prerequisites: Introductory Professional term, and

★24 in the Major subject area. Students may not receive credit for both EDSE 443 and EDSEC 344.

#### **EDSE 444 Curriculum and Teaching in Secondary School Music II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 443. Students may not receive credit for both EDSE 444 and EDSEC 345.

#### **EDSE 445 Education Band III**

★3 (*fi 6*) (either term, 3-0-0). This course examines school band literature, rehearsal techniques, instrumental techniques, conducting and school music program administration through a process of practical application. Prerequisites: EDSE 345.

#### **EDSE 446 The School Jazz Program**

★3 (*fi 6*) (either term, variable). The School Jazz Program covers the essentials of running a school jazz band as a component of the secondary school instrumental program. Jazz improvisation, repertoire, rehearsal techniques, and jazz instrumental techniques are among the topics covered. Prerequisites: Students should have knowledge of functional harmony as taught in a typical first-year university harmony course.

#### **EDSE 447 Curriculum and Teaching in Secondary School Physical Education I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term and ★24 in the Major subject area to include PEDS 294. Students may not receive credit for both EDSE 447 and EDSEC 349.

#### **EDSE 448 Curriculum and Teaching in Secondary School Physical Education II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 447. Students may not receive credit for both EDSE 448 and EDSEC 350.

#### **EDSE 452 Curriculum and Teaching in Secondary School Biological Sciences I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in the Major subject area. Students may not receive credit for both EDSE 452 and EDSEC 354.

#### **EDSE 453 Curriculum and Teaching in Secondary School Biological Sciences II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 452. Students may not receive credit for both EDSE 453 and EDSEC 355.

#### **EDSE 456 Curriculum and Teaching in Secondary School General Sciences I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in the Major subject area. Students may not receive credit for both EDSE 456 and EDSEC 338.

#### **EDSE 457 Curriculum and Teaching in Secondary School General Sciences II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 456. Students may not receive credit for both EDSE 457 and EDSEC 359.

#### **EDSE 460 Curriculum and Teaching in Secondary School Physical Sciences I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in Major subject area. Students may not receive credit for both EDSE 460 and EDSEC 362.

#### **EDSE 461 Curriculum and Teaching in Secondary School Physical Sciences II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 460. Students may not receive credit for both EDSE 461 and EDSEC 363.

#### **EDSE 468 Curriculum and Teaching in Secondary School Second Language I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in the Major subject area. Students may not receive credit for both EDSE 468 and EDSEC 370.

#### **EDSE 469 Curriculum and Teaching in Secondary School Second Language II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 468. Students may not receive credit for both EDSE 469 and EDSEC 371.

#### **EDSE 473 Curriculum and Teaching in Secondary School Social Studies I**

★3 (*fi 6*) (either term, 3-0-0). Introductory Professional Term, and ★24 in the Major subject area. Students may not receive credit for both EDSE 473 and EDSEC 375.

#### **EDSE 474 Curriculum and Teaching in Secondary School Social Studies II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 473. Students may not receive credit for both EDSE 474 and EDSEC 376.

#### **0 EDSE 478 Computer Technology Integrated into the Curriculum**

★3 (*fi 6*) (either term, 3-0-3). This course examines ways in which the computer can be used to encourage critical thinking in the classroom. The Internet,

spreadsheets, databases and other computer technologies are used to develop classroom activities. Prerequisite: Students must be able to use the Internet to find resources and be familiar with spreadsheets and databases.

#### **EDSE 488 Curriculum and Teaching in Secondary School Career and Technology Studies: Technology Education I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in the Major subject area. Students may not receive credit for both EDSE 488 and EDSEC 390.

#### **EDSE 489 Curriculum and Teaching in Secondary School Career and Technology Studies: Technology Education II**

★3 (*fi 6*) (either term, 3-0-0). Pre-/corequisite: EDSE 488. Students may not receive credit for both EDSE 489 and EDSEC 391.

#### **EDSE 493 Curriculum and Teaching in Secondary School Career and Technology Studies: Resources I**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Introductory Professional Term, and ★24 in the Major subject area.

#### **EDSE 494 Curriculum and Teaching in Secondary School Career and Technology Studies: Resources II**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite or corequisite: EDSE 493.

#### **EDSE 495 Curriculum and Teaching in Secondary School Career Education**

★3 (*fi 6*) (either term, 3-0-3). Prerequisite or corequisite: EDPS 310 and EDFX 350.

## Graduate Courses

#### **EDSE 500 Conference Seminar**

★3 (*fi 6*) (either term, variable). Selected topics in curriculum issues. Prerequisites: consent of Instructor and Department.

#### **EDSE 501 Conference Seminar**

★3 (*fi 6*) (either term, variable). Prerequisites: consent of Instructor and Department. May contain alternative delivery sections; see §200.

#### **EDSE 502 Advanced Level Guided Individual Study in Secondary Education**

★1-3 (*variable*) (either term, variable). May be offered over two terms. Prerequisites: consent of instructor and Department.

#### **0 EDSE 503 Curriculum Foundations**

★3 (*fi 6*) (first term, 3-0-0). This course focuses on the bases of current curriculum theories and their relationship to current educational practices. May contain alternative delivery sections; see §200.

#### **0 EDSE 504 Curriculum Inquiry**

★3 (*fi 6*) (second term, 3-0-0). This course focuses on curriculum perspectives and possibilities. Prerequisite: EDSE 503. May contain alternative delivery sections; see §200.

#### **EDSE 507 Postmodernism and Curriculum: Issues in Culture, Gender and Difference**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

#### **EDSE 508 Media and Popular Culture in the Curriculum**

★3 (*fi 6*) (second term, 0-3s-0). A seminar course examining texts and student reception of media (primarily television and film) within the rubric of popular culture for curriculum purposes.

#### **EDSE 509 Pedagogy of Desire**

★3 (*fi 6*) (either term, 0-3s-0). This course examines the sexual politics of the pedagogical relationship and is based on Lacanian psychoanalysis.

#### **EDSE 510 Research Methods in Secondary Education**

★3 (*fi 6*) (first term, 3-0-0). May contain alternative delivery sections; see §200.

#### **EDSE 511 Research Design in Secondary Education**

★3 (*fi 6*) (either term, 3-0-0).

#### **EDSE 512 Research Project in Secondary Education**

★3 (*fi 6*) (either term, 3-0-0). May contain alternative delivery sections; see §200.

#### **EDSE 515 Special Topics in Art Education**

★3 (*fi 6*) (either term, 3-0-0). This course examines special topics in art education.

#### **EDSE 529 Curricular Issues in English Language Arts Education**

★3 (*fi 6*) (either term, 0-3s-0). Through critically considering the relationship of current theory, research, and practice, this course will address a number of issues in the development and implementation of language arts programs at the secondary school level. It will also provide an overview of the key theories and influences which have shaped and are continuing to affect language arts curriculum and instruction.

#### **EDSE 530 Teaching Language and Writing to Adolescents in a Multimedia World**

★3 (*fi 6*) (either term, 0-3s-0). This course develops an understanding of writing, composition theory, and writing instruction through involvement in the process,

discussion of classroom practices, and critical examination of research and theory. The seminar will examine key aspects of composing processes, students' development as writers, curriculum, research, and evaluation. Students in this course will be expected to share their writing regularly as well as examine pedagogical and curricular concerns.

**EDSE 539 Secondary Mathematics Education: Research Issues in the Teaching and Learning of Mathematics**

★3 (fi 6) (either term, 3-0-0). Explores a range of research and issues concerned with the teaching and learning of mathematics. Possible topics include: mathematical understanding, communication, spoken and written discourse, and varied classroom practices.

**EDSE 540 Secondary Mathematics Education: Examining Tasks, Curricula and Programs**

★3 (fi 6) (either term, 3-0-0). Examines mathematical tasks, curricula and programs and explores the relationships among them and their implications for mathematics education policy.

**EDSE 544 Music Learning and Pedagogy I**

★3 (fi 6) (either term, 3-0-0). An overview of the historical, philosophical, social and psychological foundations of music education. Prerequisite: consent of Department.

**EDSE 545 Music Learning and Pedagogy II**

★3 (fi 6) (either term, 3-0-0). An examination of current practice and future trends in music education as informed by select readings. Prerequisite: consent of Department.

**EDSE 546 The School Jazz Program**

★3 (fi 6) (either term, variable). The School Jazz Program covers the essentials of running a school jazz band as a component of the secondary school instrumental program. Jazz improvisation, repertoire, rehearsal techniques and jazz instrumental techniques are among the topics covered. Prerequisites: Students should have knowledge of functional harmony as taught in a typical first-year university harmony course.

**EDSE 566 Science and Society: Implications for Teaching**

★3 (fi 6) (either term, 0-3s-0). A seminar course on the nature of science and social aspects of science, and implications for science teaching. Emphasis is placed on the understanding of the scientific components of current social problems, and techniques and curricula for dealing with the nature and social context of science.

**EDSE 567 Instructional Strategies in Science Teaching**

★3 (fi 6) (either term, 0-3s-0). A seminar course in which an in-depth study is made of the major techniques in science instruction. Heavy emphasis is given to research in science education and its implication for instruction.

**EDSE 568 A Critical Exam of Historical and Integrated Approaches to Teaching Second and Foreign Language Instruction**

★3 (fi 6) (either term, 0-3s-0). Students will critically examine approaches to second and foreign language instruction such as grammar-translation, direct method, audio-lingual, functional-notional, communicative and the informed eclectic. Educational ideas that influence each approach will be discussed.

**EDSE 569 Issues and Approaches in Second and Foreign Language Literacy Development**

★3 (fi 6) (either term, 0-3s-0). Students will examine issues unique to second and foreign language students as they learn to read. From the beginning reader to the advanced, explorations will draw from upon top-down, bottom-up and interactional views of literacy as well as socio-political factors.

**Q EDSE 578 Computer Technology Integrated into the Curriculum**

★3 (fi 6) (either term, 3-0-3). This course will examine ways in which the computer can be used to encourage critical thinking in the classroom. Students will use research findings, the Internet, spreadsheets, databases and other computer technologies to guide the development of classroom activities. Prerequisite skills: Students must be able to use the Internet to find resources and be familiar with spreadsheets and databases.

**EDSE 579 Integrating Technology into the Classroom: A Research Project**

★3 (fi 6) (either term, 0-3s-0). Students will develop and implement an information and communication technology research project. Students focus on technology activities that may lead to gains in learning and/or lead to changes in teaching and learning. Prerequisite: EDSE 578 or consent of the Department and the student must be in a position to implement technology activities in an educational setting.

**EDSE 580 Curriculum and Teaching for Religious and Moral Education**

★3 (fi 6) (either term, 3-0-0).

**EDSE 599 Conference Seminar**

★1-12 (variable) (variable, variable). Selected topics. Prerequisites: consent of Instructor and Department.

**EDSE 600 Secondary Education**

★6 (fi 12) (two term, 3-0-0). Reading and discussion of research, curriculum, and teaching procedures in secondary schools.

**EDSE 601 Conference Seminar in Secondary Education II**

★1-3 (variable) (variable, variable). Prerequisites: consent of instructor and Department.

**EDSE 602 Advanced Level Guided Individual Study in Secondary Education**

★1-3 (variable) (either term, variable). Prerequisites: consent of Instructor and Department.

**EDSE 605 Seeing Cinema Pedagogically**

★3 (fi 6) (either term, 0-3s-0). Pedagogical concepts and understandings are explored through cinematographic and scholarly sources. Traditional, contemporary, and radical forms of pedagogical literature are pursued and compared with culturally diverse cinema. Some issues to be addressed include depiction of children in movies, (re)presentation of pedagogical relations, languages and practice of pedagogy, ethical relations, and what cinematographic images reveal about perception and treatment of children.

**EDSE 606 Theory and Practice in Action Research**

★3 (fi 6) (first term, 3-0-0). Prerequisites: EDSE 503 and 504 or consent of Department.

**EDSE 607 Action Research Practicum**

★3 (fi 6) (second term, 3-0-0). Prerequisites: EDSE 503, 504, and 606 or consent of Department.

**EDSE 608 Cognition and Curriculum**

★3 (fi 6) (either term, 3-0-0). Theories of cognition will be studied and used to interpret curriculum. Prerequisites: EDSE 503/504 or consent of the Department.

**EDSE 610 Advanced Research Topics in Secondary Education**

★3 (fi 6) (either term, 0-3s-0).

**EDSE 611 Phenomenological Research and Writing**

★6 (fi 12) (two term, 0-3s-0). This research seminar explores human science methodology and focuses on hermeneutic phenomenology. The course investigates and develops descriptive, interpretive, vocative, and ethical dimensions of reflective writing. The meaning of any possible human experience can be a topic for phenomenological inquiry. This course is especially relevant to persons interested in the study of phenomenological meaning in the domains of education, psychology, counselling, the health sciences, and related professional and academic fields.

**EDSE 612 Theory and Practice of Arts Based Educational Research**

★3 (fi 6) (either term, 3-0-0). Qualitative research data can be collected, analyzed and disseminated in a variety of ways. Using current theories in qualitative research and creative activities from art, music, dance and drama, participants actively and creatively examine how to employ arts approaches in all phases of their research. Prerequisite: EDSE 510 or consent of Instructor and Department. Students may not receive credit in both EDSE 513 and EDSE 612.

**EDSE 613 Arts Based Educational Research Practicum**

★3 (fi 6) (either term, 3-0-0). Working in research teams, students design and conduct arts-based educational research in the examination of research topics of their own choosing. Prerequisite: EDSE 612 or consent of Instructor and Department. Students may not receive credit in both EDSE 514 and EDSE 613.

**EDSE 614 Current Issues in Art Education**

★3 (fi 6) (first term, 3-0-0). Prerequisite: Undergraduate major in art or consent of Instructor.

**EDSE 615 Directed Study in Art Education**

★3 (fi 6) (second term, 3-0-0). Prerequisite: EDSE 614 or consent of Department.

**EDSE 629 Reading and Teaching Print and Media Texts with Adolescents**

★3 (fi 6) (either term, 0-3s-0). This course examines current theory and research on literary texts, their reading and teaching, and consider implications for classroom practice. Processes involved in reading literary texts, reader-response theories, and approaches for teaching, assessing, and researching are explored. The implications for the secondary school curriculum or trends and developments in literary theory are considered.

**EDSE 630 Perspectives on English Language Arts Learning and Teaching**

★3 (fi 6) (either term, 0-3s-0). This course will provide an in-depth critical examination of the theory and research associated with selected topics in English language arts curriculum and instruction. Topics of historical and current relevance will be explored, such as emerging definitions of the field of English language arts education, English curriculum and teaching models, and approaches to evaluation. Students will examine landmark research studies in English language arts education to learn more about appropriate research approaches for different types of studies, as well as consider the ideas presented through the studies. Prerequisites: EDSE 529, 530, 629, or consent of Instructor.

**EDSE 667 Current Issues and Trends in Science Education**

★3 (fi 6) (either term, 0-3s-0). A seminar course in which an examination and synthesis is made of current thinking and research in science education. Topics are selected from major areas of interest including curriculum development,

scientific literacy, science concept acquisition, instruction and evaluation. Emphasis is given to classroom applications of major ideas.

### EDSE 668 Issues in Second and Foreign Language Teacher Education

★3 (fi 6) (either term, 0-3s-0). This course will address contemporary issues locally and on an international scale.

### EDSE 669 Curriculum and Resource Development in Second Languages

★3 (fi 6) (either term, 0-3s-0). Students will address issues of philosophy, rationale, learner expectations, unit organization, learner needs, and linguistic, strategic and cultural competence in resource analysis and development. As well, evaluation of resources will be included.

### EDSE 900 Directed Research Project

★3 (fi 6) (either term, unassigned).

## 201.72 Electrical and Computer Engineering/Biomedical Engineering, EE BE

Departments of Electrical and Computer Engineering/  
Biomedical Engineering  
Faculties of Engineering, and Medicine and Dentistry

### Undergraduate Courses

#### EE BE 512 Biophysical Measurement and Instrumentation

★3 (fi 6) (first term, 3-0-0). An introduction to the principles that underlie biophysical instrumentation. Various biomedical sensors are examined and their application to the measurement of blood pressure, cardiac output, and respiratory parameters discussed. The origin of biopotentials is developed and extended to the membrane and action potentials. The measurement of bioelectrical signals such as the ECG and EMG is presented. Applications of electrodes, biochemical sensors, and lasers are examined. Biostimulation, including cardiac pacemakers, defibrillators, and functional neuromuscular stimulation are introduced. Prerequisite: consent of Department of Biomedical Engineering or Department of Electrical and Computer Engineering.

#### EE BE 540 Digital Computer Processing of Images

★3 (fi 6) (either term, 3-0-3/2). Extension of sampling theory and the Fourier transform to two dimensions, pixel operations including gray-level modification, algebraic and geometric transformations. The design of spatial filters for noise reduction, image sharpening and edge enhancement, and some discussion of interpolation techniques. An introduction to the concepts of image restoration from known degradations and the reconstruction of images from parallel and fan projections. Prerequisite: E E 338 or consent of Instructor.

## 201.73 Electrical Engineering, E E

Department of Electrical and Computer Engineering  
Faculty of Engineering

#### Notes

(1) A course listed for either term will be offered in the first term or in the second term.

(2) In some cases prerequisite requirements may be waived with the consent of Department.

The following table lists renumbered courses:

Old	New	Old	New
E E 438	E E 338	E E 499	E E 599
E E 482	E E 582	E E 582	CMPE 582
E E 498	E E 598		

### Undergraduate Courses

#### E E 231 Numerical Methods for Electrical Engineering

★3.5 (fi 6) (second term or Spring/Summer, 3-1s-0). Numerical computation. Linear algebraic systems. Roots of linear and non-linear simultaneous equations. Numerical differentiation and integration. Interpolation and approximation. Ordinary differential equations. Prerequisite: ENCOMP 100 or CMPUT 114 and E E 240.

#### E E 239 Fundamentals of Electrical Engineering

★3.8 (fi 6) (either term or Spring/Summer, 3-0-3/2). Physical concepts of passive circuit elements, Kirchhoff's laws and DC circuit equations. Energy concepts, time domain analysis of AC circuits. Impedance, complex numbers and phasor algebra. AC power concepts, resonance, three phase circuits, introduction to machines.

#### E E 240 Electrical Circuits I

★4.3 (fi 6) (first term, 3-1s-3/2). Circuit element definitions. Circuit laws: KVL,

KCL, Ohm's. Resistive voltage and current dividers. Basic loop and nodal analysis. Dependent sources. Circuit theorems: superposition, maximum power transfer, Thevenin, Norton. Time domain behavior of inductance and capacitance, energy storage. Sinusoidal signals, complex numbers, phasor and impedance concepts, complex power, RMS power. Resonant circuits, Three-phase power, wye and delta connections, wattmeters. Prerequisites: MATH 101, 102.

#### E E 250 Electrical Circuits II

★4.3 (fi 6) (second term or Spring/Summer, 3-1s-3/2). Forced and natural time response of RL, RC, and RLC circuits using the differential equation approach. The s-plane and poles and zeroes. Forced and natural response of circuits using complex frequency analysis. Mutual inductance and the ideal transformer. Two-port networks and the y, z, h and ABCD parameters. Reciprocal networks. Introduction to the ideal operational amplifier. Prerequisites: MATH 102, 201 and E E 240.

#### E E 280 Introduction to Digital Electronics

★3.8 (fi 6) (either term, 3-0-3/2). Boolean algebra including truth tables and Karnaugh maps. Switching devices and their symbology with an introduction to NAND and NOR logic. Number systems, codes, minimization procedures, synthesis of combinational networks. Synchronous sequential circuits, flip-flops, counters. Credit may be obtained in only one of E E 280 or CMPUT 329.

#### E E 315 Engineering Electromagnetics I

★3.5 (fi 6) (first term, 3-1s-0). Review of vector calculus, electrostatics, and magnetostatics. Electric and magnetic fields in material media, including polarization mechanisms and general boundary conditions. Solutions to static field problems. Maxwell's equations and waves in free space, dielectrics and conducting media. Reflection and refraction, standing waves. Prerequisites: MATH 102, 209 and PHYS 230.

#### E E 316 Engineering Electromagnetics II

★3 (fi 6) (either term, 3-0-0). Transient and time harmonic signals in transmission lines, including impedance matching and the Smith Chart. Rectangular wave guides. Introduction to radiation and antennas. Prerequisite: E E 315.

#### E E 317 Electromagnetics for Computer Engineers

★3 (fi 6) (second term, 3-0-0). Review of electrostatics, magnetostatics and vector theorems. Introduction to Maxwell's equations. Ideal transmission line, wave equation, travelling waves. Characteristic impedance, reflection coefficient, power flow, multiple reflections and transient response of a transmission line. AC steady-state and lossy transmission lines. Smith chart, plane wave propagation, reflection and transmission coefficients. Implications on transmission rates of digital data. Local area networks, instrumentation buses. Prerequisite: PHYS 230 or equivalent.

#### E E 323 Analytical Methods of Electrical Engineering

★3.5 (fi 6) (either term, 3-1s-0). Applications of the theory of partial differential equations to Maxwell's equations, heat flow problems, the transmission line equation and Laplace's equation. Transform methods and special functions. Prerequisites: E E 335 and MATH 309.

#### E E 330 Introduction to Power Engineering

★3 (fi 6) (first term, 3-0-0). DC and AC magnetic circuit analysis. Ideal and non-ideal transformers. Ideal and non-ideal autotransformers. Three phase transformers. Mechanical forces and magnetic devices. Modelling and analysis of transducers. Corequisite: E E 250.

#### E E 332 Electric Machines

★3.8 (fi 6) (either term, 3-0-3/2). Principles of electromagnetic force and torque in rotating machinery. Simple AC and DC machines. Induction motor theory. Practical aspects of induction motor use: characteristics, standards, starting, variable speed operation. Synchronous machine theory and characteristics. Fractional HP motor theory. Safety in electrical environments. Prerequisite: E E 330 or consent of Department.

#### E E 335 Continuous Time Signals and Systems

★3.5 (fi 6) (first term, 3-1s-0). Introduction to linear systems and signal classification. Delta function and convolution. Fourier series and basic Fourier transform. Fourier transform properties. Laplace transform. Analysis of linear time invariant (LTI) systems using the Laplace transform. Prerequisites: E E 240; MATH 102 and 201 or equivalent. Prerequisite for students in electrical engineering program: MATH 309. Corequisite for students in engineering physics program: MATH 311.

#### E E 338 Discrete Time Signals and Systems

★3.8 (fi 6) (either term, 3-0-3/2). Discrete-time signals and systems; sampled signals and sampling theorem; the z-transform; design of digital filters; discrete Fourier transform, the periodogram. Fast Fourier transform, algorithms, aliasing, leakage; spectral analysis, applications. Prerequisite: E E 335. Credit may not be obtained in both E E 338 and 438.

#### E E 340 Electronics: Active Devices

★4.3 (fi 6) (first term, 3-1s-3/2). PN junction semiconductor basics, charge flow and diode equation. Diodes: clipping and clamping circuits, bridge rectifier, capacitive filtering, and zener regulator. Power supply design. Bipolar junction transistor (BJT): operation and its small-signal hybrid- $\pi$  model. BJT amplifier basics: biasing, DC/AC load line viewpoint, gain. Rin and Rout properties, analysis

and design. JFET and MOSFET device operation with application to amplifiers. Prerequisite: E E 240.

#### **E E 350 Electronics: Analog Circuits**

★3.4 (fi 6) (either term, 3-1s-3/2). Op-amp as ideal 3-terminal device, virtual ground concept, linear versus nonlinear (switched) operation, design and applications. Differential amplifiers (BJT and MOSFET). Biasing with current mirrors. Common-mode (noise) rejection, I and V offsets. Frequency response of amplifiers: basic high frequency model, dominant pole calculation and design. Frequency performance comparison of design topologies. Common op-amp circuit design. Feedback application in amplifier circuits. Prerequisites: E E 250 and 340.

#### **E E 357 Control Systems I**

★3.8 (fi 6) (either term, 3-0-3/2). Linear system models. Time response and stability. Block diagrams and signal flow graphs. Feedback control system characteristics. Dynamic compensation. Root locus analysis and design. Frequency response analysis and design. This course may not be taken for credit if credit has already been obtained in either E E 462 or E E 469. Prerequisites: E E 250 and 335.

#### **E E 365 Technical Communications**

★3 (fi 6) (either term, 3-0-0). Technical approach to writing, pyramid technique, technical correspondence, references, critiques of written assignments. Time management, engineering professionalism, brainstorming, IEEE paper contest, changing engineering profession, working in groups and group dynamics. Extemporaneous oral presentations, semi-formal and formal oral presentations, moderating oral presentations.

#### **E E 380 Introduction to Microprocessors**

★3.8 (fi 6) (either term or Spring/Summer, 3-0-3/2). Microcomputer architecture, assembly language programming, sub-routine handling, memory and input/output system and interrupt concepts. Prerequisite: E E 280 or CMPUT 329. Credit may be obtained in only one of E E 380 or CMPUT 229.

#### **E E 387 Statistical Methods in Electrical Engineering**

★3.3 (fi 6) (either term, 3-0-1/2). Introduction to descriptive statistics; measures of central tendency. Probability theory: discrete sample spaces, Bayes' rule, random variables. Discrete and continuous distributions (binomial, hypergeometric, Poisson, normal, standardized normal, exponential and chi-square). Estimation and sampling theory. Hypothesis testing. Application of techniques to electrical engineering measurements, to communications, reliability, queuing, modelling and simulation studies of electrical and computer engineering systems and other areas of signal analysis. Note: This course may not be taken for credit if credit has already been obtained in STAT 235 or equivalent.

#### **E E 390 Introduction to Communication Systems**

★3.8 (fi 6) (either term, 3-0-3/2). Basics of analog communication: amplitude, angle, and analog pulse modulation; modulators and demodulators; frequency multiplexing. Basics of digital communication: sampling, quantization, pulse code modulation, time division multiplexing, binary signal formats. Prerequisite: E E 335.

#### **E E 401 Engineering Design Project**

★4 (fi 6) (either term, 1-0-6). Design of practical engineering system or device that involves going from concept to working prototype requiring student teams to exercise creative ability, to make assumptions and decisions based on technical knowledge. Design project requirements and selection are defined during the 3rd year Winter Term. Formal interim and final reports are required from each group. In addition, lectures once a week will develop expertise in various areas related to design. Restricted to fourth-year students only.

#### **E E 445 C/C++ Programming for Engineers**

★3.8 (fi 6) (either term, 3-0-3/2). Introduction to the C/C++ programming language and object-oriented software design. Models of software development. Fundamental principles of software engineering. Procedure-oriented versus object-oriented software design. Built-in and user-defined data types. Abstract data types and objects. Basic control structures input/output in C/C++. Functions, parameter passing mechanisms, and function overloading. Arrays and pointers. Classes and data abstraction. Operator overloading. Class hierarchies, inheritance, virtual functions, and polymorphism. Function and class templates. Exception handling. Generic programming and the C++ Standard Template Library. Prerequisite: E E 231 or equivalent. Note: Only one of the following courses may be taken for credit: E E 445, CMPE 210, CMPUT 201.

#### **E E 462 Control Systems for Computer Engineers**

★3.8 (fi 6) (second term, 3-0-3/2). Linear models of control systems. PID controller transient response and tuning. Stability analysis. Root locus method. Bode plots and frequency domain analysis and design. State space techniques. Discrete-time system modelling and digital controller design. Prerequisites: E E 335 and 338. Note: This course may not be taken for credit if credit has already been obtained in either E E 357 or 469.

#### **E E 469 Feedback Control Systems for Mechanical Engineers**

★3.8 (fi 6) (second term, 3-0-3/2). Laplace transforms. Linear models of physical systems. Transient response and system performance. Stability and Routh criterion. PID regulator transient response and tuning methods. Root locus. Bode plots and frequency response analysis and design. Prerequisite: MATH 201. Note: This

course may not be taken for credit if credit has already been obtained in either E E 357 or 462.

#### **E E 480 Advanced Digital Logic Design**

★3.8 (fi 6) (either term, 3-0-3/2). Review of classical logic design methods. Introduction to the hardware description language VHDL. Logic simulation principles. Digital system design. Digital system testing and design for testability. Arithmetic circuits. Prerequisite: E E 280 or CMPUT 329.

#### **E E 483 Integrated Circuit Design**

★3.8 (fi 6) (either term, 3-0-3/2). Electrical characteristics of MOSFET devices and circuits. Simulation of MOSFET circuits. Integrated circuit fabrication. Design and layout of CMOS digital integrated circuits. Use of a computer layout system. Architecture of LSI and VLSI systems. Digital system timing and timing simulation. Computer aids for integrated circuit design. Prerequisites: E E 480 and 570.

#### **E E 494 Research Project Seminar**

★0.5 (fi 2) (either term, 0-1s-0). Organizational seminars for the research project in the following term.

#### **E E 495 Research Project**

★3 (fi 6) (either term, 0-0-6). Engineering Physics student research projects.

#### **E E 514 Reliability Engineering**

★3 (fi 6) (either term, 3-0-0). Study of how and why electrical and mechanical systems and components fail; Murphy's law; definitions of reliability and failure modes; practical statistical distributions and frequency and duration approach for designing and evaluating system and component reliability levels; repairable, non-repairable and standby systems. Prerequisite: E E 387 or equivalent.

#### **E E 521 Power Systems I**

★3 (fi 6) (either term, 3-0-0). Power system components and performance; per unit analysis of power systems; characteristics of transposed and untransposed transmission lines; transmission line models, load flow methods and Z bus building. Prerequisites: E E 250 and MATH 102.

#### **E E 524 Switchmode Power Supplies**

★3.4 (fi 6) (first term, 3-0-3/4). Power semiconductors: MOSFETS, IGBT, DC/DC converters; buck, boost, buck-boost, cuk. Converter operation in continuous and discontinuous conduction modes. Power supplies with high frequency isolation: flyback, push-pull, full-bridge and half-bridge. Resonant mode converters, soft-switching, resonant DC-link, parallel/series topologies. Applications and design examples. Prerequisite: E E 340. Note: This course is offered every second year alternating with E E 530.

#### **E E 525 Power Systems II**

★3.8 (fi 6) (either term, 3-0-3/2). Introduction to power system transient states. Analysis of faulted power systems and theory of symmetrical components. Power system voltage stability. PV and QV curve methods. Power system angular stability. Transient stability and equal area criterion. Steady-state stability and power system stabilizer. A power system design and simulation lab is included in this course. Prerequisite: E E 521 or consent of Instructor.

#### **E E 527 Industrial Power Distribution**

★3 (fi 6) (either term, 3-0-0). Fundamentals of engineering design of electrical distribution systems for buildings and electrical plants. Current design practices and engineering methods. Corequisite: E E 332.

#### **E E 528 Design of Reliable Industrial and Commercial Power Systems**

★3 (fi 6) (either term, 3-0-0). Fundamentals of reliability analysis as it applies to planning and design of industrial and commercial electric power distribution systems. Cost of power outage analysis, economic evaluation of reliability. Reliability compliance and reliability demonstration for electronic and electrical equipment and systems. Design of emergency and standby systems. Design and reliability analysis of radial primary and secondary selective distribution systems. Preventive maintenance. Case studies. Prerequisite: E E 387 or equivalent. Note: This course is offered every second year alternating with E E 529.

#### **E E 529 Power Quality**

★3 (fi 6) (either term, 3-0-0). Introduction to power quality. Definition and characteristics of power system disturbances. Generation, characterization, mitigation and analysis of key power quality disturbances: harmonics, voltage sags and swells, and electromagnetic transients. Case studies using transients and harmonics programs. Application of power quality standards and practical aspects of power quality assessment. Custom Power technologies and current developments. Prerequisite: E E 330. Note: This course is offered every second year alternating with E E 528.

#### **E E 530 Power Electronics**

★3.4 (fi 6) (first term, 3-0-3/4). Diode rectifiers. Overview of power semiconductor device technology: switching characteristics, gate drives and switching aid circuitry. Circuit topologies: Phase-controlled and diode rectifiers, DC choppers, DC drive systems, inverters, AC controllers, DC/DC converters, Switchmode power supplies. PWM control techniques. Applications and design examples. Prerequisites: E E 250 and 340. Note: This course is offered every second year alternating with E E 524.

#### **E E 531 Variable Speed AC Drives**

★3.4 (fi 6) (second term, 3-0-3/4). Variable speed control of induction motors.

Variable frequency drives: square wave variable-voltage inverter drive, pulswidth modulated voltage source inverter drive, current source inverter drive. Cycloconverters, slip-energy recovery drives. Specialty motor drives: permanent magnet motors, stepper motors and switched reluctance motors. Prerequisites: E E 250, 332 and 340.

### E E 534 Adaptive Filtering

★3 (fi 6) (either term, 3-0-0). Introduction to adaptive signal processing, adaptive filtering, applications. Discrete-time stochastic processes, correlation matrix, mean-square error surface. Wiener filter, Newton algorithm, steepest-descent algorithm. The LMS-type and RMS-type algorithms, convergence properties, quantization effects, and application examples. Adaptive IIR digital filters, derivative implementation, the effect of alternative IIR digital filter structures. Prerequisite: E E 539 or consent of Instructor.

### E E 539 Digital Filter Design and Implementation

★3.8 (fi 6) (either term, 3-0-3/2). Digital filters, digital filter structures and properties. Time-domain analysis of digital filter, frequency-domain analysis using z-transforms. Digital filter realization techniques, low-sensitivity digital filters. Approximation techniques for the design of recursive digital filters. Design of nonrecursive digital filters using windowing techniques. Design of recursive and nonrecursive digital filters using numerical optimization. Finite-wordlength arithmetic effects in the design of digital filters, coefficient quantization, signal quantization, roundoff noise, overflow oscillations, scaling. Allocation of coefficient and signal wordlengths. Hardware implementation of digital filters using fixed-point or floating-point arithmetic. Practical applications in digital multimedia and digital telephony. Prerequisites: E E 338, and E E 380 or CMPUT 229.

### E E 545 Power System Protection

★3 (fi 6) (either term, 3-0-0). Review of power systems, relays and current transformers, per unit phasors, relay, fundamental units, transformers. Site visit to actual power system installations, systems faults and relay coordination.

### E E 550 Design with Operational Amplifiers

★3 (fi 6) (either term, 3-0-0). Operational amplifier fundamentals. Ideal opamp circuit analysis. Circuits with resistive feedback. Current-to-voltage and voltage-to-current converters. Instrumentation amplifiers. Transducer bridge amplifiers. Active filters. Standard second order responses. State-variable and biquad filters. Switched capacitor filters. Static opamp limitations. Bias and offset currents, input offset voltage. Input offset-error compensation. Dynamic opamp limitations. Transient response. Current feedback amplifiers. Stability. Noise properties of opamps. Opamp specifications. Prerequisite: E E 350 and E E 357 or E E 462.

### E E 552 High Level Digital ASIC Design Using CAD

★4.5 (fi 6) (either term, 3-0-3). In this lecture and project-orientated course, students acquire and apply skills in the design of digital application-specific integrated circuit (ASIC) using synthesis CAD tools. Topics include design flow, hierarchical design, hardware description languages such as VHDL, synthesis, design verification, IC test, chip-scale synchronous design, field programmable gate arrays, mask programmable gate arrays, CMOS circuits and IC process technology. For the project, students will design and implement a significant digital system using field programmable gate arrays. Prerequisite: E E 480.

### E E 561 Control Systems II

★3.8 (fi 6) (either term, 3-0-3/2). State space analysis methods, stability, observability and controllability. State space design methods, pole placement and optimal state feedback control, observer design. Introduction to nonlinear control systems, phase-plane method, describing function method, stability and limit cycles, Lyapunov method. Introduction to adaptive control, neural network control and fuzzy control systems with case study examples. Prerequisite: E E 357.

### E E 562 Industrial Automation

★3.8 (fi 6) (either term, 3-0-3/2). Review of the industrial environment, motor controls, control instrumentation and devices. PLC (Programmable Logic Controllers): architecture, real-time control, I/O layout, I/O types, interprocessor communications programming. Industrial applications, interlocking, safety, risks, justification. Loop tuning, communications, applications. Operator interfaces: simple operators, terminals, HMI (Human Machine Interfaces) package software, business system connectivity (SQL), data structures.

### E E 563 Introduction to Neural Networks

★3 (fi 6) (either term, 3-0-0). History, concepts, applications and biological inspiration of artificial neural networks. Basic model of a neuron. Single-layer, multi-layer and recurrent networks. Popular learning algorithms in neural networks. Introduction to Grossberg network model. Stability analysis of networks using Lyapunov stability theory. Introduction to Hopfield network model. Application examples. Prerequisites: E E 280 or CMPUT 329, and E E 231. Note: This course is offered every second year alternating with E E 565.

### E E 565 Introduction to Robotics

★3.4 (fi 6) (either term, 3-0-3/4). Description of positions and orientations in 3-D space. Geometry of robot manipulators. Motion of robot manipulators. Control of robot manipulators. Prerequisites: MEC E 250 and E E 240. Note: This course is offered every second year alternating with E E 563.

### E E 570 Large Signal and Pulse Circuits

★4.5 (fi 6) (either term, 3-0-3). Pulse circuit basics: sweep and Schmitt trigger

circuits. Large signal BJT models. Monostable and astable multivibrator and timing circuit analysis. Digital logic gate circuits: NMOS, CMOS, TTL, ECL. Sampling circuits. D/A circuit principles, inverted R-2R ladder design. A/D circuit principles and converter types. Prerequisite: E E 350.

### E E 571 RF Communication Circuits

★4.5 (fi 6) (either term, 3-0-3). Introduction to radio communications systems. Frequency selective circuits and transformers. Parallel resonant circuits including transformers. Double-tuned circuits. Impedance matching. Oscillators. Conditions for oscillation. Amplitude limitation mechanisms. Phase stability. Crystal oscillators. Mixers. Diode-ring mixers. Square-law mixers. BJT mixers. Intermodulation distortion. Modulators and demodulators. Average envelope detectors. FM demodulators. High frequency amplifiers and automatic gain control. Broadband techniques. Neutralization. Phase-lock loops. Phase detectors. Voltage-controlled oscillators. Loop filters. Phase-locked loop applications. Power amplifiers. Prerequisite: E E 350. Corequisite: E E 357 or 462.

### E E 572 Physical Electronics

★3 (fi 6) (either term, 3-0-0). Crystal structures; Semiconductor quantum mechanics and band model; carrier conduction and recombination/generation, light absorption, and emission; pn junctions, Schottky junctions, heterojunctions; FET and MOSFET operation.

### E E 573 Microfabrication and Devices

★3 (fi 6) (either term, 2-0-2). Microfabrication processes for CMOS, bipolar, MEMS, and microfluidics devices. Laboratory safety and deposition processes of oxidation, evaporation and sputtering. Lithography, wet and dry etch, and device characterization. Prerequisite: E E 350. Note: Consent of Department required.

### E E 583 Introduction to Plasmas and Discharges

★3 (fi 6) (either term, 3-0-0). Definition of plasma. Behavior in electric and magnetic fields. Particle, kinetic and fluid description of flow and transport phenomena. Waves in plasmas. Current approaches to thermonuclear fusion. High temperature laser produced plasmas and low temperature DC and RF discharge plasmas. Applications in discharge pumping of lasers, plasma etching, thin film deposition and generation of x-rays. Prerequisite: E E 315 or equivalent.

### E E 586 Introduction to Optical Fibre Communications

★3 (fi 6) (either term, 3-0-0). Properties of optical communication systems; dispersion, attenuation and physical properties of single mode and multimode fibres; LED and laser diode sources; photodetectors; optical coupling; system design; latest developments. Prerequisites: E E 316 or 317 and E E 350 and 390 or consent of Department.

### E E 587 Introduction to Multimedia Systems

★3.8 (fi 6) (either term, 3-0-3/2). History of multimedia systems, multimedia authoring, fundamentals of digital audio, color representation, image and video file formats, basics of audio, image, and video compression, visual indexing, wavelet-based techniques, multimedia hardware architectures, recording and display devices. Prerequisite: E E 338 or consent of Instructor.

### E E 588 Communication in Noise

★3 (fi 6) (either term, 3-0-0). Description and analysis of random processes, characterization of noise in electric circuits, evaluation of the output signal-to-noise ratio in analog communication systems (amplitude and angle modulated), performance of digital communication systems (linear and companded pulse code modulation, binary and multilevel baseband and carrier systems) in white Gaussian noise. Prerequisites: E E 387 and 390.

### E E 589 Telecommunication Systems Engineering

★3 (fi 6) (second term, 3-0-0). Telephony basics, subscriber loop plant, traffic theories: Poisson, Erlang B, Engset, Erlang C, efficiency of large groups. Optimum alternate route design, network architecture, 2 Wire-4 Wire conversion, loss plan for echo-loss-delay, volume, stability assurance, call routing, multi-stage circuit switch design, central office functions, time-space-time, space-time-space switching, data communication basics, system concepts: ISDN, ATM, Internet, Cellular. Prerequisites: E E 387, E E 390, E E 315 or E E 317.

### E E 590 Wireless Communication Systems

★3 (fi 6) (either term, 3-0-0). Cellular system design fundamentals, propagation in mobile radio channels: large and small scale effects, modulation techniques for mobile radio, diversity and diversity combining techniques, multiple access techniques. Prerequisite: E E 588.

### E E 591 Antennas and Propagation

★3 (fi 6) (second term, 3-0-0). Antenna fundamentals, arrays of antennas, corner reflectors, helices, slots, paraboloids, practical considerations and feeding methods. Friis transmission equation, propagation between elevated antennas over lossy earth, Fresnel zones and the effect of obstacles, earth curvature and the effects of refraction, ionospheric reflection. Prerequisites: E E 250 and 316.

### E E 596 Introduction to Principles and Physics of Lasers

★3 (fi 6) (either term, 3-0-0). Interaction of radiation with atoms, laser oscillations and threshold conditions, 3- and 4-level laser systems, rate equations, special properties of laser light, cavity Q and photon lifetime, optical resonators and lens waveguides, Gaussian beams, gain saturation, Q-switching, mode locking, interaction of light and sound, holography. Description of various lasers: solid,

gas, semiconductor, dye, Raman and chemical. Laser applications. Prerequisite: E E 316 or equivalent.

#### E E 597 Microwave Engineering

★3.8 (fi 6) (either term, 3-0-3/2). Introduction to microwave engineering and wave equation review. Wave propagation and cutoff considerations. Transmission line power and mode limits. Planar and microstrip lines. Obstacles in transmission lines. Impedance matching and tuning. Quarter-wave transformer design. Microstrip transitions. Transmission line and cavity resonators. Scattering parameters and applications. Microwave transistor amplifier gain and stability design. Microwave filter design by insertion loss method. Prerequisite: E E 315.

#### E E 598 Special Problems I

★3 (fi 6) (first term, 3-0-0).

#### E E 599 Special Problems II

★3 (fi 6) (second term, 3-0-0). Courses E E 598 and 599 are intended to enable individuals or a small group of students to study topics in their particular field of interest under the supervision of a member of the Faculty.

## Graduate Courses

The following courses may be taken for credit by graduate students: E E 514, 521, 524, 525, 527, 528, 529, 530, 531, 534, 539, 545, 550, 552, 561, 562, 563, 564, 565, 566, 570, 571, 572, 573, 583, 586, 587, 588, 589, 590, 591, 596, 597, 598, 599, EE BE 512, 540, BME 513, 553, CMPE 582.

The following courses will be offered on a regular basis, subject to demand.

If no prerequisite is specified for a graduate course, permission of the instructor must be obtained before registering.

#### E E 564 Fuzzy Systems

★3 (fi 6) (either term, 3-0-0). Introduction to fuzzy systems: origin of fuzzy sets, basic notions and application areas. Granular computing. Fuzzy set operations. Fuzzy relations and relational structures. Fuzzy numbers and their arithmetic. Fuzzy computing models. Rule-based architectures. Applications of fuzzy systems: fuzzy controllers, knowledge-based networks, fuzzy hardware, applications of fuzzy sets to data mining. Prerequisites: E E 280 or CMPUT 329 and E E 231.

#### E E 566 Digital Control Systems

★3.8 (fi 6) (either term, 3-0-3/2). Sampled-data control systems, discretization, transfer function and state space models. Controllability and observability, pole assignment, deadbeat control. State observers, observer based controllers, introduction to optimal control. Prerequisites: E E 338 and either E E 357 or 462.

#### E E 600 MSc Research Project Definition

★0.5 (fi 1) (second term, 0-1s-0). Preparation of a report defining the proposed MSc thesis research.

#### E E 609 PhD Research Project Definition

★0.5 (fi 1) (either term, 0-1s-0). Preparation of a report defining the proposed PhD thesis research.

#### E E 619 Microelectronics Process Technology

★3 (fi 6) (either term, 3-0-0). The VLSI integrated circuit fabrication process. Overview of processing steps. Basic semiconductor physics. Silicon wafer material. Oxidation. Photolithography. Diffusion. Ion implantation. Chemical vapour deposition. Metallization. Process model. Yield, packaging, and assembly.

#### E E 622 Power System Problems I

★3 (fi 6) (first term, 3-0-0). Selected power system topics, such as stability, circuitbreaking, economic scheduling of generation, overvoltages, digital and analogue approaches to analysis.

#### E E 623 Power System Problems II

★3 (fi 6) (second term, 3-0-0). A continuation of E E 622, considering topics such as tie line control, excitation and its effect on the system. The application of control systems is emphasized.

#### E E 624 Advanced Topics in Variable Speed Drives

★3 (fi 6) (second term, 3-0-0). Selected topics related to variable speed drives. Topics may include: control techniques for drive systems; permanent magnet and switched reluctance machines and drives; development of induction motor models for dynamic conditions; power electronic circuits for variable speed drives; analysis and design of variable speed drives.

#### E E 627 Advanced Power Quality

★3 (fi 6) (either term, 3-0-0). Advanced power system harmonic fundamentals. Modelling transmission lines and cable systems, three phase transformers, synchronous generators, and motors, switched mode power supplies, variable speed drives, power system loads for harmonic studies. Designing and modelling utility and industrial power system network configurations. Impact of standards on design and design of mitigating actions to minimize harmonic distortion of voltage and current waveforms. Prerequisites: E E 521, 525, 529, 531, or consent of Department.

#### E E 628 Radio Astronomy Techniques

★3 (fi 6) (first term, 3-0-0). Radiometry; galactic background and sources;

antennas and arrays as spatial frequency filters; aperture synthesis; earth-rotation synthesis; interferometry; correlation receivers.

#### E E 631 Analogue Integrated Circuit Design

★3 (fi 6) (either term, 3-0-0). Models for bipolar, JFET and MOS transistors; basic single transistor stages, cascode stage; differential stage with bipolar, JFET, MOS transistors, device mismatch, offset and drift; current sources for biasing; current sources as active loads; supply independent bias, voltage sources and voltage references; level shifters; input stages of operational amplifiers; output stages and protection circuits; monolithic operational amplifier, tutorial study and design example.

#### E E 633 Design of CMOS Analog Integrated Circuits

★3 (fi 6) (either term, 3-0-0). MOS devices and modelling. Processing and layout. CMOS design rules. Basic current mirrors and single-stage amplifiers. High-output impedance current mirrors. MOS differential pair and gain stage. Basic opamp design and compensation. Two-stage CMOS opamp. Feedback and opamp compensation. Advanced current mirrors and opamps. Folded-cascode opamp. Current-mirror opamp. Fully differential opamps. Common-mode feedback circuits. Switched-capacitor circuits. Basic building blocks. Basic operation and analysis. First-order filters. Biquad filters. Continuous-time filters. CMOS transconductors. MOSFET-C filters. Noise analysis. Prerequisite: E E 350. Corequisite: E E 357 or 462.

#### E E 635 Advanced Digital Logic Design with Project

★3.8 (fi 6) (either term, 3-0-3/2). Design and realization of synchronous and asynchronous sequential circuits, using VLSI devices. Note: this course may not be taken for credit if credit has already been obtained in E E 480.

#### E E 641 High Vacuum Technology

★3.8 (fi 6) (either term, 3-0-3/2). Gas kinetics; gas flow; pumping speed theory; pumping methods; pressure, measurement; vacuum system design; leak detection techniques; residual gas analysis; sorption processes.

#### E E 642 Thin Film Technology

★3 (fi 6) (second term, 3-0-0). Vacuum principles; thin film growth by sputtering, evaporation, and chemical techniques; characterization and classification of optical, electrical and mechanical properties; applications of thin films.

#### E E 645 Laser Matter Interactions and Applications

★3 (fi 6) (either term, 3-0-0). Background of laser systems and material interactions including: laser systems, optics, laser absorption, photochemical, photomechanical, photothermal and plasma processes. Applications including: optical disc devices, UV/XUV lithography, surface treatment, welding, drilling, cutting of materials, laser direct write processes and pulsed laser deposition.

#### E E 651 Digital System Testing and Design for Testability

★3 (fi 6) (second term, 3-0-0). Designing and testing digital VLSI/ULSI systems. Reliability issues of digital systems, testing algorithms, design-for-testability strategies. Fault modelling, fault simulation, automatic test generation, data compaction, and pseudorandom techniques, built-in self-test, error detecting, and correcting codes in digital design and testing; CAD tools for design testability.

#### E E 652 Semiconductor Memory Circuits and Architectures

★3 (fi 6) (either term, 3-0-0). Memory circuits and architectures of several families of semiconductor memories are covered, with emphasis on DRAM. Topics include SRAM, DRAM, flash, ferroelectric memories, sensing, decoding, speed-area-power trade-offs, redundancy, interfaces and novel applications. Coursework includes a focused literature review and a design project. Corequisite: E E 483 or 653 or consent of Instructor.

#### E E 653 Integrated Circuit Design with Project

★3.8 (fi 6) (either term, 3-0-3/2). Electrical characteristics of MOSFET devices and circuits. Simulation of MOSFET circuits. Integrated circuit fabrication. Design and layout of CMOS digital integrated circuits. Use of a computer layout system. Architecture of LSI and VLSI systems. Digital system timing and timing simulation. Computer aids for integrated circuit design. Note: Credit may not be obtained in both E E 653 and E E 483.

#### E E 654 SIMD Parallel Processor Architectures and Applications

★3 (fi 6) (either term, 3-0-0). Several examples of Single Instruction stream, Multiple Data stream (SIMD) parallel processor architectures are described and analyzed in this course. Applications are examined. Course work includes a focused literature review and a parallel programming project. Prerequisite: consent of Instructor (background in computer architecture, and concurrent programming or operating systems recommended).

#### E E 656 Statistical Communications

★3 (fi 6) (either term, 3-0-0). Probability and stochastic processes; source coding for discrete and analog sources; representations and spectral analysis of digitally modulated signals; optimum receivers for the additive white Gaussian noise channel and their performance with different digital modulations; channel capacity and fundamentals of channel coding; multichannel and multicarrier systems.

#### E E 660 Modern Control Theory

★3 (fi 6) (either term, 3-0-0). Linear vector spaces. Basis, subspaces, review of matrix theory. State space realizations of linear time-invariant systems. Controllability and observability. Observers. State feedback. Separation principle. The linear-quadratic control problem.

**E E 661 Adaptive Control Systems**

★3 (*fi 6*) (either term, 3-0-0). Review of necessary mathematical background. Identification structures and algorithms. Persistent excitation and parameter convergence. Adaptive control structures and algorithms. Stability and robustness issues in adaptive control. Applications of identification and adaptive control systems.

**E E 662 Digital Control Systems**

★3 (*fi 6*) (either term, 3-0-0). Analysis and design of digital control systems. Basic concepts of linear discrete-time systems. Norms of signals and systems. State-space models. Discretization of analog systems. Internal stability and stabilization. Parameterization of all stabilizing controllers. H-2 and H-infinity optimal control. Digital design by fast discretization. Direct digital design.

**E E 663 Introduction to Robust Control**

★3 (*fi 6*) (either term, 3-0-0). Norms for signals and systems. Stability of feedback systems. Model uncertainty. Robust stability and robust performance. Coprime factorization and controller parameterization. Design constraints. The model matching problem. The Nevalinna-Pick interpolation. 2-norm minimization.

**E E 666 Nonlinear Control Systems**

★3 (*fi 6*) (either term, 3-0-0). Phase plane analysis. Stability in the sense of Lyapunov. Lyapunov functions. The invariance principle. Lyapunov-based design. Backstepping. Input-output stability. Passivity and small gain theorems. Dissipativity.

**E E 671 Design of CMOS Radio-Frequency Integrated Circuits**

★3 (*fi 6*) (either term, 3-0-0). Passive RC-components in CMOS microelectronics; high-frequency amplifier design; LNA design. Mixers. RF power amplifier. Phase-locked loops; oscillators and synthesizers: Phase noise. Transmitters and receivers; transceivers in the frequency domain; performance of transceivers; high level synthesis. Pre/Corequisite: E E 571.

**E E 681 Survivable Networks**

★3 (*fi 6*) (either term, 2-2s-0). History concepts, theories, and technologies of high speed restoration of the backbone telecommunications transport network. Unavailability, network reliability, survivability, impact of failures, k-shortest paths rerouting, max flow, distributed restoration, selfhealing network protocol, optimal capacity allocation, path vs span restoration, selfhealing rings, matched nodes, uni- and bi-directional rings, optimal ring design problem, dual feeding, diverse path pairs. Current research topics: preconnection, node recovery, distributed preplanning, self-traffic engineering, hybrid networks. Student projects and seminars. Prerequisites: E E 589 and 686.

**E E 682 Photonic Devices**

★3 (*fi 6*) (either term, 3-0-0). Overview of modern photonic devices for informatics. Photon emitters and detectors, optical waveguide devices; nonlinear optics in waveguides; electro- and acousto-optic devices; photonic integrated circuits; applications to switching, signal processing, computing and sensing. Prerequisite: E E 586 or permission of Instructor.

**E E 683 Optical Fibre Communications**

★3 (*fi 6*) (first term, 3-0-0). Semiconductor laser structures; analysis of spectra, modulation characteristics and coupling. Fibre wave analysis, attenuation, dispersion, taps. Detector noise considerations and receiver circuit design. System options and design, coding. Heterodyning, electro-optical switching and recent developments.

**E E 684 Nonlinear Optics in Photonic Systems**

★3 (*fi 6*) (either term, 3-0-0). Fundamental description of nonlinear optical phenomena in terms of higher order susceptibilities. Various specific nonlinear phenomena: electrooptic modulation, acoustooptic modulation, harmonic generation and frequency conversion, stimulated Raman and Brillouin scattering and amplification, parametric oscillation and amplification, self phase modulation, soliton propagation, and photorefractive effects. Applications to engineering laser and fiber optic communication systems.

**E E 685 Data Communication and Computer Networks**

★3 (*fi 6*) (either term, 3-0-0). Layered models for protocols. Point-to-point protocols. Delay models. Multiaccess systems. Routing. Flow control.

**E E 686 Digital Transmission Networks**

★3 (*fi 6*) (first term, 3-0-0). Plesiochronous (near synchronous) digital multiplexing, waiting time jitter, jitter tolerance, jitter accumulation, coherent and random regenerator jitter, lumped-word and distributed framing systems, misframe time, SONET, network overhead functions, payload mapping, payload pointer concepts, network synchronization. TVAR calculation, wander and slips, protection switching, ring, mesh and selfhealing survivable networks, restorability and availability, asynchronous transfer mode, studies of specialized circuits, equipment design and recent research. Prerequisites: E E 588 and E E 589, or consent of Instructor.

**E E 687 Transmission Media and Systems**

★3 (*fi 6*) (either term, 3-0-0). Type of transmission media from twisted pairs, coaxial cables to free space propagation and loss. Types of fading and multipath fading analysis in communications systems, reliability and protection methods. Digital radio link analysis. Satellite communications, uplink and downlink analysis and multiple access techniques. Mobile and cellular radio systems from AMPS to Time Division Multiple Access and Code Division Multiple Access Systems.

Calculations of cellular radio systems capacities and interferences. Coaxial cable TV systems from power feed to amplifiers, analysis and design. Field trips. Prerequisites: E E 390 or consent of Instructor.

**E E 690 Concurrent Systems Engineering**

★3 (*fi 6*) (either term, 3-0-0). Classification of concurrent systems. Modelling the system environment. Design methods. Concurrent programming environment and concepts. Petri nets. Concurrent software (Modula-2, Oberon, Occam, Ada). Timing requirements and scheduling algorithms.

**E E 692 Software Engineering Metrics and Models**

★3 (*fi 6*) (either term, 3-0-0). Measures in Software Engineering. The representational theory of measurement. Examples of software measures. Function points. The goal-question-metric paradigm. Collection of software metrics data. Software reliability growth models. Effort estimation and the COCOMO model. Application plans.

**E E 695 Plasma Devices and Diagnostics**

★3 (*fi 6*) (second term, 3-0-0). Methods of obtaining plasmas: discharges, laser heating, shock tubes, etc. Plasma diagnostics including electric, magnetic and optical probing of plasmas. Prerequisite: consent of Instructor.

**E E 710 Advanced Topics in Computer Engineering**

★3 (*fi 6*) (either term, 3-0-0).

**E E 720 Advanced Topics in Software Engineering**

★3 (*fi 6*) (either term, 3-0-0).

**E E 730 Advanced Topics in Power Engineering**

★3 (*fi 6*) (either term, 3-0-0).

**E E 740 Advanced Topics in Digital Signal Processing**

★3 (*fi 6*) (either term, 3-0-0).

**E E 750 Advanced Topics in Microelectronics**

★3 (*fi 6*) (either term, 3-0-0).

**E E 760 Advanced Topics in Control**

★3 (*fi 6*) (either term, 3-0-0).

**E E 770 Advanced Topics in Electromagnetics**

★3 (*fi 6*) (either term, 3-0-0).

**E E 780 Advanced Topics in Communications**

★3 (*fi 6*) (either term, 3-0-0).

**E E 790 Advanced Topics in Biomedical Engineering**

★3 (*fi 6*) (either term, 3-0-0).

**E E 900 Directed Research Project**

★6 (*fi 12*) (variable, unassigned).

## 201.74 Engineering, Computer, ENCMP

Department of Electrical and Computer Engineering  
Faculty of Engineering

### Undergraduate Courses

**ENCMP 100 Computer Programming for Engineers**

★3.8 (*fi 6*) (either term, 3-0-1.5). Fundamentals of computer programming with emphasis on solving engineering problems. C/C++ language implementation. Syntax, variables, statements, control structures, loops, functions, data structures, files, pointers, memory use. Procedural and object-oriented programming. Objects, inheritance, polymorphism.

## 201.75 Engineering, General, ENGG

Faculty of Engineering

The following table lists renumbered courses effective 1993/94:

Old	New	Old	New
ENGG 200	ENGG 100	ENGG 500	ENGG 400
ENGG 201	ENGG 101	ENGG 502	ENGG 402
ENGG 230	ENGG 130	ENGG 504	ENGG 404
ENGG 300	ENGG 299	ENGG 505	ENGG 405
ENGG 308	ENGG 208	ENGG 506	ENGG 406

### Undergraduate Courses

**ENGG 100 Orientation to the Engineering Profession I**

★1 (*fi 2*) (first term, 1-0-0). A introduction to the Faculty and the engineering profession: the engineering disciplines, study skills, cooperative education, work opportunities, engineering, and society. Several written assignments will be required to assist in developing the student's communication skills.



**ENGG 101 Orientation to the Engineering Profession II**

★1 (fi 2) (second term, 1-0-0). An introduction to the engineering profession and its challenges; career fields, professional responsibilities of the engineer, ethics, the history and development of the engineering profession. Several written assignments will be required to assist in developing the student's communication skills.

**ENGG 130 Engineering Mechanics**

★4 (fi 6) (either term, 3-0-2). Equilibrium of planar systems. Analysis of statically determinate trusses and frames. Friction. Centroids and centres of gravity. Forces and moments in beams. Second moments of area. Note: Students in all sections of this course will write a common final examination. Corequisite: MATH 100.

**ENGG 208 Introductory Computer Aided Design**

★3 (fi 6) (either term, 2-0-2). Introduction to microcomputers and microcomputer-aided drafting and design. Introduction to technical sketching for a variety of applications. Students registered in Business, Bachelor of Design, Bachelor of Fine Arts, or Bachelor of Arts with a major in Industrial Design or Visual Communications Design should enroll in ENGG 209. This course is not open to students registered in Engineering or Science.

**ENGG 209 Intermediate Computer Aided Design**

★3 (fi 6) (first term, 2-0-2). Introduction to microcomputers and microcomputer-aided drafting and design, with emphasis on advanced applications. Introduction to technical sketching for a variety of applications. This course is open to students registered in Business, Bachelor of Design, Bachelor of Fine Arts, and Bachelor of Design, Bachelor of Fine Arts, and Bachelor of Arts with a major in Industrial Design or Visual Communication Design, or with the Instructor's approval. This course is not open to students registered in Engineering or Science.

**ENGG 299 Orientation to Cooperative Education**

★1.5 (fi 2) (first term, 1-1s-0). An examination of the history, philosophy and objectives of Cooperative Education; introduction to the operation of the Cooperative Studies Program; self-assessment of transferable skills and work values; preparation of the resumé; practice of job interview skills; goal setting on the job; ethics, safety and human rights. Note: This course is only open to students registered in the Cooperative Education Program and must be taken prior to a student's first work placement.

**ENGG 310 Engineering Economy**

★3 (fi 6) (either term or Spring/Summer, 3-0-0). The application of the fundamentals of economics to engineering alternatives in planning, developing and managing industrial projects. Note: Credit cannot be obtained for both ENGG 310 and MEC E 310 or ENGG 401.

**ENGG 400 The Practice of the Engineering Profession**

★1 (fi 2) (second term, 1-0-0). The technical and professional duties and responsibilities of the engineer, the ethics of the engineering profession, technical and professional organizations. The role of the engineer in the social environment. Note: Restricted to fourth-year regular and fifth-year co-op engineering students.

**ENGG 401 Fundamentals of Engineering Management**

★3 (fi 6) (either term, 3-0-0). The application of the fundamentals of engineering economics, financial analysis and market assessment to engineering alternatives in the planning, development and ongoing management of industrial enterprises. The course covers the use of engineering, economic, financial and market assessment information in investment and business operation decisions in technology oriented companies. Note: Credit cannot be obtained for both ENGG 401 and ENGG 310.

**ENGG 402 Project Management and Entrepreneurship**

★3 (fi 6) (either term, 3-0-0). Introduction to the conceptual and practical considerations in identifying and developing new products. The theory and practice of project management applied to the creation of new business activities and ventures will be discussed. Topics include project management, innovation and entrepreneurship, business planning, marketing, and mobilizing human and financial resources. These will be applied in the development of a business plan for a business concept. The course is intended to provide engineering and business students with an awareness of specific planning, budgeting and scheduling techniques that can be used to implement and monitor new business activities. Prerequisites: Completion of at least six academic terms. This course is open to Business and Science students with consent of Instructor.

**ENGG 403 Engineering, Environment and Society**

★3 (fi 6) (second term, 3-0-0). The role of engineering and management in addressing environmental and socioeconomic factors associated with engineered projects and the impact of technology on society. This course covers the various roles that engineers can play in the development and delivery of new enterprises and projects with particular emphasis on evolving environmental and social demands placed upon project proponents. The impact of these projects on society and the various approaches that can be used to promote the successful delivery of projects are considered.

**ENGG 404 Industrial Safety and Loss Management**

★3.8 (fi 6) (first term, 3-3s/2-0). A broad study of the principles and practices of providing a safe and reliable working environment in all types of major industries. Government regulatory requirements are reviewed. The key topics of

study, using leading industry practices, are industrial health, safety, and environmental risks. The course emphasizes the importance of the decisions of engineers and business managers in protecting workers, the environment, assets, production, and the public in general. Plant visits, case studies, and guest lecturers from industry and government are included. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details. Prerequisite: Completion of at least two years of study in Engineering or Business or by consent of the Instructor.

**ENGG 405 Engineering, Business and Society**

★3 (fi 6) (either term, 3-0-0). The role of engineering and management in achieving the objectives of technology oriented enterprises, and the impact of technology on society. The course covers alternate forms of organization, key differences between management of a one time project and an ongoing operation, the impact of work on society, individual variations in personality and management style and the implications for managing, and specific issues in human resource and quality management.

**ENGG 406 Industrial Safety and Risk Management**

★3.8 (fi 6) (second term, 3-3s/2-0). A comprehensive study of the theories and practices of providing a low-risk working environment in all types of major industries, with particular emphasis on risk analysis/management solutions. Case studies of recent industrial disasters and industrial site visits are used to focus on proactive management techniques. The course strongly emphasizes risk analysis, risk management, and loss control. Techniques of leadership, management, and motivation to provide excellence of results are emphasized. Legal and ethical responsibilities of engineers and business managers are reviewed. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details. Prerequisite: Completion of at least two years of study in Engineering or Business or by consent of the Instructor.

**ENGG 420 Engineering Law**

★3 (fi 6) (either term, 3-0-0). Contracts; specifications; tenders; bonds; construction contract forms; Public Works Act; Workers' Compensation Act; building trades; company law; the engineer as an expert witness; patents; trade marks; copyrights; negligence; arbitration. Note: Restricted enrolment. Registration approval by Dean's office only.

## 201.76 Engineering Management, ENG M

Department of Mechanical Engineering  
Faculty of Engineering

The following table lists renumbered courses effective 1994/95:

Old	New	Old	New
MEC E 610	ENG M 620	MEC E 613	ENG M 650
MEC E 611	ENG M 630		

### Graduate Courses

**ENG M 601 Graduate Seminar**

★0.5 (fi 2) (either term, 0-1s-0). Presentations by graduate students, staff, and visitors of issues and topics in Engineering Management.

**ENG M 612 Quality Assurance and Assessment Systems**

★3 (fi 6) (either term, 3-0-0). Current theory and practice of quality management systems. Modeling of systems and supporting technologies for performance management and improvement. ISO 9000 standards, business excellence models and performance measurement. Application of quality assurance schemes in manufacturing, service and not-profit organizations. Design, implementation and improvement of assurance systems using auditing and self-assessment models. Auditing standards and self-assessment guidelines. Integration of quality, environmental, health and safety, financial, and other assurance systems and supporting technologies.

**ENG M 620 Engineering Economic Analysis**

★3 (fi 6) (either term, 3-0-0). Advanced topics in engineering economics including operating and capital budgets, financial statement use by managers, replacement analysis, cost of capital and leasing. Prerequisite: ENGG 310 or 401 or equivalent.

**ENG M 621 Engineering Economic Analysis I**

★1.5 (fi 3) (either term, 18 hours). Financial statements and their use. Review of basic financial analysis techniques, review of project evaluation, equivalence and rate of return analysis. Effects of depreciation. Capital Cost Allowance (CCA) and income tax on project evaluation. Prerequisite: ENGG 310 or 401.

**ENG M 622 Engineering Economics Analysis II**

★1.5 (fi 3) (either term, 18 hours). Estimating and costing, capital budgeting and cost of capital multiple investment alternative, risk assessment and risk management, inflation and its effects on cash flows, alternative methods of project finance (venture capital, long term debt, initial public offerings, etc.), and cost-benefit analysis. Prerequisite: ENG M 621.

**ENG M 630 Project Management Techniques**

★3 (fi 6) (either term, 3-0-0). This course involves study of the management

techniques that are particularly relevant to the design, development and control of engineering projects. Special attention will be given to network (CPM, PERT) systems and the use of computers for time and cost control.

#### ENG M 635 Project Management

★3 (fi 6) (second term, 3-0-0). This course first presents an overall project framework that provides a basic structure for understanding project management. The component processes that make up project management are presented and discussed. Case studies will be presented by the students and discussed to demonstrate practical applications of each process. A major project will be assigned to the group early in the term. The various roles and responsibilities typical in project teams will be rotated throughout the group. Work on the project will allow first-hand application of the knowledge presented and discussed in the class. Credit cannot be obtained in both MGTSC 686 and ENG M 635.

#### ENG M 640 Optimization Models and Algorithms

★3 (fi 6) (either term, 3-0-0). The applications of optimization methods in solving engineering management problems. Both modeling techniques and algorithms will be covered. Linear programming, non-linear programming, dynamic programming, integer programming, stochastic programming, genetic algorithms, heuristic methods, queuing theory and other new optimization methods. Credit may only be given for one of ENG M 640, MEC E 612, and CH E 654. Prerequisite: MP E 497, MGTSC 352 or equivalent.

#### ENG M 650 Managing in a Technical Environment

★3 (fi 6) (either term, 3-0-0). Design concepts for management systems, philosophy of engineering management, the management function, matrix management, management by objectives.

#### ENG M 655 Personality Theory and Technical Management

★3 (fi 6) (either term, 3-0-0). This course reviews current thinking on personality theory (using Carver and Scheier's model of seven theoretical perspectives on personality), and looks at the implications for managing that arise from each theoretical perspective. In particular, managing in technical settings with a diverse range of skill types and levels frequently calls for diversity in management approaches that reflect the inherent diversity in the people being managed. The Myers Briggs Type Indicator, widely used in business settings, is reviewed in greater detail. Management styles and the nature of management thinking and decision making are discussed.

#### ENG M 660 Special Topics in Technology Commercialization

★3 (fi 6) (second term, 3-0-0). This course examines the fundamentals of starting, financing and managing an advanced technology business. Teams of students will each find a high-tech opportunity and develop a business and financing plan to start and grow the business. Guest lectures from experts who have practical experience in the various subject areas of business development will be coordinated with the main course lectures and the various stages of developing the business and financing plans. Oral and written presentation of various phases of the plan will be prepared by each group and delivered at various intervals. By the end of the term the team will have developed a written business plan/investment proposal and a financing plan to demonstrate the viability of the opportunity.

#### ENG M 665 Introduction to Intellectual Property and New Technology Commercialization

★3 (fi 6) (second term, 3-0-0). This course provides an understanding of intellectual property in the context of technology transfer and commercialization. The key topics in this course will include intellectual property, product development, valuation of technology, capturing value, and securing the deal. This course will introduce students to considerations in identifying and developing new products, examine how exploitation of intellectual property is a corporate strategy, and discuss the impact intellectual property has in new company formation and growth. Key concepts are to be learned through in-class critiques of assigned readings and case analyses.

#### ENG M 670 Advanced Topics in Engineering Management I

★3 (fi 6) (either term, 3-0-0).

#### ENG M 680 Advanced Topics in Engineering Management II

★3 (fi 6) (either term, 3-0-0).

## 201.77 Engineering Physics, EN PH

Department of Physics  
Faculties of Engineering and Science

### Undergraduate Courses

#### EN PH 131 Mechanics

★4.3 (fi 6) (either term, 3-1s-3/2). Kinematics and dynamics of particles; gravitation; work and energy; linear momentum; angular momentum; systems of particles; introduction to dynamics of rigid bodies. Prerequisites: MATH 100, ENGG 130. Corequisite: MATH 101. Prerequisite or corequisite: PHYS 130. Restricted to Engineering students. Other students who take this course will receive ★3.0.

## 201.78 English, ENGL

Department of English  
Faculty of Arts

**Note:** Courses in the Department of English teach the English language and its several literatures; some works may be taught in translation as necessary to fulfil the primary goal of understanding English literature.

See also WRITE. WRITE courses may be taken as English courses.

### Undergraduate Courses

#### Notes

- (1) Most students will take ENGL 100 or 101, two-term courses, either of which will serve as the prerequisite to all senior English courses. Students with credit in ENGL 100 or 101 or equivalent should not take current ENGL 100 or 101 and may proceed to senior English courses. Transfer students to the Faculty of Arts who have received credit in ★3 in junior-level English are permitted to take either ENGL 104 or 105 in lieu of the ENGL 100/101 requirement.
- (2) Normally, no more than one two-term, junior English course, or equivalent, may be offered for credit in an undergraduate program.
- (3) Junior English courses require a substantial amount of writing in essays and tests to afford practice in setting down ideas in good English.
- (4) All senior courses have as prerequisite ENGL 100, 101 or equivalent; prerequisites for 400-level courses are ★12 of senior English, ★6 of which must be at the 300-level (as numbered in this edition of the Calendar, including any specific course prerequisites in the individual course descriptions).
- (5) Not all senior courses are offered in any given year.

#### ENGL 100 Literature in English, Beginnings to the Present

★6 (fi 12) (two term, 3-0-0). A close study of historically representative works which demonstrate the development, enlargement, and experimentalism of literature in English, with a minimum 20% of class time devoted to writing instruction. Not to be taken by students with credit in former ENGL 100 or 101 or 110 or 104/105.

#### ENGL 101 Critical Reading and Writing

★6 (fi 12) (two term, 3-0-0). A critical study of literature in English, concentrating on works written since 1800, with a minimum 30% of class time devoted to writing instruction. Note: Not to be taken by students with credit in ENGL 100 or 110 or 104/105.

#### ENGL 104 Readings in Poetry

★3 (fi 6) (either term, 3-0-0). A close study of selected modern and traditional verse to introduce the student to ways of approaching and critically evaluating poetry. Note: Not for degree credit to students enrolled in the BA degree program.

#### ENGL 105 Readings in Prose

★3 (fi 6) (either term, 3-0-0). A close study of novels, short stories, essays, and other forms, both modern and traditional, to introduce the student to ways of approaching prose, and to assist the student in reading critically. Note: Not for degree credit to students enrolled in the BA degree program.

#### ENGL 108 Introduction to Language and Literature

★3 (fi 6) (first term, 3-0-0). This course combines formal instruction in writing with a study of the essay and the short story. One-half of class time will be devoted to writing instruction. This course may be followed only by ENGL 109. Note: Not to be taken by students in Arts and Education. This course will be offered by arrangement with client Faculties.

#### ENGL 199 Essentials of Writing for Engineering Students

★3 (fi 6) (either term, 3-0-0). This course is designed to develop the student's ability to write the narrative, descriptive, expository, and persuasive prose fundamental to all written communication. Instruction and practice will be integrated with the study of prose models drawn from modern essayists. A review of basic grammar will be included. Note: Restricted to students in the Faculty of Engineering only.

#### ENGL 205 The English Novel

★6 (fi 12) (two term, 3-0-0). Representative works by Defoe, Richardson, Fielding, Smollett, Sterne, Austen, Scott, Dickens, Thackeray, Brontë, Hardy, and others. Prerequisite: ENGL 100, 101 or equivalent. Note: Not to be taken by students with credit in former ENGL 305.

#### ENGL 206 The Short Story

★3 (fi 6) (either term, 3-0-0). Representative works of writers illustrating the tradition of the short story in English. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 207 Native Literatures

★3 (fi 6) (either term, 3-0-0). Introduction to Native North American Literatures, which may include fiction, drama, poetry and non-fiction in Canada and the USA. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 212 Introduction to the English Language

★3 (fi 6) (either term, 3-0-0). This course introduces the grammar of English sounds, words, and sentences as a basis for further studies in language and

literature. Prerequisite: ENGL 100, 101 or equivalent. Note: Not to be taken by students with credit in former ENGL 288 or 313, or in LING 101 or 203.

#### ENGL 216 Literary Theory

★6 (*fi 12*) (two term, 3-0-0). An introduction to a variety of primarily 20th-century and contemporary theoretical practices in the context of their history and development, with the aim of enhancing an understanding of literature and literary culture. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 239 Shakespeare

★3 (*fi 6*) (either term, 3-0-0). A reading of nine plays, representing the range of Shakespeare's work. Prerequisite: ENGL 100, 101 or equivalent. Note: Not to be taken by students with credit in ENGL 338.

#### ENGL 271 Canadian Literature: Major Writers and Movements

★6 (*fi 12*) (two term, 3-0-0). A study of the growth of English-Canadian literature in its cultural context from the colonial period to the present, with an emphasis on major writers and movements. Prerequisite: ENGL 100, 101 or equivalent. Note: Not open to students with credit in ENGL 371, Canadian Literature to 1925, or ENGL 372 Canadian Literature from 1925.

#### ENGL 281 Post-Colonial Literature

★6 (*fi 12*) (two term, 3-0-0). Representative works of writers from various areas of the Commonwealth. Prerequisite: ENGL 100, 101 or equivalent. Note: Not to be taken by students with credit in ENGL 381, 481 or former ENGL 380.

#### ENGL 283 An Introduction to the Literature of Popular Culture in English

★3 (*fi 6*) (either term, 3-0-0). A study of the varieties of literature, written and spoken, of popular culture in English. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 285 The King James Bible in English Literature

★6 (*fi 12*) (two term, 3-0-0). A literary study of selections from the Hebrew Bible (Old Testament) and New Testament of the King James Bible, and of the influence of the King James Bible in English literature. Prerequisite: ENGL 100, 101 or equivalent. Note: Not to be taken by students with credit in former ENGL 385.

#### ENGL 287 Children's Literature in English

★6 (*fi 12*) (two term, 3-0-0). An historical and critical study of children's literature in English. It includes books written especially for children and books annexed from English literature by children. Prerequisite: ENGL 100, 101 or equivalent. Note: Not to be taken by students with credit in ENGL 388, 389 or 487.

#### ENGL 299 Essay Writing for Education Students

★3 (*fi 6*) (either term, 3-0-0). This course, designed to increase the student's ability to write effective essays, emphasizes the study of grammar, punctuation, and sentence and paragraph structure. The study of models of prose style is integrated with frequent practice in writing. ENGL 299 is not a remedial course. Note: Restricted to students in the Faculty of Education; not to be taken by students with credit in WRITE 298, 398 or 498. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 310 Introduction to Bibliography and Methods of Research

★3 (*fi 6*) (either term, 3-0-0). An examination of the development of printing, textual problems, library organization, bibliography compilation, and manuscript styles and methods. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 311 History of the Language

★3 (*fi 6*) (either term, 3-0-0). An analysis of the historical development of the English language, with some study in the prose tradition. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 320 Old English Language and Literature

★6 (*fi 12*) (two term, 3-0-0). An introduction to the language and literature of Anglo-Saxon England. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 321 The Earlier Middle Ages

★3 (*fi 6*) (either term, 3-0-0). The literature of England from its beginnings to the end of the 13th century. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 322 The Later Middle Ages

★3 (*fi 6*) (either term, 3-0-0). The literature of 14th- and 15th-century England, including Chaucer. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 324 Chaucer

★6 (*fi 12*) (two term, 3-0-0). Major works of Chaucer and of selected poets of the 15th century. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 327 Medieval and Tudor Drama

★3 (*fi 6*) (either term, 3-0-0). English drama to the death of Marlowe. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 330 The Short Poem in the Renaissance

★3 (*fi 6*) (either term, 3-0-0). This course will include a study of lyrics and the sonnet. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 331 The Romance Tradition in Renaissance Literature

★3 (*fi 6*) (either term, 3-0-0). To include Utopia, Arcadia, and The Faerie Queene. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 337 Elizabethan and Jacobean Drama

★3 (*fi 6*) (either term, 3-0-0). English drama from 1590 to 1642. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 338 Shakespeare

★6 (*fi 12*) (two term, 3-0-0). A study of representative plays. Note: Not to be taken by students with credit in ENGL 239 or 339. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 339 Further Studies in Shakespeare

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ENGL 100, 101 or equivalent and ENGL 239 or consent of Department. Note: Not to be taken by students with credit in ENGL 338.

#### ENGL 340 Milton and the 17th Century

★6 (*fi 12*) (two term, 3-0-0). Note: Not to be taken by students with credit in ENGL 344. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 341 The Augustan Age

★3 (*fi 6*) (either term, 3-0-0). Representative works by writers from the Restoration and early 18th century. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 343 The Age of Sensibility

★3 (*fi 6*) (either term, 3-0-0). Works of representative writers of the later 18th-century, including the precursors of Romanticism. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 344 Milton

★3 (*fi 6*) (either term, 3-0-0). A study of representative poems. Note: Not to be taken by students with credit in ENGL 340. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 345 English Prose 1660-1800

★3 (*fi 6*) (either term, 3-0-0). Representative non-fiction works by various men and women writers, including letters, essays, historiography, science and philosophy, biography and autobiography, and political controversy. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 346 Jonson, Donne, and their Successors

★3 (*fi 6*) (either term, 3-0-0). Formerly ENGL 332. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 347 Restoration and 18th-Century Drama

★3 (*fi 6*) (either term, 3-0-0). English drama from 1660 to 1780. Note: Not to be taken by students with credit in former ENGL 355. Drama from the Restoration to 1870. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 350 British Romantic Poetry

★3 (*fi 6*) (either term, 3-0-0). Representative poems of the Romantic period. Note: Not to be taken by students with credit in ENGL 351. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 351 Poetry and Prose of the Romantic Period

★6 (*fi 12*) (two term, 3-0-0). Readings in representative Romantic texts. Note: Not to be taken by students with credit in ENGL 350. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 352 The Earlier Victorian Age

★6 (*fi 12*) (two term, 3-0-0). Representative works of the earlier Victorians. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 353 The Later Victorian Age

★3 (*fi 6*) (either term, 3-0-0). Representative works of the later Victorians. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 358 American Literature to 1900

★6 (*fi 12*) (two term, 3-0-0). A selection of representative major writers. Emphasis on the writers of the 'American Renaissance,' especially Poe, Hawthorne, Emerson, Thoreau, Melville, Whitman, Mark Twain, and Henry James. Note: Not to be taken by students with credit in former ENGL 358 or ENGL 359. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 359 American Prose to 1900

★3 (*fi 6*) (either term, 3-0-0). Representative works. Note: Not to be taken by students with credit in ENGL 358. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 361 American Literature from 1900-1945

★3 (*fi 6*) (either term, 3-0-0). Representative works of 20th-century American writers to mid-century. Note: Not to be taken by students with credit in ENGL 360. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 362 American Literature from 1945

★3 (*fi 6*) (either term, 3-0-0). Representative works of 20th-century American writers from mid-century to the present. Note: Not to be taken by students with credit in ENGL 360. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 363 Early 20th-Century Poetry

★3 (*fi 6*) (either term, 3-0-0). Representative works of British and American poets to mid-century. Note: Not to be taken by students with credit in ENGL 360 or 370. Prerequisite: ENGL 100, 101 or equivalent.

#### ENGL 364 Later 20th-Century Poetry

★3 (*fi 6*) (either term, 3-0-0). Representative works of British and American poetry from mid-century to the present. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 365 Early 20th-Century British Novel**

★3 (*fi 6*) (either term, 3-0-0). Representative works of 20th-century British novelists to mid-century. Note: Not to be taken by students with credit in ENGL 370. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 366 British Literature from 1945**

★3 (*fi 6*) (either term, 3-0-0). Representative works of 20th-century British writers from mid-century to the present. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 368 Early 20th-Century Drama**

★3 (*fi 6*) (either term, 3-0-0). Selected British and American plays, from Naturalism to the Theatre of the Absurd. Note: Not to be taken by students with credit in ENGL 367. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 369 Later 20th-Century Drama**

★3 (*fi 6*) (either term, 3-0-0). Selected plays of British and American dramatists from mid-century to the present. Formerly ENGL 468. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 370 The Age of Modernism**

★6 (*fi 12*) (two term, 3-0-0). Note: Not to be taken by students with credit in ENGL 363 or 365. Formerly ENGL 369. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 371 Canadian Literature to 1925**

★6 (*fi 12*) (two term, 3-0-0). A critical and historical study of the literature of English-speaking Canada to 1925. Note: Not to be taken by students with credit in former ENGL 384, in ENGL 373, 375, or in both former ENGL 386 and 387. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 372 Canadian Literature from 1925**

★6 (*fi 12*) (two term, 3-0-0). A critical and historical study of the literature of English-speaking Canada from 1925 to the present. Note: Not to be taken by students with credit in former ENGL 384, in ENGL 374, 376, or in both former ENGL 386 and 387. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 373 Canadian Literature to 1925**

★3 (*fi 6*) (either term, 3-0-0). A critical and historical study of the literature of English-speaking Canada to 1925. Note: Not to be taken by students with credit in ENGL 371, or former 375, 384, 387. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 374 Canadian Literature 1925-1960**

★3 (*fi 6*) (either term, 3-0-0). A critical and historical study of representative Canadian writing in English. Note: Not to be taken by students with credit in ENGL 372, or former ENGL 384, or former ENGL 387. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 376 Canadian Literature from 1960**

★3 (*fi 6*) (either term, 3-0-0). A critical and historical study of representative Canadian writing in English from 1960. Note: Not to be taken by students with credit in ENGL 372, or former ENGL 384, or former ENGL 386. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 377 Modern Canadian Drama**

★3 (*fi 6*) (either term, 3-0-0). Selected plays by dramatists of English-speaking Canada. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 381 Post-Colonial Literature: National Literatures**

★3 (*fi 6*) (either term, 3-0-0). Note: Not to be taken by students with credit in former ENGL 480. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 383 History of the Literature of Popular Culture in English**

★3 (*fi 6*) (either term, 3-0-0). An historical survey of representative works in the literature, written and spoken, of popular culture in English. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 388 Folklore in Children's Literature in English**

★3 (*fi 6*) (either term, 3-0-0). An examination of the related fields of folklore and fantasy in children's literature in English. It deals with those elements of folklore, mythology and legend that have become a traditional part of children's literature and also includes certain modern adaptations and fantasies which have their origins in myth and folklore. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 389 Classics of Children's Literature in English**

★3 (*fi 6*) (either term, 3-0-0). A representative sampling of classics of children's literature in English. As an historical survey it will examine prevailing and changing attitudes towards children to provide a critical assessment of the ways in which various authors have succeeded in understanding and pleasing a particular audience. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 390 Writing by Women I**

★6 (*fi 12*) (two term, 3-0-0). A survey of women's writing in English from the earliest period to the mid-19th century. Note: Not to be taken by students with credit in former ENGL 390/395 Women's Literary Tradition. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 391 Writing by Women II**

★6 (*fi 12*) (two term, 3-0-0). A survey of women's writing in English from the mid-19th century to the present. Note: Not to be taken by students with credit in former ENGL 390/395 Women's Literary Tradition. Prerequisite: ENGL 100, 101 or equivalent.

**ENGL 401 Studies in Authors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 402 Studies in Genres**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 403 Studies in Literary Themes**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 404 Studies in Literary History**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 413 Studies in English Language**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: ENGL 311, or consent of Department; please refer also to Note (4) at the beginning of this listing.

**ENGL 417 Literary Theory: Studies in Rhetorical Modes**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 423 Studies in Middle English Literature**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 434 Studies in 16th- and Early 17th-Century Poetry**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 435 Studies in 16th- and Early 17th-Century Prose**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 437 Studies in Renaissance Drama**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 444 Studies in Restoration and 18th-Century Poetry**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 445 Studies in Restoration and 18th-Century Prose**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 450 Studies in Romantic Literature**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 454 Studies in 19th- and/or 20th-Century Poetry**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 455 Studies in 19th- and/or 20th-Century Prose**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 456 Dickens**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 460 Studies in American Authors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 461 Studies in American Literary Movements**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 474 Studies in Canadian Poetry**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: ★6 in Canadian Literature, or consent of Department; please refer also to Note (4) at the beginning of this listing.

**ENGL 475 Studies in Canadian Prose**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: ★6 in Canadian Literature, or consent of Department; please refer also to Note (4) at the beginning of this listing.

**ENGL 477 Studies in Canadian Drama**

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: ★6 in Canadian Literature, or consent of Department; please refer also to Note (4) at the beginning of this listing.

**ENGL 478 Regional Literature of Canada: Prairie Literature**

★3 (*fi 6*) (either term, 3-0-0). Literature of the prairie provinces, to be examined primarily as a body of related texts with a place in national and international literary developments, but also in relation to the geographical, historical, and cultural distinctiveness of the region and to changing conceptions of regionalism in Canadian literature. Prerequisites: ★6 in Canadian literature, or consent of Department; please refer also to Note (4) at the beginning of this listing. Note: Not open to students with credit in former ENGL 470, Regional Literature of Canada dealing with the prairie provinces.

**ENGL 481 Post-Colonial Literature: Comparative Studies**

★3 (fi 6) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 483 Studies in the Literature of Popular Culture in English**

★3 (fi 6) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 484 Studies in Literature and Film**

★3 (fi 6) (either term, 3-0-0). A cross-disciplinary study of selected literary and film texts in English. Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 485 Biblical Topics in English Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 487 Further Studies in Children's Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 490 Women's Genres**

★3 (fi 6) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 491 Women's Modernism**

★3 (fi 6) (either term, 3-0-0). Prerequisites: Please refer to Note (4) at the beginning of this listing.

**ENGL 499 Cooperative Work Experience Seminar**

★3 (fi 6) (first term, 0-3s-0). Required of all students returning to the university campus following completion of their Cooperative Education work term placement. The course will involve completion and defense of an applied research project based on the work term placement as well as discussion of related issues. Note: this course does not apply to the 400-level requirements for English programs. Prerequisites: WKEXP 801, 802, and 803.

**ENGL 532 Tutorial: Fourth-Year Honors English**

★3 (fi 6) (either term, variable). In the third year of the program, the Honors student, in consultation with the Department, arranges for a literary project to be pursued under the guidance of a member of the Department for one term. The project involves study of some problems having to do with such matters as technique, genre, criticism, or theme.

**ENGL 533 Directed Reading in Fourth-Year Honors English**

★3 (fi 6) (either term, 3-0-0). Note: Students may take this directed-reading course no more than once during their program.

## Graduate Courses

Selected courses from the following list will be offered each year. Details of each year's program may be obtained early in the preceding spring from the Department.

**ENGL 553 Directed Reading**

★6 (fi 12) (two term, 3-0-0).

**ENGL 554 Directed Reading**

★3 (fi 6) (first term, 3-0-0).

**ENGL 555 Directed Reading**

★3 (fi 6) (second term, 3-0-0).

**ENGL 567 Studies in Literary History**

★3 (fi 6) (either term, 3-0-0).

**ENGL 571 Critical Theory**

★6 (fi 12) (two term, 3-0-0). Not to be taken by students with credit in ENGL 568.

**ENGL 584 Creative Writing**

★6 (fi 12) (two term, 3-0-0).

**ENGL 586 Studies in American Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 591 Studies in Canadian Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 615 Studies in Middle-English Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 634 Renaissance Literature**

★6 (fi 12) (two term, 3-0-0).

**ENGL 635 Studies in Renaissance Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 647 Studies in 17th-Century Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 659 Studies in Restoration and 18th-Century Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 660 The 18th-Century Novel**

★6 (fi 12) (two term, 3-0-0).

**ENGL 665 Studies in Romantic Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 671 Victorian Poetry**

★6 (fi 12) (two term, 3-0-0).

**ENGL 673 Studies in Victorian Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 674 Post-Colonial Literature in English**

★6 (fi 12) (two term, 3-0-0).

**ENGL 679 Studies in 20th-Century Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 680 Studies in Post-Colonial Literature in English**

★3 (fi 6) (either term, 3-0-0).

**ENGL 687 Studies in Children's Literature**

★3 (fi 6) (either term, 3-0-0).

**ENGL 690 Women Writers in English**

★6 (fi 12) (two term, 3-0-0).

**ENGL 693 Studies in Literary Genres**

★3 (fi 6) (either term, 3-0-0).

**ENGL 694 Studies in Literary Techniques**

★3 (fi 6) (either term, 3-0-0).

**ENGL 695 Studies in Literary Themes**

★3 (fi 6) (either term, 3-0-0).

**ENGL 696 Studies in Individual Authors**

★3 (fi 6) (either term, 3-0-0).

**ENGL 900 Directed Research Project**

★3 (fi 6) (either term, unassigned).

## 201.79 English as a Second Language, ESL

Faculty of Extension

### Undergraduate Courses

**ESL 140 Advanced Academic English, Part I**

★3 (fi 17) (either term, 132 hours). This course in English for Academic Purposes (EAP) provides advanced ESL students with the opportunity to improve their academic listening, speaking, reading and writing skills. Upon completion of ESL 140, students are able to analyze academic materials critically and to express themselves fluently, accurately and logically, both orally and in writing. This seven-week course entails 20 hours of classroom instruction per week, for a total of 132 hours. Prerequisites: Minimum score of 530 on TOEFL or appropriate cut-off scores for other standardized academic proficiency tests recognized by the Office of the Registrar and Student Awards. Schedule: Offered at numerous times throughout the year.

**ESL 145 Advanced Academic English, Part II**

★3 (fi 17) (either term, 132 hours). This EAP course is a continuation of ESL 140. Students further develop their abilities to collect and synthesize information from a variety of academic sources; analyze and critique materials; and present their ideas in a variety of media in accordance with the academic standards found at the first-year university level. ESL 140 and 145 thoroughly prepare students for study at the undergraduate university level. This seven-week course entails 20 hours of classroom instruction per week, for a total of 132 hours. Prerequisite: ESL 140. Schedule: Offered at numerous times throughout the year.

**ESL 150 Preparing for Undergraduate Studies**

★6 (fi 15) (either term, 6-0-0). This course enables international students whose first language is other than English to develop the academic and social communication skills necessary to function effectively and independently at the undergraduate level at the University of Alberta. In addition to a language component, the course contains a cultural component which deals with such aspects as cultural awareness and values, differences in approaches to teaching and learning, orientation to campus and campus life, etiquette, behavior, and acculturation difficulties. This course also serves as the English language component in the University of Alberta Visiting Student Certificate Program. Prerequisites: Minimum score of 530 on TOEFL or appropriate cut-off scores for other standardized academic proficiency tests recognized by the Office of the Registrar and Student Awards. Schedule: April-July 1997 for the University of Alberta Visiting Student Certificate Program; August-November 1997 for January entrance to University degree programs.

**ESL 550 Preparing for Graduate Studies**

★6 (fi 15) (either term, 360 hours). This 360-hour course enables students whose first language is other than English to develop the academic and social

communication skills necessary to function effectively and independently at the graduate level at the University of Alberta. In addition to an English-language component, the course contains a cultural component which deals with such aspects as cultural awareness and values, differences in approaches to teaching and learning, orientation to campus and campus life, etiquette, behavior, and acculturation difficulties. This course is open to students who have received recommendations for preliminary admission to the Faculty of Graduate Studies and Research (FGSR). Prerequisite: consent of FGSR. Schedule: April-July or August-November.

## 201.80 Enseignement pratique, ENPRO

Faculté Saint-Jean

**Note:** Des frais de placement seront exigés pour les cours suivants. Veuillez consulter §22.2.1 pour de plus amples détails.

### Cours de 1er cycle

#### 201.80.1 Stage I élémentaire/secondaire

##### ENPRQ 300 Enseignement pratique: niveau élémentaire

★6 (fi 12) (l'un ou l'autre semestre, 6 semaines). Stage pratique de 6 semaines dans un milieu scolaire (immersion française ou français en milieu minoritaire). Prérequis: EDUC 200 ou l'équivalent et une note de 6 ou plus dans le test d'admission aux stages. Ce cours occasionne des frais additionnels (voir §22.2.3).

##### ENPRQ 310 Enseignement pratique: niveau secondaire

★6 (fi 12) (l'un ou l'autre semestre, 6 semaines). Stage pratique de 6 semaines dans un milieu scolaire (immersion française ou français en milieu minoritaire). Prérequis: EDUC 200 ou l'équivalent et une note de 6 ou plus dans le test d'admission aux stages. Ce cours occasionne des frais additionnels (voir §22.2.3).

#### 201.80.2 Stage II élémentaire/secondaire

##### ENPRQ 350 Enseignement pratique: niveau élémentaire

★6 (fi 12) (l'un ou l'autre semestre, 7 semaines). Stage pratique de 7 semaines dans un milieu scolaire (immersion française ou français en milieu minoritaire). Prérequis: Stage I. Ce cours occasionne des frais additionnels (voir §22.2.3).

##### ENPRQ 360 Enseignement pratique: niveau secondaire

★6 (fi 12) (l'un ou l'autre semestre, 7 semaines). Stage pratique de 7 semaines dans un milieu scolaire (immersion française ou français en milieu minoritaire). Prérequis: Stage I. Ce cours occasionne des frais additionnels (voir §22.2.3).

#### 201.80.3 Stage III

##### ENPRQ 400 Etude approfondie: niveau élémentaire

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0).

## 201.81 Entomology (Biological Sciences), ENT

Department of Biological Sciences  
Faculty of Science

**Note:** See the following sections for listings of other Biological Sciences courses: Biology (BIOL); Botany (BOT); Genetic (GENET); Microbiology (MICRB); Zoology (ZOO).

### Undergraduate Courses

#### ENT 207 Agricultural Entomology

★3 (fi 6) (second term, 3-0-3). Introduction to insects and related arthropods emphasizing those aspects of their structure and life history responsible for some of them becoming pests and indicating those aspects towards which control measures can be directed. Principles of integrated control. Prerequisite: One of BIOL 107 or 108.

#### ENT 220 Insect Diversity

★3 (fi 6) (first term, 3-0-3). An introduction to the evolution, diversity, phylogeny, life styles, distribution, and classification of hexapods and practical experience in their identification. Prerequisite: BIOL 108.

#### ENT 280 Forest Entomology

★3 (fi 6) (second term, 3-0-3). Characteristics of major North American forest insects. Roles of insects in forest ecosystems. Insects destructive to wood and wood products. Principles of control. Prerequisites: Biology 30 and first year Chemistry (CHEM 161 and 163 recommended). Not open to first-year students.

#### ENT 321 Insect Function

★3 (fi 6) (first term, 3-0-0). Biochemical and physiological adaptations that have allowed insects and their relatives to become extremely successful in most habitats, ways in which insect functions differ from those of other animals, use of insect models for general physiological and biochemical research, and adaptations underlying insecticide resistance. Prerequisite: BIOL 107 and ENT 220.

#### ENT 378 Insect Pathology

★3 (fi 6) (first term, 3-0-0). An introduction to the diseases of insects and related arthropods. The use of insect pathogens to reduce pest damage in forestry and agriculture. Roles of diseases in insect population dynamics, Biotechnology and insect pathogens. Prerequisite: ★3 in Entomology or Microbiology. Not open to first-year students.

#### ENT 392 Medical and Veterinary Entomology

★3 (fi 6) (second term, 3-0-0). An account of the influence of the arthropods on the health of man and domestic animals, and the interactions between arthropod vectors and vertebrate pathogens. Prerequisite: ENT 207 or 220. Not open to students with credit in ENT 292.

### Graduate Courses

#### Notes

- (1) All 300- and 400-level courses in the Department of Biological Sciences may be taken for credit (except for BIOL 490, 498 and 499) by graduate students with approval of the student's supervisor or supervisory committee.
- (2) The following courses may be taken as an option in the Department of Biological Sciences with approval of the student's supervisor or supervisory committee: BIOCH 510, 520, 530, 540, 541, 550, 555, 560; CHEM 361, 363, 461; CELL 300, 301; INT D 371, 372, 421, 452, 455, 464, 543, 544, 545, 551; MA SC 400, 401, 402, 410, 412, 420, 425, 430, 437, 440, 445, 450, 454, 470, 480; MMI 350, 405, 415, 516, 520; NEUR0 472, 503; NU FS 363; PALEO 318, 319; PHARM 601.

#### ENT 521 Arthropod Physiology

★3 (fi 6) (first term, 3-0-0). Lectures and discussions of assigned readings in arthropod physiology. The topics will change from year to year, and the course may be taken for credit more than once. Prerequisite: Consent of Department.

#### ENT 601 Entomology Seminar

★1 (fi 2) (first term, 0-2s-0). A forum for those with an interest in insects. Presentations may be provided by students, faculty, invited speakers and visiting scientists.

#### ENT 602 Entomology Seminar

★1 (fi 2) (second term, 0-2s-0). Presentations may be provided by students, faculty, invited speakers and visiting scientists. Each student enrolled for credit gives one seminar for evaluation. Questions and discussion follow; participation also requires written evaluations of each seminar by peers and one or more Faculty members.

## 201.82 Environmental and Conservation Sciences, ENCS

Departments of Agricultural, Food and Nutritional Science, and Renewable Resources, and Rural Economy  
Faculty of Agriculture, Forestry, and Home Economics

**Note:** See also Agricultural Economics (AG EC), Animal Science (ANSC), Forest Economics (FOREC), Forest Engineering (FOREN), Forest Science (FOR), Plant Science (PL SC), Renewable Resources (REN R), and Soil Science (SOILS) listings for related courses.

The following table lists renumbered courses effective 1995/96:

Old	New	Old	New
AN SC 376	ENCS 376	PL SC 406	ENCS 406
ENCS 202	SOILS 210	PL SC 407	ENCS 407
FOR 365	ENCS 201	PL SC 471	ENCS 471
PL SC 356	ENCS 356		

The following course was renumbered effective 1996/97:

Old	New
ENCS 485	REN R 485

### Undergraduate Courses

#### ENCS 201 Wildlife Biodiversity and Ecology

★3 (fi 6) (second term, 3-0-3). Survey of wildlife ecosystems with fishes, amphibians, reptiles, birds, mammals, and selected invertebrates. Emphasis on field identification, voice recognition, adaptive ecology, and habitat relationships. Current conservation and stewardship issues stressed. Field trip. This course requires payment of additional miscellaneous fees (see §22.2.3). Prerequisite: ★3 in university-level Biology. Credit may not be obtained in both ENCS 201 and FOR 365. [Renewable Resources]

**ENCS 203 Water Resource Management**

★3 (fi 6) (second term, 3-0-0). Global perspective of supply of and demand for water, basic hydrologic principles, concepts in water management, human intervention in the hydrologic cycle, and environmental issues related to this intervention. Prerequisite: ★30 at the university level with at least ★6 in the life or natural sciences. [Renewable Resources]

**ENCS 204 Introduction to Plant Resources**

★3 (fi 6) (first term, 3-0-3). Identification of vascular and non-vascular plants (including some fungi) and quantitative assessment of vegetation. Includes population and community sampling techniques, community classification, assessment of diversity, and quantification of range and timber resources. Prerequisite: BIOL 108. Note: Credit cannot be obtained for ENCS 204 by students who already have credit for BOT 204. [Renewable Resources]

**ENCS 260 History and Fundamentals of Environmental Protection and Conservation**

★3 (fi 6) (second term, 3-0-0). A sociological exploration of historical and contemporary perspectives on social-environmental relationships, and their implications for land use practices. The class will explore how these evolving perspectives become expressed in environmental movements, management applications in protected areas, and changing demands on multiple use areas. [Renewable Resources]

**ENCS 307 Environmental Assessment Methods**

★3 (fi 6) (second term, 3-0-0). Principles and elements of environmental assessment with an interdisciplinary focus. Topics include types of environmental assessments, when to use them, data/information required, sampling strategies, how data/information should be collected and analyzed and ultimately communicated to pass legal and scientific scrutiny. Project assignment required. Prerequisites: ENCS 201, 203; INT D 204; SOILS 210; ECON 102; STAT 151; and (SOC 100, 300 or R SOC 355); or equivalents. [Renewable Resources]

**ENCS 352 Natural Resource and Environmental Law**

★3 (fi 6) (either term, 3-0-0). Overview of Canadian laws and policies designed to control air, land, and water pollution including licensing systems, quasi-criminal sanctions, and environmental impact assessment processes. The course will also review relevant constitutional issues and consider alternative legal approaches to the resolution of environmental problems. Prerequisite: Completion of ★60 of university-level course work. [Rural Economy]

**ENCS 356 Principles of Rangeland Conservation and Habitat Management**

★3 (fi 6) (first term, 3-0-3). An introduction to rangeland conservation and wildlife habitat management. Examines the effects of grazing and browsing on ecosystems components, including rangeland soils, plants, plant communities, and landscapes. Discusses interactions among herbivores including livestock and wildlife. Reviews practical management activities such as rangeland inventory, improvements, planning, and condition assessment. Prerequisite: ★3 in university-level biology. [Agricultural, Food and Nutritional Science]

**ENCS 360 Soil and Water Conservation**

★3 (fi 6) (second term, 3-3s-0). Erosion and civilization, a historical perspective. Principles of water and wind erosion. Effects of erosion on land productivity and on water and air quality. Biophysical, economical, and social factors contributing to erosion. Principles of erosion control on arable and non-arable land; planning of land-use, biological, and engineering practices. Hands-on experience with erosion and productivity computer models. Prerequisite: SOILS 210 or ENCS 202. Credit cannot be obtained for both ENCS 360 and SOILS 360. [Renewable Resources]

**ENCS 364 Principles of Managing Natural Diversity**

★3 (fi 6) (second term, 3-1s-0). Introduction to the theoretical foundation for conservation science. Elements of population, community and landscape ecology will be reviewed, and their application to real-world challenges discussed. Objective is to provide students with the scientific tools to evaluate and develop conservation strategies for maintaining diversity in human-altered systems. Ethical and philosophical aspects of the socio-political arena in which conservation decisions are made and implemented are also explored. Prerequisites: BIOL 208 or (BIOL 108 and REN R 110) and ★60 of university-level coursework. Credit will not be given for both ENCS 364 and BIOL 467. This course has limited enrolment, with preference given to students in the ENCS, Conservation Biology and Management Program. [Renewable Resources]

**ENCS 376 Wildlife Productivity and Management**

★3 (fi 6) (first term, 3-0-3). Principles of animal function as applied to management of wildlife communities. Special emphasis on nutritional ecology of hoofed mammals and trophic dynamics of grazing systems. Field trips. Prerequisite: ★3 in university-level Biology. Course requires payment of additional miscellaneous fees (see §22.2.3). [Renewable Resources]

**ENCS 401 Special Topics in Conservation**

★1-6 (variable) (either term, variable). Individual Study. Problems in specialized areas of conservation science. Open to third- or fourth-year students upon consent of Instructor. [Renewable Resources]

**ENCS 402 Special Topics in Environmental Sciences**

★1-6 (variable) (either term, variable). Individual Study. Problems in specialized

areas of environmental science. Open to third- or fourth-year students upon consent of Instructor. [Renewable Resources]

**ENCS 406 Rangeland Plant Communities of Western Canada**

★3 (fi 6) (second term, 3-0-3). Examines major rangeland plant communities and their physical environments in western Canada, including individual plant identification and ecology. Includes a review of various land uses such as livestock and wildlife grazing within these communities, their response to disturbances such as herbivory and fire, and other management considerations. Intended for undergraduate students. Graduate students may not register for credit (see AFNS 506). Prerequisite: one of ENCS 356, REN R 120 or BOT 210; ENCS 356 is strongly recommended. [Agricultural, Food and Nutritional Science]

**ENCS 407 Rangeland Plant Communities of North America**

★3 (fi 6) (first term, 1-0-6). An in-depth study of the plants and communities of North American rangelands and wildland ecosystems, and their management. Prerequisites: ENCS 356; ENCS 406 strongly recommended. [Agricultural, Food and Nutritional Science]

**ENCS 410 Methods and Applications in Environmental Economics**

★3 (fi 6) (either term, 0-3s-0). Empirical applications of methods used in resource and environmental economics. Involves one or more case studies of the following topics: non-market valuation, models of environment-economic systems and the impacts of resource management policies. Course requires payment of additional miscellaneous fees. Corequisite: INT D 465, or consent of Instructor. Prerequisites: AG EC 416 or equivalent, and ECON 281. Open only to fourth-year students in the Environmental and Conservation Sciences Program, or consent of Instructor. Note: Students who register for this course must spend one weekend fieldtrip (Friday night to Sunday) in mid- to late September.

**ENCS 455 Soil Remediation**

★3 (fi 6) (first term, 3-3s-0). Principles and methods of biological, chemical, and physical remediation of soils contaminated by hazardous chemicals and other pollutants. Topics include bioremediation of hydrocarbon contaminated soils; chemical restoration of heavy metal polluted soils, acid soils and mine spoils, and salt-affected soils; physical and biological restoration of compacted soils and hydrophobic soils contaminated with organic compounds or wastes; and risk analysis and soil quality criteria in soil remediation. Prerequisite: Must have completed at least ★75 at university with emphasis on biophysical courses. Course requires payment of additional miscellaneous fees (see §22.2.3). [Renewable Resources]

**ENCS 461 Climates and Ecosystems**

★3 (fi 6) (first term, 3-2s-0). The basic principles by which the cycles of water, carbon, and nutrients through soils, plants, and the atmosphere are controlled in terrestrial ecosystems under different climates. Interrelationships among water, carbon and nutrient cycles in natural and managed ecosystems that have developed in different climatic zones. Environmental consequences of human intervention in the cycles for food and fibre production in different ecosystems. Prerequisite: SOILS 210. Recommended courses: PL SC 221 or BOT 240. Credit may not be obtained in both ENCS 361 and 461. [Renewable Resources]

**ENCS 462 Protected Areas Management**

★3 (fi 6) (first term, 3-0-0). Principles and methods of management of national and provincial parks, and forest recreational systems; wilderness management; the integration of biological and sociological criteria in park and recreational management. Prerequisite: ENCS 260. [Renewable Resources]

**ENCS 463 Protected Areas Planning**

★3 (fi 6) (second term, 3-0-0). Survey of current principles and practices relevant to the planning of parks, wilderness areas, and recreational environments in wildland settings, from the perspective of the practitioner. Emphasis on current case studies, including possible field trip. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details. Prerequisite: ENCS 260 or ENCS 462. [Renewable Resources]

**ENCS 464 Conservation and Management of Endangered Species**

★3 (fi 6) (first term, 3-0-0). Theoretical and applied considerations for maintaining endangered, threatened and rare populations and species, including provincial, national and international strategies. Contributory factors to decline and extinction are discussed, as are various recovery programs. Prerequisite: ENCS 364, or consent of Instructor. [Renewable Resources]

**ENCS 465 Environmental and Conservation Field Studies**

★3 (fi 6) (either term, variable). Field trip studies with a focus on environmental and conservation biology topics. Course content and offerings vary from year to year, and have included study trips on Northern Ecosystems, National Parks, and Protected Areas, Arctic Tundra, the Florida Everglades, and Galapagos Islands. Prerequisite: ★9 in Biological or Ecological topics. [Renewable Resources]

**ENCS 467 Methods of Environmental Interpretation and Communication**

★3 (fi 6) (second term, 3-0-0). Application of principles of public communication and interpretation to environmental settings. Planning and design of public programs, nature trails, signs, exhibits, visitor centres, conducting walks, and presentations. Environmental education, program evaluation. Public relations and media interaction. Prerequisite: consent of Instructor. ENCS 260 recommended. [Renewable Resources]

**ENCS 468 Fundamentals of Environmental Advocacy**

★3 (fi 6) (first term, 3-0-0). History, theory and modern practice of environmental advocacy in defence of biodiversity and ecosystem integrity. Promotes professionalism and advance skills in leadership, organization, and applied biological and social sciences. Stresses ethics, case studies, role models, research and preparation of arguments, conflict resolution, media communications and individual empowerment. Guest speakers. Fields trips. Prerequisite: ★90 in university-level coursework. [Renewable Resources]

**ENCS 471 Practical Case Studies in Rangeland Management and Conservation**

★3 (fi 6) (first term, 3-0-3). Cumulative effects of fire, grazing, browsing, and improvement practices on the productivity and species composition of range and pasture ecosystems, including management implications. Extended field trip prior to the start of classes. Offered in alternate years commencing 2001/02. Intended for undergraduate students. Graduate students should take AFNS 572. Prerequisite: ENCS 356. ENCS 406 is strongly recommended. [Agricultural, Food and Nutritional Science]

**ENCS 472 Human Factors in Wildland Resource Management**

★3 (fi 6) (first term, 3-0-0). Overview of the relationship between people, as individuals or groups, and their interface with the environment. The course draws on findings in sociology, psychology, sociobiology, communications theory, and other social sciences to present an understanding of the social and political dimensions of modern wildland resource systems. Credit cannot be obtained for both ENCS 472 and FOR 472. Prerequisite: ★60 of university-level coursework or more. (Offered jointly by the Department of Renewable Resources and Rural Economy.) [Renewable Resources]

**ENCS 473 Environmental and Conservation Policy**

★3 (fi 6) (either term, 3-0-0). An overview of principles and programs relating to environmental and conservation policy. Selected local, national, and international environmental policy issues. Prerequisite: FOREC 345, INT D 365, ECON 365 or INT D 369. [Rural Economy]

**ENCS 474 Utilization of Wildlife Resources**

★3 (fi 6) (first term, 3-0-0). Issues, principles and science surrounding sustainable use of wildlife resources. Hunting, angling and trapping for subsistence, recreational and commercial purposes. Sociopolitical dimensions of harvest regulation, wildlife administration, and human demographic changes. Field trips. Course requires payment of additional miscellaneous fees (see §22.2.3). Prerequisite: minimum of ★6 of Renewable Resources or Biological Sciences courses at the 300-level or higher. [Renewable Resources]

**ENCS 475 Waste Management and Utilization**

★3 (fi 6) (second term, 3-3s-0). Chemical, biological, and physical properties of anthropogenic wastes, their reactions in the soil environment, theory and practice for their chemical and biological immobilization and use in agriculture, forest, and urban lands. Prerequisites: consent of Instructor, must have completed at least ★60 at the university-level. [Renewable Resources]

**ENCS 476 Dynamics of Wildlife and Rangeland Ecosystems**

★3 (fi 6) (second term, 3-0-3). Plant-herbivore interactions and grazing systems management. Systems analysis, simulation modelling, expert systems, and other computer applications in wildlife and range management. Prerequisites: ★60 at the university level with at least ★6 in Biology or Ecology. [Renewable Resources]

## Graduate Courses

## Notes

- (1) All 400-level courses listed under ENCS, FOR, REN R or SOILS and offered by the Department of Renewable Resources may be taken for graduate credit. FOREC 445, 473, and INT D 421, 465 may also be taken for graduate credit.
- (2) 400-level courses in ENCS 406, 407 and 471 may be taken for credit under certain circumstances with approval of the student's supervisor or supervisory committee. A 300-level course may be taken for credit by graduate students under certain circumstances with approval of the AFNS Graduate Program Committee. (See §174.1.1(1)).
- (3) See also Agricultural, Food and Nutritional Science (AFNS) listing for related courses.

**ENCS 510 Wetland Resource Management**

★3 (fi 6) (second term, 0-3s-0). An in-depth, seminar treatment of wetland ecology principles supplemented with student led discussion of wetland issues, management and current research drawn from local, regional and international sources. The course objective is to apply ecological bases of wetland ecology to understanding, developing and critiquing wetland management prescriptions. Prerequisite: consent of Instructor. [Renewable Resources]

**ENCS 564 Advanced Topics in Wildlife Ecology and Conservation**

★3 (fi 6) (second term, 0-3s-0). A seminar course based on current readings and discussion in advanced, topical areas of wildlife ecology and conservation. Discussions will cover conceptual and methodological aspects in a wide range of areas. Prerequisites: ENCS 364 and 464, and/or consent of Instructor. Offered in alternate years, commencing 2003. [Renewable Resources]

**ENCS 565 Applied Analysis of Natural Systems**

★3 (fi 6) (second term, 0-3s-0). In-depth case studies of management issues involving multiple, interacting natural processes and human interventions. Emphasis is on quantitative approaches to solving problems in applied ecology. Topics will highlight cross-scale considerations, and include the response of individual organisms, populations, and natural communities to local and regional environments and resource management decisions. Offered in alternate years, commencing 2002. Prerequisite: consent of Instructor. [Renewable Resources]

**ENCS 673 Environment and Conservation Policy**

★3 (fi 6) (either term, 3-0-0). An overview of principles and programs relating to environmental and conservation policy. Selected local, national, and international environmental policy issues. Prerequisite: FOREC 345, INT D 365, ECON 365 or INT D 369. Not available for students with credit in ENCS 473. Available only to students in MBA/MAG, MBA/MF, MBA in Natural Resource and Energy Programs, or by consent of Department. [Rural Economy]

## 201.83 Environmental Engineering, ENV E

Department of Civil and Environmental Engineering  
Faculty of Engineering

The following courses were renumbered effective 2001/02:

Old	New	Old	New
ENV E 402	ENV E 302	ENV E 422	ENV E 322

## Undergraduate Courses

**ENV E 220 Environmental Chemistry for Engineering**

★3.8 (fi 6) (either term, 3-0-3/2). Survey of basic principles in analytical, inorganic, and organic chemistry with emphasis on environmental engineering applications. Laboratory measurements related to water quality. Prerequisite: CHEM 105.

**ENV E 222 Chemical, Physical, and Biological Processes**

★3.8 (fi 6) (either term, 3-0-3/2). Theory of chemical, physical, and biological processes in environmental engineering. Chemical kinetics and equilibrium, biological growth and kinetics, elements of reactor design, sedimentation, filtration, absorption; precipitation, and gas transfer. Prerequisite: ENV E 220; Corequisite: BIOL 107.

**ENV E 302 Environmental Impact Assessment**

★2.5 (fi 6) (either term, 2-1s-0). Need and objectives of environmental impact assessment (EIA). Basic tasks and methods for need justification, project description, environmental factor determination, impact prediction, significance testing, mitigation design, evaluation, reporting, and public review. Review of impacts of different types of engineering projects and activities. Prerequisite: ENV E 222.

**ENV E 320 Environmental Hydrology**

★3.8 (fi 6) (either term, 3-0-3/2). Introduction to concepts in hydrology and hydrogeology. Hydrology topics include precipitation, evaporation, infiltration, streamflow, and hydrograph analysis. Hydrogeology topics include infiltration, percolation, seepage, drainage, aquifer hydraulics, and urban runoff quality. Prerequisite: CIV E 330; Corequisite: CIV E 331.

**ENV E 322 Environmental Protection**

★3 (fi 6) (either term, 3-0-0). Principles and methods of environmental protection for the engineering profession. Choice of technology, design of engineering projects, emission controls, mitigation and monitoring, environmental management plans. Federal and provincial environment legislation, professional engineering codes. Environmental policies and their effects on engineering design. Environmental management plans and issues. Prerequisite: ENV E 302.

**ENV E 351 Properties of Environmental Engineering Materials**

★3.8 (fi 6) (either term, 3-0-3/2). Study of materials used in environmental engineering including traditional engineering materials such as soil and rock, concrete, steel, and wood but extending the coverage to man made materials such as plastics, textiles, membranes, composites, resins, and polymers. Prerequisite: EAS 210. Corequisite: CIV E 290.

**ENV E 400 Special Topics in Environmental Engineering**

★3 (fi 6) (first term, 3-0-0). Industrial waste management, or hazardous waste management, or air pollution, or soil/groundwater pollution, etc. Prerequisite: ENV E 222; corequisite: ENV E 322.

**ENV E 421 Municipal Systems**

★3.8 (fi 6) (either term, 3-0-3/2). Detailed and advanced design of water supply systems, sewerage, and storm drains. Rates of flow and hydraulics of networks and sewers, rainfall-runoff analysis, storm water storage, and loads on conduits. Extensive computer simulation of systems. Prerequisites: ENV E 222, CIV E 331, ENV E 320.

**ENV E 432 Solid Waste Management**

★3 (fi 6) (either term, 3-0-0). Principles of solid waste management to protect public health. Study of solid waste components, refuse collection, storage, and



handling. Design and operation of solid waste transfer and disposal facilities including transfer stations, resource recovery and composting facilities, incinerators, and landfills. Prerequisites: ENV E 421 and 322.

#### ENV E 434 Environmental Geotechnics

★3 (fi 6) (either term, 3-0-0). Design of soil waste containment systems; stability of natural slopes, engineered cuts and embankments; earth pressure theories; design of retaining structures and pressures on buried pipes; settlement of earth containment structures and foundations; load-carrying capacity of foundations; design for filtration, separation, containment, and reinforcement using geosynthetics. Prerequisites: EAS 210, ENV E 351, CIV E 381.

#### ENV E 440 Facility Design

★4.5 (fi 6) (either term, 3-0-3). Design and planning of water supply, water and wastewater treatment, storm water management, and solid waste facilities. Course includes major design projects, field trips, and presentations. Students work in teams on a design project. Prerequisites: ENV E 222, 421.

#### ENV E 471 Elements of Structural Design

★3.8 (fi 6) (either term, 3-0-3/2). Structural design principles in steel and concrete as applied to environmental engineering type structures such as pipes, tanks, beams, columns, slabs, and foundations. Prerequisite: CIV E 270.

## 201.84 Environmental Physical Sciences, ENVPS

Departments of Chemistry, Earth and Atmospheric Sciences, and Physics  
Faculty of Science

### Undergraduate Courses

#### ENVPS 403 Industrial Internship Practicum

★3 (fi 6) (first term, 0-3s-0). Required by all students who have just completed an Environmental Physical Sciences Industrial Internship Program. Must be completed during the first academic term following return to full-time studies. Note: A grade of 1 or 9 will be determined by the student's job performance as evaluated by the employer, by the student's performance in the completion of an internship practicum report, and by the student's ability demonstrated in an oral presentation. Prerequisite: WKEXP 422.

## 201.85 Espagnol, ESPA

Faculté Saint-Jean

### Cours de 1er cycle

#### ESPA 100 Espagnol langue seconde

★6 (fi 12) (aux deux semestres, 5-0-0). Études des éléments et des structures de base de l'espagnol parlé et écrit. Note: Ce cours se destine aux étudiants qui n'ont aucune connaissance de la langue espagnole. Il n'est pas accessible aux étudiants ayant ou postulants des crédits pour Spanish 35, SPAN 100 ou leurs équivalents. Priorité est donnée aux étudiants de la Faculté Saint-Jean.

## 201.86 Etudes canadiennes, ETCAN

Faculté Saint-Jean

### Cours de 1er cycle

#### ETCAN 101 Introduction à l'étude du Canada

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Présente un survol de la vie au Canada dans sa spécificité, pouvant inclure les aspects artistique, culturel, politique, social, et économique; introduit au champ interdisciplinaire des Etudes canadiennes.

#### ETCAN 320 Les francophonies canadiennes I: implantation et institutionnalisation

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Les fondements des communautés francophones et acadiennes du Canada, par l'étude de documents d'époque et d'études scientifiques. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits en CA FR 320, 322.

#### ETCAN 322 Les francophonies canadiennes II: identité et minorité

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Le statut de minoritaire, les moyens juridiques et politiques susceptibles de favoriser son épanouissement, et les représentations de soi-même et des autres. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits en CA FR 320, 322.

#### ETCAN 360 La question nationale au Canada

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Une étude des nationalismes canadien/Canadien, québécois et amérindiens, dans les traditions politiques, intellectuelles et artistiques du Canada. Prérequis: ★6 à sigle ETCAN/CANST ou à contenu canadien dans les disciplines suivantes: économie, histoire, science politique, sociologie; ou permission du Vice-doyen aux affaires académiques.

#### ETCAN 421 Langue et gouvernement au Canada

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Une étude de la diversité linguistique au Canada et de son impact sur les politiques et les institutions de gouvernement. Les thèmes comprennent le contact des langues, le maintien d'une langue, la mobilisation ethnique, les politiques linguistiques. Analyse approfondie de la législation en matière de langue et de l'utilisation des langues au sein des assemblées législatives, des fonctions publiques, des tribunaux et des écoles. Prérequis: SC PO 220 ou l'accord du Vice-doyen aux affaires académiques.

#### ETCAN 450 Enjeux canadiens actuels

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Un examen interdisciplinaire d'enjeux choisis dans les domaines culturel, économique, politique et social, auxquels le Canada fait actuellement face. Prérequis: ★6 à contenu canadien de niveau 300 ou 400, dont au moins ★3 à sigle ETCAN/CANST.

## 201.87 Etudes classiques, ECLSS

Faculté Saint-Jean

### Cours de 1er cycle

#### ECLSS 102 La mythologie grecque et romaine

★3 (fi 6) (premier semestre, 3-0-0). Un aperçu de la mythologie au moyen de lectures choisies en traduction d'auteurs anciens et d'études contemporaines. Anciennement ECLSS 202.

#### ECLSS 250 Le monde grec

★3 (fi 6) (deuxième semestre, 3-0-0). Vie et société grecques illustrées par des découvertes archéologiques; l'âge de bronze, la cité, les temples, Athènes, Sparte, l'art et l'architecture grecs, le commerce et la guerre. Diapositives, films et autres documents.

#### ECLSS 367 L'art grec archaïque et classique

★3 (variable) (l'un ou l'autre semestre, 3-0-0). L'origine et le développement de l'art et de l'architecture grecs. Son rapport avec l'histoire culturelle et politique de l'époque. Cours à distance. Voir §200.

#### ECLSS 368 L'art helléniste et romain

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Le développement et le rôle de l'art et de l'architecture dans les royaumes helléniques et dans la république romaine: l'évolution de l'art impérial romain.

## 201.88 Etudes de la religion, ET RE

Faculté Saint-Jean

### Cours de 1er cycle

#### ET RE 102 Introduction aux religions de l'Occident

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Parcours historique des religions juédaique, chrétienne et islamique. Anciennement ET RE 202.

#### ET RE 103 Introduction aux religions de l'Asie

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Parcours historique des religions hindouiste, bouddhiste, confucianiste et shintoïste

#### ET RE 248 La tradition chrétienne

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Les thèmes classiques de la chrétienté depuis le Nouveau Testament jusqu'à nos jours: le message de Jésus-Christ, le kerygme, la hiérarchie de l'église, l'évolution de la doctrine, le canon des Saintes Ecritures, l'Eglise et l'Etat, les Saintes Ecritures et leur interprétation. Anciennement ET RE 348.

## 201.89 Etudes interdisciplinaires, ETIN

Faculté Saint-Jean

### Cours de 1er cycle

#### ETIN 350 Communication et évolution culturelle

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse de milieux culturels à partir de modèles sémiologiques de la culture. Conceptualisation de stratégies d'intervention pour stimuler le développement du milieu choisi.

**ETIN 520 Mémoire d'Etudes interdisciplinaires**

★6 (fi 12) (aux deux semestres, 0-3s-0). Préparation du mémoire requis en quatrième année du programme de spécialisation en Etudes interdisciplinaires.

**201.90 Exchange Program, EXCH**

International Centre

**Undergraduate Courses****EXCH 800 Exchange Program**

★0 (fi 60) (two term, unassigned).

**EXCH 801 Exchange Program**

★0 (fi 30) (either term, unassigned).

**EXCH 810 Exchange Program**

★0 (fi 30) (Spring/Summer, unassigned).

**EXCH 811 Exchange Program**

★0 (fi 15) (Spring/Summer, unassigned).

**Graduate Courses****EXCH 802 Exchange Program**

★0 (fi 6) (either term, unassigned).

**EXCH 803 Exchange Program**

★0 (fi 12) (either term, unassigned).

**EXCH 804 Exchange Program**

★0 (fi 18) (either term, unassigned).

**EXCH 805 Exchange Program**

★0 (fi 24) (either term, unassigned).

**201.91 Extension, EXT**

Faculty of Extension

**Graduate Courses****EXT 501 Applied Research in Communications and Technology**

★3 (fi 6) (full year, unassigned). General description of the field of communications and technology, related disciplines and related fields. Overall philosophy and structure of the MACT program. Models of research, research methods (qualitative and quantitative), role of theory. This course guides students in their topic selection for their culminating project and the project development. Restricted to MACT students. Course delivered by asynchronous Internet communication.

**EXT 502 Human Communication**

★3 (fi 6) (Spring/Summer, 3-0-0). Basics of human communication, verbal and non-verbal. Includes cultural, class, gender, and other factors. Deals with direct (face-to-face) communication, as opposed to communication mediated by technologies. Restricted to MACT students. Course delivered by asynchronous Internet communication and in-person sessions.

**EXT 503 Group Transactions**

★3 (fi 6) (Spring/Summer, 3-0-0). The study of communication and interaction in small groups, with particular focus on the communication that goes on in workplace teams. Analysis of 'the learning organization', as an important theme in the context of 'knowledge work' in the modern economy. Restricted to MACT students. Course delivered by asynchronous Internet communication and in-person sessions.

**EXT 504 Organizational Communications**

★3 (fi 6) (first term, unassigned). This course deals with both internal communications (formal and informal) within an organization, and external communications (public relations, media relations, print and multimedia communications). Brief survey of the field of organizational analysis, with focus on marketing, clear language writing, rhetoric, public speaking, and writing for new media (e.g., hypertext). Restricted to MACT students. Course delivered by asynchronous Internet communication.

**EXT 505 Using and Managing Communications Technologies**

★3 (fi 6) (Spring/Summer, 3-0-0). Basics of communication mediated by technologies, including print, video, film, computer-mediated communication, and multi-media. Restricted to MACT students. Course delivered by asynchronous Internet communication and in-person sessions.

**EXT 506 Using and Managing Communications Networks**

★3 (fi 6) (Spring/Summer, 3-0-0). In this area 'network' is interpreted broadly, to include all means of mediated communication at a distance including telephone, video, and computer mediated communication. Particular focus on the perspective

of managers, public relations officers, marketing officers, etc., within an organization. Restricted to MACT students. Course delivered by asynchronous Internet communication.

**EXT 507 Knowledge Management and Communications Technologies**

★3 (fi 6) (second term, unassigned). A comprehensive understanding of the field of knowledge management including alternative knowledge management strategies, models, applications and technologies. An exploration of the complexity of 'managing' knowledge from an organizational perspective when it is understood that individuals, particularly through their communities of practice, create and apply knowledge. The course will explore knowledge management technologies and tools, as well as emerging knowledge management issues and trends. Restricted to MACT students. Course delivered by asynchronous Internet communication.

**EXT 508 Culminating Project**

★6 (fi 12) (two term, unassigned). Under supervision, students undertake a project that addresses some practical problem, issue, or objective related to communications and technology. Restricted to MACT students. Course delivered by asynchronous Internet communication.

**EXT 550 Introduction to Electric Commerce**

★3 (fi 6) (either term, unassigned). This course is intended to provide an introduction to the concepts, technologies and functions of electronic commerce as they exist today, and to develop a broad understanding of how this major shift in doing business is affecting and will continue to affect business and consumers in the future. Course delivered by asynchronous Internet communication.

**EXT 551 Understanding Computing Projects: Application, Design, and Project Management Issues for Communications Professionals**

★3 (fi 6) (either term, unassigned). An introduction to the fundamental concepts of computing projects and project design assumptions. Intended to assist communications professionals in making decisions in managing computing software, database and Internet-related projects. Offered by asynchronous Internet communication.

**EXT 597 Topics in Communications and Technology**

★3 (fi 6) (either term, unassigned). May be delivered by asynchronous and/or synchronous Internet communication.

**EXT 598 Directed Study in Communications and Technology**

★3 (fi 6) (either term, unassigned). May be delivered by asynchronous and/or synchronous Internet communication.

**201.92 Famille, FA MI**

Faculté Saint-Jean

**Cours de 1er cycle****FA MI 333 Ecole, famille, communauté**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse des problèmes que les besoins changeants de la famille et de la communauté posent à l'école (contexte francophone minoritaire/immersion française).

**201.93 Family Medicine, F MED**Department of Family Medicine  
Faculty of Medicine and Dentistry**Notes**

- (1) Family Medicine is included in MED 516, 526, 527, 532, 546, and 547.
- (2) The Department of Family Medicine is responsible for the Human Sexuality Course, MED 522 offered within the Faculty of Medicine and Dentistry.

**Undergraduate Courses****F MED 546 Rural Family Medicine Student Internship**

★4 (fi 8) (either term, 4 weeks). Student internship in Rural Family Medicine for students registered in the MD program.

**201.94 Film and Media Studies, FMS**Department of Comparative Literature, Religion and Film/  
Media Studies  
Faculty of Arts**Undergraduate Courses****FMS 200 Introduction to the Study of Film**

★6 (fi 12) (two term, 3-0-3). A survey of major areas in film studies, emphasizing history, theory, film language, and the study of individual masterpieces.

Prerequisites: ★6 in English at the 100-level, or ART H 101 and 102, or C LIT 100, or 201 and 202, or PHIL 101 and 102. Note: only FMS 200 and 205 are available for Fine Arts credit. Formerly F ST 200.

**FMS 205 The Fundamentals of Film**

★3 (fi 6) (either term, 3-0-3). Analysis of film language in terms of the primary tools of the filmmaker's art and of their relation to visual communication and aesthetic quality. Prerequisites: ★6 in English at the 100-level, or ART H 101 and 102, or C LIT 100, or 201 and 202, or PHIL 101 and 102. Note: only FMS 200 and FMS 205 are available for Fine Arts credit. Formerly F ST 205.

**FMS 210 Introduction to the Study of Television**

★6 (fi 12) (two term, 3-0-3). Provides students a broad-based introduction to mass media theories, texts and contexts, histories, audiences, business environments, and emerging new broadcast media forms. Prerequisites: ★6 in junior English, or ART H 101/102, or C LIT 100 or 201/202, or PHIL 101/102.

**FMS 297 Special Topics in Film and Media Studies**

★3 (fi 6) (either term, 0-3s-0).

**FMS 301 The Art of the Filmmaker**

★6 (fi 12) (two term, 3-0-3). The course explores in detail the work of four or five filmmakers whose contributions have been central to the medium. Study will focus on the notion of style in film and on the articulation of themes and ideas through cinematic technique. Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 301.

**FMS 309 Québécois Cinema**

★3 (fi 6) (either term, 3-0-3). History and aesthetic developments from the 1960s to present. Pre- or corequisite FMS 200 or 205 or consent of Department.

**FMS 310 Canadian Film**

★3 (fi 6) (either term, 3-0-3). Major trends in both English and French Canadian film, such as documentary, feature film, animation, and experimental film. Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 310.

**FMS 311 The Hollywood Film I: Cultural Models, Narrative Strategies and the History of the Industry**

★3 (fi 6) (either term, 3-0-3). A history of the American commercial film industry together with a consideration of selected Hollywood films as social cultural and aesthetic artifacts. Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 311.

**FMS 312 The Hollywood Film II: Genre**

★3 (fi 6) (either term, 3-0-3). The narrative patterns and cultural mythology of well defined genres (e.g. the Western, the Crime Film, the 'Women's Picture,' the Horror Film). Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 312.

**FMS 314 Film and the Representation of Women**

★3 (fi 6) (either term, 3-0-3). An examination of the ways in which the representation of women has contributed to both the construction and the dismantling of gender stereotypes of women in the twentieth century. Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 314.

**FMS 330 Documentary Film**

★3 (fi 6) (either term, 3-0-3). Theory and history of the documentary film, with emphasis on Flaherty, the Documentary Movement in Britain, the National Film Board of Canada, and recent developments in the field. Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 330.

**FMS 333 Experimental Film**

★3 (fi 6) (either term, 3-0-3). Avant-garde, abstract and structural film. The history and changing conceptions of experimental film, with examples from the silent era to the present. Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly INT D 401. Formerly F ST 333.

**FMS 353 Film and Television**

★3 (fi 6) (either term, 3-0-3). Independence and interdependence of film and television as visual media, cultural institutions and industries. Differences in technology and presentation, and their effects on film and television content and aesthetics. Pre- or corequisite: FMS 200 or 205 or 210 or SOC 344 or consent of Department. Formerly F ST 353.

**FMS 361 Third World Cinema**

★3 (fi 6) (either term, 3-0-3). The course will examine a selection of films from Africa, Latin America, South and East Asia and the Middle East. Emphasis will be on cultural and socio-political context of film production and the often militant aesthetics of the filmmakers. Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 361.

**FMS 362 The French New Wave**

★3 (fi 6) (either term, 3-0-3). An historical and critical study of the body of films which began to take shape in the late 1950s around the influential journal *Cahiers du cinéma*, and which revolutionized filmmaking around the world. Attention will be given to situate the work of Godard, Truffaut, Chabrol, Rivette, and Rohmer (as well as *Nouvelle vague* forerunners Resnais and Melville) within the tradition surrounding Realism, Modernism, and Avant-Garde. Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 362.

**FMS 363 Central and Eastern European Cinema**

★3 (fi 6) (either term, 3-0-3). A survey of major films produced in central and/or eastern Europe since World War II. Particular attention will be paid to the relationship between film and politics. Prerequisites: FMS 200 or 205 or consent of Department. Formerly F ST 363.

**FMS 364 Asian Popular Cinemas**

★3 (fi 6) (either term, 3-0-3). Explores the circulation of national-popular traditions within international contexts of East, South, and Southeast Asian cinemas such as India, Japan, China, Hong Kong, Indonesia. Pre- or corequisite: FMS 200 or 205 or consent of Department.

**FMS 371 Contemporary American Cinema**

★3 (fi 6) (either term, 3-0-3). Concentrating on American filmmaking since the 1960s, the course will focus on a selection of films which trace the rise of Postmodernism in contemporary American culture. Special attention will be given to defining Postmodernism and to situate it historically within the development of American cinema. Pre- or corequisite: FMS 200 or 205 or consent of Program. Formerly F ST 371.

**FMS 380 American and Canadian Media History**

★3 (fi 6) (either term, 3-0-3). A comparative analysis of the two countries' broadcasting systems and their histories. Prerequisites: FMS 210 or SOC 344 or consent of Department. Formerly F ST 380.

**FMS 381 Topics in Race and Ethnicity in the Media**

★3 (fi 6) (either term, 3-0-3). Prerequisites: FMS 210 or SOC 344 or consent of Department. Formerly F ST 381.

**FMS 382 Topics in Television Genres**

★3 (fi 6) (either term, 3-0-3). Prerequisites: FMS 210 or SOC 344 or consent of Department. Formerly F ST 382.

**FMS 383 Broadcast Media in a Global Context**

★3 (fi 6) (either term, 3-0-3). Explores broadcasting in different countries, challenges posed by the dominance of American media, and strategies used by national and American media, and strategies used by national and ethnic groups to use broadcast media in their own interests. Prerequisites: FMS 210 or SOC 344 or consent of Department. Formerly F ST 383.

**FMS 384 Television and the Representation of Women**

★3 (fi 6) (either term, 3-0-3). Examines how women have been portrayed on television, how particular genres have appealed to women, and how female audiences have negotiated with their televisual images. Prerequisites: FMS 314 or consent of Department. Formerly F ST 384.

**FMS 385 Critical Analysis of Television**

★3 (fi 6) (either term, 3-0-3). Examines different methodologies and critical approaches to understanding how television functions as a medium and a cultural form. Prerequisites: FMS 210 or SOC 344 or consent of Department. Formerly F ST 385.

**FMS 397 Special Topics in Film and Media Studies**

★3 (fi 6) (either term, 0-3s-0).

**FMS 399 Special Topics in Film and Media Studies**

★3 (fi 6) (either term, 3-0-3). Pre- or corequisite: FMS 200 or 205 or consent of Department. Formerly F ST 399.

**FMS 401 Classical Film Theory**

★3 (fi 6) (either term, 3-0-3). From the silent film paradigm through French, Soviet, and German theories in the 1920s and 1930s, up to and including ontological theories of Bazin, Kracauer, Mitry, and Cavell. Prerequisites: FMS 200 or 205 and one FMS 300-level course, or consent of Department. Formerly INT D 401. Formerly F ST 401.

**FMS 402 Modern Film Theory**

★3 (fi 6) (either term, 3-0-3). Theories of ideology, narration, gender, sexuality, and race since 1968, with particular attention to the discourses of structuralism, semiotics, psychoanalysis, feminism, and postmodernism. Prerequisites: FMS 200 or 205 and one FMS 300-level course, or consent of Department. Formerly F ST 402.

**FMS 403 Genre Theory**

★3 (fi 6) (either term, 0-3s-1). Advanced study in genre theory. Examines the notion of genre and its relevance as a theoretical and critical tool for the study of film. Prerequisites: FMS 200 or 205 and ★3 in FMS or consent of Department. Formerly F ST 403.

**FMS 404 Film Narrative**

★3 (fi 6) (either term, 3-0-3). The elements of visual/auditory storytelling, with emphasis on the structure and conventions of dominant narrative types, together with a consideration of alternative narrative forms. Prerequisites: FMS 200 or 205 and one FMS 300-level course or consent of Department. Formerly F ST 404.

**FMS 405 Psychoanalysis and Cinema**

★3 (fi 6) (either term, 3-0-3). Psychoanalysis and contemporary film theory and criticism. Applications of Freud and Lacan's thought to theories of the cinematic apparatus, spectatorship, sexual difference, and sexuality. Prerequisites: FMS 200 or 205 and one FMS 300-level course or consent of Department. Formerly F ST 405.

**FMS 406 Mass Culture and Everyday Life**

★3 (fi 6) (either term, 3-0-3). Social theories of daily life in the 20th century, with particular attention to how experiences of time, space, and identity have been transformed by commodities, urban space, technology, and mass communication. Prerequisites: FMS 200 or 205 or FMS 210 or SOC 344 and one FMS 300-level course or consent of Department. Formerly F ST 406.

**FMS 409 Special Topics in Film/Media Theory**

★3 (fi 6) (either term, 3-0-3). Prerequisites: FMS 200 or 205, or FMS 210 or SOC 344 and one FMS 300-level course or consent of Department.

**FMS 410 Filmmakers**

★3 (fi 6) (either term, 0-3s-3). Concentrated study of the works of individual filmmakers. The course will deal with one to three important filmmakers through representative films. Prerequisites: FMS 200 or 205 and one FMS 300-level course or consent of Department. Formerly F ST 410.

**FMS 412 Topics in Film Studies**

★3 (fi 6) (either term, variable). A seminar-based examination of specialized topics in film. Prerequisites: FMS 200 or 205 and one FMS 300-level course or consent of Department. Formerly F ST 412.

**FMS 420 Topics in Media Studies**

★3 (fi 6) (either term, 3-0-3). Prerequisites: FMS 210 or SOC 344 with a 300-level course or consent of Department. Formerly F ST 420.

**FMS 421 Canadian Broadcast Media**

★3 (fi 6) (either term, 3-0-3). Historical and critical survey of television in the Canadian context. Prerequisites: FMS 210 or SOC 344 with a 300-level course or consent of Department. Formerly F ST 421.

**FMS 422 Topics in Media and Gender**

★3 (fi 6) (either term, 3-0-3). Revolving content course. Prerequisites: FMS 210 or SOC 344 with a 300-level course or consent of Department. Formerly F ST 422.

**FMS 423 Media Historiography**

★3 (fi 6) (either term, 0-3s-3). Methods for analyzing popular media and television as historical artifacts. The course explores theories about history in relation to media and television. Prerequisites: FMS 210 or SOC 344 with a 300-level course, or consent of Department. Formerly F ST 423.

**FMS 424 Broadcast Media and Contemporary Theory**

★3 (fi 6) (either term, 0-3s-3). Recent theorizing about popular media, especially in the British Cultural Studies tradition. Prerequisites: FMS 210 or SOC 344 with a 300-level course or consent of Department. Formerly F ST 424.

**FMS 491 Directed Study**

★3 (fi 6) (either term, 0-3s-0). Prerequisites: ★3 at the 300-level in Film and Media Studies, and consent of Department. Formerly F ST 491.

**FMS 497 Special Topics in Film and Media Studies**

★3 (fi 6) (either term, 0-3s-0).

of primary and secondary securities markets, and financial intermediaries. Topics include stock and bond market operation, management issues in other financial institutions. Prerequisite: FIN 301.

**FIN 416 Advanced Portfolio Management**

★3 (fi 6) (either term, 3-0-0). Recent theoretical and empirical developments in portfolio management are covered with an emphasis on investment strategy and the evaluation of investment performance. A student project makes extensive use of microcomputing, spreadsheets and financial market data. Prerequisite: FIN 301, 412.

**FIN 418 Fixed Income**

★3 (fi 6) (either term, 3-0-0). The valuation and management of interest-rate contracts. The main focus is on the behaviour of bond portfolios and related risk-management techniques. The institutional features of North American fixed-income markets complete the course. Prerequisites: FIN 301, 412.

**FIN 422 Capital Investment**

★3 (fi 6) (either term, 3-0-0). Capital budgeting and the determination of the cost of capital to the firm. Prerequisite: FIN 301. Pre- or corequisite: MGTSC 352.

**FIN 424 Financial Valuation**

★3 (fi 6) (either term, 3-0-0). Financial valuation of public and private entities. Estimation of growth, cost of capital and cash flow. Use of financial ratios. Valuation and options. Corporate strategy, intellectual capital and firm value. Prerequisite: FIN 301.

**FIN 434 Advanced Corporate Finance**

★3 (fi 6) (either term, 3-0-0). This course covers advanced topics in corporate finance such as capital structure, dividend policy, asset selection, agency problems, mergers and acquisitions. Prerequisite: FIN 301. Pre- or corequisite: MGTSC 352.

**FIN 436 Investment Management**

★3 (fi 6) (either term, 3-0-0). This course provides students with experience managing an institutional asset portfolio, the PRIME FUND. Students interact with investment professionals in making asset acquisition and divestiture decisions within the institutional framework of the fund. This course draws on and unifies skills related to investment analysis and portfolio theory. It combines traditional academic objectives with the practical demands of hands-on investment analysis and portfolio management. The students learn by actually using the tools of the trade. These include printed materials, real-time computerized sources of information and, most importantly, access to practising analysts and managers. Students also learn about the differences between institutional and personal investment decisions, the mechanics of trading, the different providers of trading services, and cash management. Prerequisites: FIN 412, 416. Open only to students with the consent of the Department.

**FIN 442 International Financial Markets**

★3 (fi 6) (either term, 3-0-0). An overview of the international financial environment and the financial function in the multinational corporation. Its purpose is to provide decision-making skills in international money and capital markets. Prerequisite: FIN 301.

**FIN 488 Selected Topics in Finance**

★3 (fi 6) (either term, 3-0-0). Normally restricted to third- and fourth-year Business students. Prerequisites: FIN 301 or consent of Department. Additional prerequisites may be required.

**FIN 490 Finance Competition Part I**

★1.5 (fi 3) (either term, 0-1.5s-0). Preparation for Student Competition in Finance. Prerequisite: consent of Instructor.

**FIN 491 Finance Competition Part II**

★1.5 (fi 3) (either term, 0-1.5s-0). Completion of Student Competition in Finance. Prerequisite: FIN 490 and consent of Instructor.

**FIN 495 Individual Research Project I**

★3 (fi 6) (either term, 3-0-0). Special study for advanced undergraduates. Prerequisites: consent of Instructor and Assistant Dean, Undergraduate Program.

**FIN 496 Individual Research Project II**

★3 (fi 6) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: FIN 495, consent of Instructor and Assistant Dean, Undergraduate Program.

**FIN 497 Individual Research Project III**

★3 (fi 6) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: FIN 496, consent of the Instructor and Assistant Dean, Undergraduate Program.

**Graduate Courses****FIN 501 Financial Valuation and Management**

★3 (fi 6) (either term, 3-0-0). Fundamental concepts in asset valuation are discussed within the context of simple asset pricing models and efficient financial markets. This course introduces the valuation of financial assets such as bonds and stocks. Further topics include the issuing of financial securities, leverage, dividend policy, cash management, and derivative securities. Prerequisites: ACCTG 501, BUEC 501, MGTSC 511, and MGTSC 521.

**201.95 Finance, FIN**

Department of Finance and Management Science  
Faculty of Business

**Note:** Enrolment in all FIN courses is restricted to students registered in the Faculty of Business, or to students registered in specified programs that require Business courses to meet degree requirements and who have obtained prior approval of their Faculty.

**Undergraduate Courses****FIN 301 Introduction to Finance**

★3 (fi 6) (either term, 3-1s-0). Types of securities and basic methods of valuation. Valuation and selection of physical and intellectual assets. Operation of asset markets and market efficiency. Risk measures and risk reduction methods. Financing policy, including choices between debt and equity financing. Note: Students are expected to have basic familiarity with microcomputer applications. Prerequisite: STAT 151 or equivalent. Pre- or corequisite: MGTSC 312, ACCTG 300 or 311.

**FIN 412 Investment Principles**

★3 (fi 6) (either term, 3-0-0). This course examines securities and securities markets with emphasis on stocks and bonds. Topics include information, interest rates, risk-return relationships, efficient markets, diversification, portfolio performance measurement, and the application of financial theory to investment decisions. Prerequisite: FIN 301. Pre- or corequisite: MGTSC 352.

**FIN 413 Risk Management**

★3 (fi 6) (either term, 3-0-0). This course examines the markets and valuation models for options and future contracts, and their application to hedging and the valuation of the other financial contracts. Prerequisite: FIN 301.

**FIN 414 Operation of Financial Institutions**

★3 (fi 6) (either term, 3-0-0). This course covers the organization and operation

**FIN 541 Financial Performance Analysis**

★1.5 (fi 3) (either term, 18 hours). This course will cover financial valuation of public and private entities, cost of capital, and forecasting of performance and growth. Offered in a six-week period. Prerequisite: FIN 531.

**FIN 586 Selected Topics in Finance**

★1.5 (fi 3) (either term, 3-0-0). Topics in this seminar may vary from year to year and are chosen at the discretion of the Instructor.

**FIN 614 Investments**

★3 (fi 6) (either term, 3-0-0). This course is concerned with investment in stocks, bonds and other financial assets. Topics include, but are not limited to, interest rates, risk-return relationships, investment valuation, and market information and efficiency. Prerequisite: FIN 531.

**FIN 616 Securities Markets and Investment Banking**

★3 (fi 6) (either term, 3-0-0). This course is concerned with the structure and operations of securities markets. Specifically, the course will cover the market for government securities, the organization and changing structure of investment dealers, underwriting compensation, merits of issuing securities through negotiation versus competitive bidding, right versus underwriting, direct placement, and the role of investment dealers in pricing new issues. In addition, the organization of secondary markets, pricing of brokerage and dealer services, relative merits of organizing trading in the form of a continuous auction vis-à-vis a negotiated market, and the economics of money management will be studied. Prerequisite: FIN 502.

**FIN 618 Fixed Income Securities**

★3 (fi 6) (either term, 3-0-0). This course is devoted to the study of bonds and related financial instruments. Important topics will include interest rate risk, and valuation of loans and securities with interest rate exposure. Prerequisite FIN 531 and MGTSC 521.

**FIN 634 Corporate Financial Planning**

★3 (fi 6) (either term, 3-0-0). Advanced discussion of asset choice and financial structure. Supplemental case study. Prerequisite: FIN 502.

**FIN 644 International Finance**

★3 (fi 6) (either term, 3-0-0). The objective of this course is to acquaint students with macro and micro aspects of international finance. At the macro level coverage will include theories of direct investment, the international monetary mechanism, foreign exchange markets, and repercussions from balance of payments difficulties. Micro level materials will include problems of doing business internationally and a survey of public and private foreign and international finance institutions. The final part of the course will review Canada's role in international business. Prerequisite: MANEC 502.

**FIN 654 Risk Management**

★3 (fi 6) (either term, 3-0-0). Futures, options, and other derivative securities. Markets, valuation models, application to risk management through hedging, and the application of pricing models to the valuation of financial contracts. Prerequisite: FIN 502.

**FIN 673 Mergers, Restructuring, and Corporate Control**

★3 (fi 6) (either term, 3-0-0). Financial and economic aspects of corporate mergers, restructuring, downsizing, and bankruptcy are examined. Relations between corporate structure and performance are investigated. Specific attention is paid to the roles of top management and boards of directors. Special issues relating to privatization and restructuring in former socialist economies are studied. Prerequisite: FIN 502.

**FIN 686 Selected Topics in Finance**

★3 (fi 6) (either term, 3-0-0). Topics dealt with in this seminar may vary from year to year, and will be chosen at the discretion of the instructor. Prerequisite: FIN 502.

**FIN 698 Individual Study Project in Finance**

★3 (fi 6) (either term, 3-0-0).

**FIN 701 Advanced Seminar in Finance I**

★3 (fi 6) (either term, 3-0-0).

**FIN 702 Advanced Seminar in Finance II**

★3 (fi 6) (either term, 3-0-0).

**FIN 703 Advanced Seminar in Finance III**

★3 (fi 6) (either term, 3-0-0).

**FIN 704 Individual Research**

★3 (fi 6) (either term, 3-0-0).

**FIN 705 Research Seminar in Finance**

★3 (fi 6) (two term, 3-0-0). Seminar participants will present, discuss, and critique important papers on the frontiers of current research. Members of the faculty and visiting scholars will also present frequent talks on various topics. Students taking the course for credit are expected to present original work related to their doctoral theses. This seminar is a single-term course offered over two terms. Prerequisites or corequisites: FIN 701, 702, and 703, or permission of the Instructor.

**FIN 815 Financial Analysis and Decision Making**

★1.5 (fi 16) (second term, 18 hours). A week-long intensive course. Understanding

cash flow analysis, short-term financing, pro formas, the assessment of financial performance, ratio analysis and the role of financial intermediaries. Restricted to Executive MBA students only.

**FIN 830 Finance**

★3 (fi 32) (second term, 3-0-0). Understanding valuation, capital markets, venture capital, international markets, and corporate risk management. Restricted to Executive MBA students only.

**201.96 Fondements de l'éducation, FO ED**

Faculté Saint-Jean

**Cours de 1er cycle****FO ED 200 Analyse historique et sociologique de l'école**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Une introduction à l'étude des relations entre l'école publique et la société afin d'initier les étudiants à l'importance des sciences sociales en éducation. L'analyse historique portera sur l'évolution des lois qui déterminent la structure et l'administration des écoles ainsi que la professionnalisation de l'enseignement. Ce cours n'est pas accessible aux étudiants ayant des crédits en FO ED 201, 205, 206, 301 et 457.

**FO ED 302 Histoire de la pensée en éducation**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). La recherche des questions philosophiques sous-jacentes à tout système d'éducation dans un monde multiculturel et dont l'objectif général est la formulation de sa propre pensée éducative. Ce cours n'est pas accessible aux étudiants ayant des crédits en FO ED 452, 455 457.

**FO ED 307 Contexte particulier des écoles françaises en milieu minoritaire**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Cours de fondement à l'intention des futurs enseignants qui se dirigent vers l'enseignement dans les écoles françaises en situation minoritaire. L'histoire de l'école française, de son rôle, de ses buts, de ses programmes et des besoins auxquels elle doit répondre soulignera la relation particulière entre l'école francophone et la société. Ce cours n'est pas accessible aux étudiants ayant des crédits en CU ME 357, FO ED 350 et FO ED 401.

**201.97 Forest Economics, FOREC**

Department of Rural Economy

Faculty of Agriculture, Forestry, and Home Economics

**Undergraduate Courses**

**Note:** See also INT D 365, 369, 465, and 565 for courses which are offered by more than one department or faculty and which may be taken as options or as a course in this discipline.

**FOREC 345 Economics of Forestry**

★3 (fi 6) (either term, 3-0-0). Economic aspects of forest production, marketing, finance, and policy. Prerequisite: ECON 101.

**FOREC 400 Special Topics**

★3 (fi 6) (either term, 0-3s-0). Individual study. Study of a selected topic or problem requiring both written and oral reports. Prerequisite: consent of Department Chair.

**FOREC 473 Forest Policy**

★3 (fi 6) (either term, 3-0-0). Analysis of forest resource policy formation and evaluation. Review of selected policies and programs provincially, nationally, and internationally. Analysis of current policy issues. Prerequisite: FOREC 345, INT D 365 or INT D 369. (Offered jointly by the Departments of Renewable Resources and Rural Economy.) [Rural Economy]

**Graduate Courses****FOREC 500 Research Projects in Forest Economics**

★3 (fi 6) (either term, 0-3s-0). Individual study. Investigations of a special problem involving field or library study and preparation of written reports. Note: May be repeated for credit one time. Prerequisite: consent of Department Chair.

**FOREC 545 Forest Resource Economics**

★3 (fi 6) (either term, 3-0-0). Economic analysis of public policy issues and regulatory activities in the forestry sector. Analysis of the roles of institutions and property rights in regulating: timber supply (the harvesting and management of forest stocks and flows); the production and trade of forest products; the provision of multiple forest resources; and other forest policy issues. Prerequisite: consent of Instructor, ECON 481 recommended.

**FOREC 600 Directed Studies**

★3 (fi 6) (either term, 0-3s-0). Analysis of selected research problems and design or research projects in forest economics. Prerequisite: consent of Department Chair.

**FOREC 673 Forest Policy**

★3 (fi 6) (either term, 3-0-0). Analysis of forest resource policy formation and evaluation. Review of selected policies and programs provincially, nationally, and internationally. Analysis of current policy issues. Prerequisite: FOREC 345, INT D 365, or INT D 369. Not available for students with credit in FOREC 473. Available only to students in MBA/MAG, MBA/MF, MBA in Natural Resource and Energy Programs, or by consent of Department. (Offered jointly by the Departments of Renewable Resources and Rural Economy.) [Rural Economy]

**201.98 Forest Engineering, FOREN**

Department of Renewable Resources  
Faculty of Agriculture, Forestry, and Home Economics

**Undergraduate Courses****FOREN 201 Introduction to Geomatic Techniques in Forestry**

★3 (fi 6) (first term, 3-0-3). Methods and applications of surveying, global positioning systems (GPS), geographic information systems (GIS), photogrammetry, photo interpretation and meteorological technologies as they relate to forestry.

**FOREN 310 Wood Science and Technology**

★3 (fi 6) (first term, 3-0-3). The anatomy and identification of North American woods; biological, chemical and physical properties of wood and its components; growth, natural and processing defects; lumber grading.

**FOREN 335 General Forest Harvesting and Transportation**

★3 (fi 6) (first term, 3-0-0). Harvesting and transportation methods and technologies as applied to wood-harvesting operations. This is a general course for Forestry students who desire a basic knowledge of current technologies used to conduct forest operations.

**FOREN 355 Wood Science and Utilization**

★3 (fi 6) (second term, 3-0-3). The anatomy and identification of woods; biological, chemical, and physical properties of wood and its components. Lumber, pulp and paper, and reconstituted wood products technologies. Concept of integrated utilization.

**FOREN 400 Topics in Wood Utilization**

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in wood utilization relating to solid wood products manufacturing and/or pulp and paper technology. Prerequisite: FOREN 310 or FOREN 345.

**FOREN 421 Simulation Methods in Forest Engineering**

★3 (fi 6) (second term, 3-0-3). Continuous and discrete simulation methods applied to the study of processes in forest operations. Prerequisites: Introductory courses in computing science and calculus. Not open to students with credit in BIOEN 321.

**Graduate Courses****FOREN 550 Problems in Forest Engineering**

★3 (fi 6) (either term, 3-0-0). Directed study in forest engineering, including forest harvesting, road location and construction. Prerequisite: consent of Instructor.

**FOREN 560 Trends and Problems in Wood Science I**

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in wood technology and forest products. Prerequisite: consent of Instructor.

**FOREN 660 Selected Topics in Wood Science I**

★3 (fi 6) (either term, 0-3s-0). Individual study.

**201.99 Forest Science, FOR**

Department of Renewable Resources  
Faculty of Agriculture, Forestry, and Home Economics

**Notes**

(1) See also Agricultural Economics (AG EC), Animal Science (AN SC), Environmental and Conservation Sciences (ENCS), Forest Economics (FOREC), Forest Engineering (FOREN), Interdisciplinary Undergraduate Courses (INT D), Plant Science (PL SC), Renewable Resources (REN R), and Soil Science (SOILS) listings for related courses.

(2) See also INT D 365 and 466 for courses which are offered by more than one department or faculty and which may be taken as options or as a course in this discipline.

The following table lists renumbered courses effective 1996/97:

Old	New	Old	New
FOR 110	REN R 110	FOR 439	REN R 439
FOR 120	REN R 120	FOR 475	REN R 475
FOR 321	REN R 321	FOR 490	REN R 490
FOR 420	REN R 420	FOR 601	REN R 601
FOR 421	REN R 421	FOR 602	REN R 602
FOR 430	REN R 430		

The following table lists renumbered courses effective 1997/98:

Old	New
FOR 401	REN R 410

**Undergraduate Courses****FOR 100 Introduction to Forestry**

★3 (fi 6) (first term, 3-0-0). A general introduction to trees and other forest plants, forest ecology, and forest land-use planning. Includes discussions of the relationships between recreation, water, wildlife, agriculture, range and timber to forest management policies and practices in Alberta and elsewhere. Not available for credit to BSc Forestry students.

**FOR 101 Introductory Forestry Field School**

★0 (fi 3) (first term, 6 days). A general overview of the practice of Forestry. This orientation includes an introduction to basic forest measurements, forest management practices, and will include tours of a number of major forest operations in Alberta. Course runs for six days just prior to Fall registration. Course requires payment of additional miscellaneous fees (see §22.2.3).

**FOR 210 Forest Measurements**

★3 (fi 6) (second term, 3-0-3). Principles and practices of measuring and estimating present and future fibre production of forest communities, including applications of statistics, sampling techniques, regression analysis, and computer programming. Prerequisites: MATH 113, and ★3 of statistics. Pre- or Corequisite: REN R 110.

**FOR 302 Forest Measurements Field Camp**

★1 (fi 2) (Spring/Summer, 6 days). Six days of forest measurement field work off campus. Conducted immediately following Winter Term final examinations. Required of all students pursuing the BSc in Forestry or Forest Business Management. Students are required to schedule FOR 302 in the same year as FOR 303 and FOR 304. Prerequisites: FOR 101, (FOR 120 or REN R 120), FOR 210, and FOREN 201. Course requires payment of additional miscellaneous fees (see §22.2.3).

**FOR 303 Forest Engineering Field Camp**

★1 (fi 2) (Spring/Summer, 6 days). Six days of forest engineering field work off campus. Conducted immediately following Winter Term final examinations. Required of all students pursuing the BSc in Forestry or Forest Business Management. Students are required to schedule FOR 303 in the same year as FOR 302 and 304. Prerequisites: FOR 101, (FOR 120 or REN R 120), FOR 210, and FOREN 201. Course requires payment of additional miscellaneous fees (see §22.2.3).

**FOR 304 Forest Ecology Field Camp**

★1 (fi 2) (Spring/Summer, 6 days). Six days of silviculture and ecology field work off campus. Conducted immediately following Winter Term final examinations. Required of all students pursuing the BSc in Forestry or Forest Business Management. Students are required to schedule FOR 304 in the same year as FOR 302 and FOR 303. Prerequisites: FOR 101, REN R 120, FOR 210, FOREN 201, and SOILS 210. Course requires payment of additional miscellaneous fees (see §22.2.3).

**FOR 314 Forest Soils**

★3 (fi 6) (second term, 3-0-3). Chemical, physical, and biological properties and processes of soil in relation to site and the growth of forest vegetation; nutrient cycling; influences of surface soil erosion, fertilization, and fire upon forest soil productivity; forest land classification. Prerequisite: SOILS 210 or ENCS 202. [Renewable Resources]

**FOR 322 Forest Ecosystems**

★3 (fi 6) (first term, 3-0-3). Analysis of the structure and function of forest ecosystems from a stand to a landscape perspective. Topics include physical structure and heterogeneity, community composition, energy flow productivity, nutrient cycling, succession, ecosystem classification, impacts of natural and anthropogenic disturbance. Lab exercises during the first three weeks are held outside. Course requires payment of additional miscellaneous fees (see §22.2.3). Prerequisite: BIOL 208 or both (BIOL 108 and REN R 120) or consent of Instructor.

**FOR 323 Silviculture**

★3 (fi 6) (first term, 3-0-3). Forest regeneration principles and techniques; stand tending including fertilization, thinning, pruning and drainage; harvesting systems for reforestation; nursery practices; reforestation, the law and current practices. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details. Prerequisite: REN R 321.

**FOR 340 Forest Fire Management**

★3 (fi 6) (second term, 3-0-3). Fire thermophysics, combustion energetics, fire

behavior, fuels measurement and manipulation, and fire effects; prevention, detection, suppression, settlement protection, preattack planning, and prescribed burning as part of sophisticated forest management.

#### FOR 350 Forest and Range Hydrology

★3 (fi 6) (second term, 3-0-3). Principles of physical, channel, and land-use hydrology in a wildland and range context. The interaction of vegetation, soils, and storage processes with physiography and climate in regulation of hydrologic processes within watersheds; and effects of disturbance on these functions. Prerequisite: SOILS 210. (Not open to students with credit in ENCS 203).

#### FOR 372 Forestry and the Environment

★3 (fi 6) (second term, 3-0-3). Introduction to forest ecology, forest resources and forest management for non-foresters. Examination of environmental issues and land use impacts associated with forestry practices and their resolution. A one day weekend field trip will be required. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details. Prerequisite: third year University standing. Not open to forestry majors.

#### FOR 405 Intermediate Forest Problems

★3 (fi 6) (either term, 0-3s-0). Individual study. Problems in specialized areas of forest science. Prerequisite: consent of Instructor.

#### FOR 423 Advanced Silviculture

★3 (fi 6) (second term, 3-0-0). Readings, discussions and exercises on current topics in Silviculture. Possible topics include: forest microsites, forest competition, plantation forestry, partial-cut systems, or intensive management. Prerequisite: FOR 323.

#### FOR 431 Integrated Forest Management

★3 (fi 6) (second term, 3-0-3). Problem solving, decision making and planning in relation to the management of forest resources. Application of models and related tools. Public involvement and issues management will be addressed. Course requires payment of additional miscellaneous fees (see §22.2.3). Prerequisite: FOR 302, 303, 304, 323, and REN R 430. Credit cannot be obtained for both CAPS 431 and FOR 431. (Offered jointly by the Departments of Renewable Resources and Rural Economy). [Renewable Resources]

#### FOR 433 Forest Growth and Yield Prediction

★3 (fi 6) (first term, 3-0-0). Selected topics in forest mensuration, regression analysis, growth and yield prediction. Sampling methods, growth models and data management. Prerequisite: FOR 210.

#### FOR 450 Forest Watershed Management

★3 (fi 6) (first term, 0-3s-0). Seminar discussions/presentations on issues and methods in forest management and the production, protection, and regulation of wildland water resources. Relationship between disturbance (natural/anthropogenic) and water yield, regime, water quality. Watershed management as a component of integrated forest land management (ECA procedures, hydrologic modeling, stream protection zones (SPZ's), best management practices (BMP's) and cumulative effects assessment). Prerequisite: ENCS 203, FOR 350, or other hydrology course (with consent of instructor).

## Graduate Courses

### Notes

- (1) FOREC 545, FOREN 550, 560, 561, 650, 660, 661 may also be taken as a FOR credit.
- (2) 400-level courses listed under ENCS, FOR, REN R or SOILS and offered by the Department of Renewable Resources may be taken for graduate credit under certain circumstances. FOREC 445, 473, and INT D 421, 465 may also be taken for graduate credit under certain circumstances. (See §174.1.1(1)).

#### FOR 501 Special Topics in Forestry

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Instructor.

#### FOR 502 Problems in Forest Ecology

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in forest ecology. Prerequisite: consent of Instructor.

#### FOR 503 Problems in Silviculture

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in silviculture. Prerequisite: consent of Instructor.

#### FOR 522 Advanced Forest Ecology

★3 (fi 6) (second term, 0-3s-0). Current topics in forest ecology are dealt with through lectures, student seminars, readings, and discussion. Possible topics include: ecosystem management, forest fragmentation, biodiversity, succession, community dynamics, environmental impacts of harvesting, 'New Forestry.' Prerequisite: consent of Instructor. Offered in alternate years.

#### FOR 535 Problems in Forest Resources Management

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in forest resources management. Prerequisite: consent of Instructor.

#### FOR 545 Problems in Forest Fire

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in forest fire. Prerequisite: consent of Instructor.

#### FOR 546 Advanced Fire Ecology

★3 (fi 6) (second term, 3-0-0). The role of fire as a forcing function in ecosystem dynamics in the physical components (energy flows and nutrient cycling) and in the biotic components (individual, populations, and community levels). The role of fire in high profile scientific questions such as climate change, rainforest clearing and smoke pollution should be useful for students in zoology, botany, and geography as well as forest science, wildlife science, plant science, and conservation science. Note that this course follows the introductory FOR 340. Prerequisites: A basic ecology course and consent of Instructor.

#### FOR 555 Problems in Forest Hydrology

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in forest hydrology. Prerequisite: consent of Instructor.

#### FOR 565 Problems in Forest Recreation

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in forest recreation. Prerequisite: consent of Instructor.

#### FOR 590 Seminar in Tree Improvement

★3 (fi 6) (second term, 0-3s-0). Reports and discussion of current literature and advanced topics in forest genetics and tree improvement. Prerequisites: Graduate standing and consent of Instructor; FOR 490 or REN R 490 recommended.

#### FOR 610 Research Methods in Forestry

★3 (fi 6) (second term, 3-2s-0). Use of the scientific method in forestry research, formulation of hypotheses, design of experiments, interpretation of data. Prerequisite: consent of Instructor.

## 201.100 Français, FRANC

Faculté Saint-Jean

Le numéros de certains cours au niveau du Baccalauréat à la Faculté Saint-Jean ont été changés. La liste suivante indique les équivalences approximatives entre les anciens et les nouveaux cours de français en date de 2000/2001:

Ancien	Nouveau	Ancien	Nouveau
FRANC 160	FRANC 110	FRANC 166	FRANC 211
FRANC 161	FRANC 111	FRANC 264/272	FRANC 221
FRANC 162/163	FRANC 211	FRANC 267	FRANC 221
FRANC 165	FRANC 210	FRANC 273	FRANC 230

## Cours de 1er cycle

### FRANC 101 Communication orale et écrite

★6 (fi 12) (Printemps/Été, 3-0-3). Etude des éléments et des structures de base du français parlé et écrit; identification et mise en pratique de notions élémentaires et de certains schémas de communication. Ce cours se destine aux étudiants qui ne disposent pas de la base nécessaire pour satisfaire aux exigences de FRANC 110 et 111 (French 30 ou l'équivalent) et n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 100 à la Faculty of Arts.

### FRANC 110 Expression orale I

★3 (fi 6) (l'un ou l'autre semestre, 0-4L-0). Vise à faire acquérir les compétences communicatives orales nécessaires à l'expression courante de niveau intermédiaire dans le cadre de la francophonie interculturelle.

### FRANC 111 Expression écrite I

★3 (fi 6) (l'un ou l'autre semestre, 0-5L-0). Vise à faire acquérir les compétences communicatives écrites nécessaires à l'expression courante de niveau intermédiaire dans le cadre de la francophonie interculturelle.

### FRANC 140 Communication orale et écrite

★6 (fi 12) (Printemps/Été, 3-0-3). Etude du français parlé et écrit, par la mise en relation de la langue et de son usage dans un contexte socio-culturel francophone précis. Travaux pratiques d'écoute, de lecture, d'écriture et, surtout, d'expression orale. La note finale sera évaluée 60% à l'oral, 40% à l'écrit. Prérequis: French 30 ou l'équivalent, ou FRANC 101 ou FREN 100. Ce cours peut être crédité pour FRANC 110 et n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 150 à la Faculty of Arts.

### FRANC 210 Expression orale II

★3 (fi 6) (l'un ou l'autre semestre, 0-4L-0). Vise à faire acquérir les compétences communicatives orales nécessaires à l'expression de niveau avancé dans le cadre de la francophonie interculturelle.

### FRANC 211 Expression écrite II

★3 (fi 6) (l'un ou l'autre semestre, 0-5L-0). Vise à faire acquérir les compétences communicatives écrites nécessaires à l'expression de niveau avancé dans le cadre de la francophonie interculturelle.

### FRANC 220 Expression orale III

★3 (fi 6) (l'un ou l'autre semestre, 0-4L-0). Vise à faire acquérir les compétences communicatives orales nécessaires à l'expression courante de niveau supérieur dans le cadre de la francophonie interculturelle.

**FRANC 221 Expression écrite III**

★3 (fi 6) (l'un ou l'autre semestre, 0-5L-0). Vise à faire acquérir les compétences communicatives écrites nécessaires à l'expression courante de niveau supérieur dans le cadre de la francophonie interculturelle.

**FRANC 225 Lire le texte littéraire**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Ce cours vise à faire connaître différents concepts et stratégies de lecture et d'analyse du texte littéraire. Les ouvrages à l'étude seront choisis en fonction des approches et des méthodologies présentées. Prérequis: FRANC 221 ou l'accord du Vice-doyen aux affaires académiques.

**FRANC 230 Correction phonétique et diction française**

★3 (fi 6) (l'un ou l'autre semestre, 1-2L-0). Étude du système phonétique du français dans le but d'améliorer la prononciation. Cours axé sur la pratique s'adressant surtout aux anglophones. Pratique en groupe et au laboratoire de langue.

**FRANC 231 Morphologie et syntaxe**

★3 (fi 6) (l'un ou l'autre semestre, 0-3L-0). Étude des usages du français écrit (sans négliger l'oral). Développement de stratégies d'autocorrection. Cours axé sur la pratique en sous-groupes.

**FRANC 232 Techniques de rédaction**

★3 (fi 6) (l'un ou l'autre semestre, 0-3L-0). Pratique de la rédaction technique, journalistique et de la vulgarisation scientifique. Prérequis: FRANC 221 ou l'accord du Vice-doyen aux affaires académiques.

**FRANC 235 Survol de la littérature francophone**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Ce cours d'introduction à la littérature en français vise à faire connaître, dans une perspective sociocritique, les noms des grands écrivains et penseurs du monde francophone, leurs idées et la mise en texte de ces idées. Le corpus à l'étude consistera en des oeuvres représentatives à travers les siècles. Ce cours présuppose une bonne connaissance et une maîtrise de la langue française aux plans grammatical, syntaxique et lexical.

**FRANC 241 Communication orale et écrite**

★6 (fi 12) (Printemps/Été, 3-0-3). Perfectionnement du français écrit et, surtout, oral. Ce cours se destine à l'étudiant ayant réussi FRANC 210 et 211 ou FREN 150, et se veut complémentaire au FRANC 220 et 221.

**FRANC 284 Laboratoire d'écriture I**

★3 (fi 6) (l'un ou l'autre semestre, 0-4L-0). Cours individuel sur les procédés de l'écriture littéraire. Prérequis: accord du professeur après entrevue.

**FRANC 314 Pratique avancée du français oral et écrit**

★6 (fi 12) (Printemps/Été, 3-0-3). Sensibilisation aux différents moyens d'exprimer une idée. Ce cours a pour but d'aider l'étudiant à mieux structurer sa pensée en français et, ce, à l'oral et à l'écrit. Il se destine à l'étudiant qui voudrait approfondir les connaissances et compétences acquises en FRANC 220 et 221 ou en FREN 250, ou bien renforcer certaines connaissances et compétences acquises en FRANC 232 ou 322.

**FRANC 322 Pratique de la dissertation**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). La compréhension, l'analyse et la synthèse d'informations. L'étude et la manipulation du raisonnement logique. La recherche et l'exploitation des arguments. L'élaboration et la mise en forme de la dissertation comme texte clair, cohérent et convaincant. Travaux pratiques. Cours obligatoire pour l'obtention du diplôme de la Faculté. Ce cours présuppose une bonne connaissance et une maîtrise de la langue française aux plans grammatical, syntaxique et lexical. Prérequis: FRANC 221 ou l'accord du Vice-doyen aux affaires académiques.

**FRANC 325 Littérature française du XVII<sup>e</sup> siècle**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etudes d'oeuvres représentatives du XVII<sup>e</sup> siècle. Prérequis: FRANC 235.

**FRANC 326 Littérature française du XVIII<sup>e</sup> siècle**

★3 (fi 6) (deuxième semestre, 3-0-0). Evolution des genres littéraires illustrée par des textes du XVIII<sup>e</sup> siècle. Prérequis: FRANC 235. Note: ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 360 à la Faculté des Arts.

**FRANC 327 Littérature française du XIX<sup>e</sup> siècle**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). L'analyse des mouvements littéraires. L'évolution de la conception littéraire à travers les textes du XIX<sup>e</sup> siècle. Prérequis: FRANC 235. Note: ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 380 à la Faculté des Arts.

**FRANC 328 Littérature française du XX<sup>e</sup> siècle**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude d'oeuvres représentatives de la littérature moderne. Introduction à la littérature contemporaine. Prérequis: FRANC 235 et un demi-cours de littérature française. Note: ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 380 à la Faculté des Arts.

**FRANC 331 Etude avancée du français et de l'anglais I**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude comparative des systèmes

français et anglais sur les plans syntaxique, morphologique, lexical et sémantique. Introduction à la traduction. Prérequis: FRANC 221 ou l'équivalent. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 351 ou 352.

**FRANC 332 Etude avancée du français et de l'anglais II**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude comparative des systèmes français et anglais sur les plans syntaxique, morphologique, lexical et sémantique. Introduction à la traduction, suite. Prérequis: FRANC 331 ou l'équivalent. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 351 ou 352.

**FRANC 384 Laboratoire d'écriture II**

★3 (fi 6) (l'un ou l'autre semestre, 0-4L-0). Cours individuel sur les procédés de l'écriture littéraire. Prérequis: FRANC 284.

**FRANC 432 Stylistique comparée du français et de l'anglais**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Comparaison des moyens d'expression du français et de l'anglais. Traduction: théorie et pratique. Travaux d'application. Prérequis: FRANC 221 ou l'équivalent. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 400 à la Faculty of Arts. Note: Ce cours exige une bonne connaissance du français et de l'anglais; il est recommandé à l'étudiant de suivre auparavant le cours FRANC 332.

**FRANC 470 Analyse syntaxique**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude approfondie de la structure de la phrase française. Théorie et pratique. Prérequis: FRANC 221 ou l'équivalent.

**FRANC 475 Stylistique du français**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Initiation aux procédés stylistiques. Prérequis: FRANC 322 ou l'équivalent.

**FRANC 480 Choix de sujet**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Prérequis: FRANC 225, 235 et ★3 en littérature de niveau 300.

**FRANC 484 Création**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Théorie et pratique du processus créatif dans l'écriture; introduction aux procédés discursifs de la poésie, du roman et de la pièce de théâtre. Prérequis: FRANC 225, 235 et ★3 en littérature de niveau 300. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits en ADRAM 484.

**FRANC 499 Etudes dirigées**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Cours destiné à permettre aux étudiants d'approfondir un sujet de leur choix en littérature d'expression française non-canadienne. Prérequis: FRANC 235 et 2 demi-cours de littérature française.

**FRANC 520 Mémoire de Français - langue et littérature**

★6 (fi 12) (aux deux semestres, 0-3s-0). Préparation du mémoire requis en quatrième année du programme de spécialisation en Français-langue et littérature.

**Cours de 2e cycle****FRANC 580 Choix de sujet en littérature française et francophone**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Le contenu varie d'une année à l'autre. Les sujets sont annoncés avant la période d'inscription. Prérequis: FRANC 225, 235, CA FR 350, ★3 en littérature de niveau 400, ou l'accord du Vice-doyen aux affaires académiques.

**201.101 French Language and Literature, FREN**

Department of Modern Languages and Cultural Studies:  
Germanic, Romance, Slavic  
Faculty of Arts

**Notes**

- (1) The Department reserves the right to place students in the language course appropriate to their level of language skill.
- (2) Placement tests may be administered in order to assess prior background. Students with a French language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in an advanced course more suitable to their level of ability, or they may be encouraged to seek "Credit by Special Assessment" (see §44.5) where appropriate.
- (3) The Department will withhold credit from students completing courses for which prior background is deemed to make them ineligible. For example, 100-level courses are normally restricted to students with little or no prior knowledge in that language. Should a student with matriculation standing, or those possessing prior background (such as native speakers or those for whom it is their first language) register in the 100-level course, credit may be withheld.



## Undergraduate Courses

### **L** FREN 100 Beginners' French

★6 (*fi 12*) (two term, 5-0-0). Designed for students with little or no previous background in French. This course covers material in matriculation-level French and allows students to proceed into study of French at the university-level. Normally, students will go from FREN 100 to 150. Note: Not open to students with native or near native proficiency or to students with French 30 or its equivalents (e.g. French 20S or 20N etc.) in Canada and other countries.

### **O** FREN 150 First-Year University French

★6 (*fi 12*) (two term, 5-0-0). Intensive training in spoken and written French, including grammar, composition, and literature. Prerequisite: FREN 100 or French 30 or equivalent. Note: Students with a final grade of 85% or more in French 30 interested in advanced placement may take a placement test to enter FREN 251/252. Students presenting IB French or Langue et Littérature 30 (now French Language Arts 30) should register in FREN 257.

### **L** FREN 155 French Reading Comprehension

★3 (*fi 6*) (either term, 3-0-0). A basic course in French grammar and literature designed to develop skills in reading French. Language of instruction is English. Prerequisite: French 30 or equivalent. Not open to students with credit in FREN 150. Note: Will not meet the requirements in a principal area of concentration.

### **L** FREN 156 Further Reading in French

★3 (*fi 6*) (either term, 3-0-0). An intermediate course in French grammar and literature. Language of instruction is English. Prerequisite: FREN 155 or consent of Department. Not open to students with credit in FREN 150. Note: Will not meet the requirements in a principal area of concentration.

### **O** FREN 233 French Cultural Moments

★3 (*fi 6*) (either term, 3-0-0). This course uses the study of various intellectual, cultural, and historical events, to provide students with a window onto the French world. Prerequisite: FREN 150 or consent of Department.

### **O** FREN 251 Intermediate University French

★3 (*fi 6*) (either term, 3-0-2). Prerequisite: FREN 150. Note: Not open to students with credit in FREN 250, 252 or FRANC 165, 210.

### **O** FREN 252 Reading and Writing in French

★3 (*fi 6*) (either term, 3-0-2). Prerequisite: FREN 251 or consent of Department. Note: Not open to students with credit in either FREN 250 or FRANC 166, 211.

### **O** FREN 253 Contrastive Analysis of French and English

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 150.

### **O** FREN 257 Accelerated Language Course for Honors Students

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department. Note: Not open for credit to students having credit in FREN 258.

### **O** FREN 301 Introduction to French Literary Studies

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 251 and 252, or 257. Note: Not open for credit to students having credit in FREN 300.

### **O** FREN 333 Francophone Cultural Practices

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: FREN 251 and 252, or 257.

### **O** FREN 343 Popular Expression in French

★3 (*fi 6*) (either term, 3-0-0). Prerequisites or corequisites: FREN 251 and 252, or 257.

### **O** FREN 344 Literature and Society in French

★3 (*fi 6*) (either term, 3-0-0). Prerequisite or corequisite: FREN 301.

### **O** FREN 346 Women Writing in French

★3 (*fi 6*) (either term, 3-0-0). Prerequisite or corequisite: FREN 301.

### **O** FREN 351 Advanced Grammar

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: FREN 251 and 252, or 257. Note: Not open to students with credit in FREN 360 or FRANC 221, 264.

### **O** FREN 352 Composition, Style, and Expression

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: FREN 251 and 252, or 257. Note: Not open to students with credit in FREN 350 or FRANC 221, 267.

### **O** FREN 353 Translation: French into English

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: FREN 251 and 252, or 257. Note: Not open for credit to students having credit in FREN 415.

### **O** FREN 361 Introduction to Quebec/French-Canadian Studies

★3 (*fi 6*) (either term, 3-0-0). Prerequisite or corequisite: FREN 301.

### **O** FREN 364 Cultural Practices of Quebec and French Canada

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: FREN 251 and 252, or 257. Note: Not open for credit to students having credit in FR CA 300 or CA FR 350.

### **O** FREN 372 French Phonetics

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 251 or consent of Department. Note: Not open for credit to students having credit in R LIN 372.

### **O** FREN 375 The Grammatical Structure of French: Word to Phrase; Phrase to Sentence

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 251 or consent of Department. Note: Not open for credit to students having credit in R LIN 375.

### **O** FREN 390 Introduction to Children's Literature in French

★3 (*fi 6*) (either term, 3-0-1). A survey of children's literature in French, especially designed for future teachers of French. Prerequisite: Any 200- or 300-level French or French-Canadian courses except the 200-level reading courses.

### **FREN 432 Topics in Francophone Cultural Practices**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 333.

### **FREN 442 Text in Context in French**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 301.

### **FREN 443 Problems in French Literary Studies**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 301.

### **FREN 454 Translation: English into French**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 351 or 352. Note: Not open for credit to students having credit in FREN 416.

### **FREN 468 Topics in Quebec/French Canadian Studies**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 301.

### **FREN 469 Literature and Society in Quebec/French Canadian Studies**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: FREN 301.

### **FREN 473 Canadian French**

★3 (*fi 6*) (either term, 3-0-0). An overview of Canadian French, looking at its historical development as well its present-day structure. The course is intended to familiarize students with the spoken features of the varieties of French spoken within Canada in order that they may have a greater knowledge of Canadian French and a greater facility understanding it. Prerequisite: FREN 372 or 375 or consent of Department.

### **FREN 474 The Acquisition of French as a Second Language for Adults**

★3 (*fi 6*) (either term, 3-0-0). This course approaches the acquisition of French as a second language from the perspective of both the learner and the teacher. Prerequisite: FREN 372 or 375, or consent of Department.

### **FREN 476 Linguistics Applied to French**

★3 (*fi 6*) (either term, 3-0-0). The system of moods and tenses in French. Development of material for application in the classroom. Prerequisite: FREN 372 or 375 or consent of Department.

### **FREN 479 The Text in French**

★3 (*fi 6*) (either term, 3-0-0). Using perspectives of discourse analysis and exploring the links between language and culture. Prerequisite: FREN 372 or 375 or consent of Department.

### **FREN 499 Special Topics**

★3 (*fi 6*) (either term, 3-0-0).

### **FREN 520 Honors Thesis**

★3 (*fi 6*) (variable, variable). For fourth-year Honors students. Prerequisite: consent of Department.

## Graduate Courses

### **FREN 505 Theories of Second Language Acquisition**

★3 (*fi 6*) (either term, 3-0-0). The objective of this course is to familiarize students with recent research on second language acquisition in order to provide them with a better understanding of the processes involved in learning a second language. Topics to be discussed are Contrastive Analysis, Error Analysis, Learner Strategies, Critical Period, L2 Variation, UG approaches, Language Attrition and Immersion Learning. Pedagogical ramifications and applications of theoretical discussion will also be discussed. Prerequisite: consent of Department.

### **FREN 511 Reading Course I**

★3 (*fi 6*) (first term, 3-0-0). Designed for graduate students who wish to satisfy the language requirement for their department. An intensive study of essential grammar and translation of graded texts. Note: not open to undergraduates.

### **FREN 512 Reading Course II**

★3 (*fi 6*) (second term, 3-0-0). Designed for graduate students who have acquired the basic knowledge of grammar and translation skills but require preparation for the proficiency examination to satisfy the language requirements for their department. Prerequisite: FREN 501 or consent of Department. Note: not open to undergraduates.

### **FREN 517 Intermediate Exercises in Translation**

★3 (*fi 6*) (either term, 3-0-0). Translation from French and English of a wide variety of prose texts to provide an understanding of the threefold process of translation (reading, interpreting, writing). Note: not open to students with credit in FREN 515 or 516. Prerequisite: consent of Department.

### **FREN 529 Studies in Francophone Literature Outside France**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department.

**FREN 531 Studies in Medieval French Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**FREN 560 Studies in 18th-Century French Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**FREN 599 Directed Reading**

★3 (fi 6) (either term, 3-0-0).

**FREN 600 Translation Theories: French-English; English-French**

★3 (fi 6) (either term, 3-0-0).

**FREN 601 Special Topics in Literary Translation**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department. Note: Restricted to students enrolled in the MA in French Translation program.

**FREN 622 Seminar in French Theatre**

★3 (fi 6) (either term, 3-0-0).

**FREN 627 Seminar in the French Novel**

★3 (fi 6) (either term, 3-0-0).

**FREN 690 Master's Seminar in French**

★6 (fi 12) (two term, 0-3s-0). Note: Open only to students registered in the course-based MA in French/French-Canadian Literature.

**FREN 698 Topics in French Linguistics**

★3 (fi 6) (either term, 3-0-0).

**FREN 699 Topics in French Literature**

★3 (fi 6) (either term, 3-0-0).

**FREN 900 Directed Research Project**

★6 (fi 12) (variable, variable).

## 201.102 Genetics (Biological Sciences), GENET

Department of Biological Sciences  
Faculty of Science

**Note:** See the following sections for listings of other Biological Sciences courses: Biology (BIOL); Botany (BOT); Entomology (ENT); Microbiology (MICRB); Zoology (ZOO).

### Undergraduate Courses

**GENET 270 Foundations of Molecular Genetics**

★3 (fi 6) (either term, 3-1.5s-0). Basic concepts on the organization of genetic material and its expression will be developed from experiments on bacteria and viruses. Prerequisite: BIOL 207.

**GENET 275 The Genetics of Higher Organisms**

★3 (fi 6) (second term, 3-0-0). A comprehensive survey of the principles of genetics of eukaryotes. Gene structure and function; Mendelian genetics; cytoplasmic inheritance; cytogenetics; biochemical genetics; somatic cell genetics. Emphasis will be placed on examples from human genetics. Prerequisite: BIOL 207.

**GENET 301 Organization of Simple Genomes**

★3 (fi 6) (first term, 3-0-0). The organization, behavior dynamics and expression of the genetic material in simple model systems from the point of view of its function in the transmission of hereditary information. Prerequisite: GENET 270.

**GENET 302 Organization of Complex Genomes**

★3 (fi 6) (second term, 3-0-0). Current genomics: DNA sequencing projects in eukaryotes; implications of genome projects; DNA sequence organization; the influence of various chromatin configurations on gene expression, techniques for manipulating animal genomes; epigenetic phenomena; regulation of the cell cycle. Prerequisites: GENET 275, 270 recommended.

**GENET 304 Gene Expression and its Regulation**

★3 (fi 6) (first term, 3-0-0). The molecular biology of the processes by which the base sequence of genes is expressed as cellular phenotype will be examined. Emphasis will be placed upon the similarities and differences between prokaryotes and eukaryotes and upon the mechanisms which regulate the operation of particular genes. Prerequisite: GENET 270.

**GENET 364 Plant Genetics**

★3 (fi 6) (second term, 3-1s-0). A survey of genetic phenomena unique to or characteristic of higher plants, with emphasis on explanation at the molecular level. The relationship between molecular or somatic cell genetics and plant breeding will be discussed. Prerequisite: GENET 270.

**GENET 375 Introduction to Molecular Genetics Techniques**

★3 (fi 6) (second term, 0-1s-6). A laboratory course in which students will be introduced to modern techniques in molecular biology. These will include cytogenetics, recombinant DNA techniques, and methods of genome analysis.

Prerequisites: GENET 270, 275, MICRB 265, and a 300-level GENET course. Enrolment is limited, and registration is by permission of the Department.

**GENET 390 Gene Manipulation**

★3 (fi 6) (first term, 3-0-0). In vitro manipulation of genes with an emphasis on applications to biotechnology. Bacterial, yeast, plant, and animal vector systems. Enzymology of DNA manipulation. Electrophoresis of nucleic acids and proteins. Hybridization techniques for the identification of nucleic acids and proteins. Hybridization techniques for the identification of nucleic acid sequences. cDNA and genomic DNA cloning and screening. In vitro mutagenesis. Prerequisite: GENET 270. Prerequisite or corequisite: BIOCH 203 and 205.

**GENET 408 Replication, Repair, and Recombination**

★3 (fi 6) (first term, 3-1s-0). The goal of the course is to build a foundation of information in the topics of DNA replication, recombination, and repair and to apply this information to understanding the molecular basis of certain human diseases including cancer. Prerequisites: GENET 301 and 304 are strongly recommended. Note: This course is normally recommended for fourth-year students. GENET 408 and 508 cannot both be taken for credit.

**GENET 412 Genetic Control of Development**

★3 (fi 6) (first term, 3-1s-0). Gene action during development; identification and analysis of the network of genetic elements regulating developmental decisions. Prerequisites: GENET 302 or 304. Note: GENET 412 and 512 cannot both be taken for credit.

**GENET 418 Human Genetics**

★3 (fi 6) (second term, 3-1s-0). A survey of human genetic variation and mutation in a molecular genetics context. Chromosomal abnormalities, cancer cytogenetics, population genetics, DNA polymorphisms linked to diseases, gene mapping, applications to genetic counselling, ethical issues. Prerequisites: GENET 302. BIOL 380 strongly recommended. Note: GENET 418 and 518 cannot both be taken for credit.

**GENET 420 Research Techniques in Molecular Genetics**

★6 (fi 12) (either term, 0-0-12). A laboratory course emphasizing modern techniques in bacterial and phage genetics, restriction analysis of DNA, and plasmid construction by in vitro recombinant DNA techniques. Prerequisites: GENET 301 and 390. GENET 375 recommended. Enrolment is limited and registration is by permission of the Department. Designed for undergraduate and graduate students in programs with molecular biological orientation.

### Graduate Courses

**Notes**

- (1) All 300- and 400-level courses in the Department of Biological Sciences may be taken for credit (except for BIOL 490, 498 and 499) by graduate students with approval of the student's supervisor or supervisory committee.
- (2) The following courses may be taken as an option in the Department of Biological Sciences with approval of the student's supervisor or supervisory committee: BIOCH 510, 520, 530, 540, 541, 550, 555, 560; CHEM 361, 363, 461; CELL 300, 301; INT D 371, 372, 421, 452, 455, 464, 543, 544, 545, 551; MA SC 400, 401, 402, 410, 412, 420, 425, 430, 437, 440, 445, 450, 454, 470, 480; MMI 350, 405, 415, 516, 520; NEURO 472, 503; NU FS 363; PALEO 318, 319; PHARM 601.

**GENET 500 Advanced Genetic Analysis I: The Genetic System**

★3 (fi 6) (first term, 3-3s-0). Directed study of literature on the discovery of the phenomena of inheritance and their physical correlates within the cell. Notes: (1) Graded on participation in group discussions and on written work and/or examinations based on assigned readings. (2) Scheduling of this course will be subject to modification depending on the requirements of instructors and students. Note: Usually taken as one of a pair of courses (GENET 500, 510) by first year graduate students in the area of Genetics. Students in other graduate programs may register with the consent of the instructors.

**GENET 508 Graduate Course in Replication, Repair and Recombination**

★3 (fi 6) (first term, 3-1s-0). The goal of the course is to build a foundation of information in the topics of DNA replication, recombination, and repair and to apply this information to understanding the molecular basis of certain human diseases including cancer. Prerequisites: consent of the Instructor. Note: GENET 408 and 508 cannot both be taken for credit.

**GENET 510 Advanced Topics in Gene Regulation, Development and Medical Genetics**

★3 (fi 6) (second term, 3-3s-0). Directed study of literature on regulation of the phenotypic expression of genes and the manner in which genes direct the process of development. Note: See GENET 500.

**GENET 512 Graduate Course in Genetic Control of Development**

★3 (fi 6) (first term, 3-1s-0). Gene action during development; identification and analysis of the network of genetic elements regulating developmental decisions. Prerequisites: GENET 302 and 304 and consent of Department. Note: GENET 412 and 512 cannot both be taken for credit.

**GENET 518 Graduate Course in Human Genetics**

★3 (fi 6) (second term, 3-1s-0). A survey of human genetic variation and mutation

in a molecular genetics context. Chromosomal abnormalities, cancer cytogenetics, population genetics, DNA polymorphisms linked to disease, gene mapping, applications to genetic counseling, ethical issues. Prerequisites: GENET 302, BIOL 380 strongly recommended. Consent of Department. Note: GENET 418 and 518 cannot both be taken for credit.

**GENET 601 Genetics Seminars**

★1 (fi 2) (either term, 0-1s-0).

**GENET 605 Invited Speaker Seminar Series**

★1 (fi 2) (either term, 0-1s-0).

## 201.103 Geophysics, GEOPH

Department of Physics  
Faculty of Science

**Note:** Not all Geophysics courses are offered every year. Students are advised to consult the Department of Physics regarding the courses that will be available in a given year. The geophysics field school is normally held in the week prior to the start of Fall term, and is a required component of GEOPH 437 and 438.

### Undergraduate Courses

**0 GEOPH 221 Physics of the Earth**

★3 (fi 6) (second term, 3-0-0). The Earth in the solar system; earthquakes, seismology and structure of the Earth's interior; gravity and the shape of the Earth; geomagnetism, geodynamics and plate tectonics; atmospheric and space physics and Sun-Earth interactions; discussion of geophysics as a career. Prerequisites: MATH 101, 115 or 118, and PHYS 101, 102, 109, 126, 146 or EN PH 131.

**0 GEOPH 223 Environmental Monitoring and Mining Exploration Techniques**

★3 (fi 6) (first term, 3-0-3). Near surface geophysical techniques; shallow seismic, gravity, radiometric, electrical and electromagnetic methods; environmental monitoring; rock properties; the effect of contaminants on rock properties. Prerequisites: MATH 101, 115 or 118, and PHYS 101, 102, 109, 126, 146 or EN PH 131. Note: Not available to students in Honors or Specialization Physics or Geophysics.

**0 GEOPH 224 Geophysical Exploration Techniques**

★3 (fi 6) (second term, 3-0-3). Seismic wave propagation; the geological interpretation of seismic reflection and refraction; seismic data processing; the principles of well logging; gravitational and magnetic techniques. Prerequisites: MATH 101, 115 or 118, and PHYS 101, 102, 109, 126, 146 or EN PH 131. Note: Not available to students in Honors or Specialization Physics or Geophysics.

**0 GEOPH 325 Gravity, Magnetic, and Electrical Techniques**

★3 (fi 6) (either term, 3-0-0). Basic theory of gravity, magnetic, and electrical exploration methods; factors controlling density, resistivity, and magnetic properties of rocks; applications in environmental geophysics, continental dynamics and mineral exploration; instrumentation. Prerequisite: PHYS 281, MATH 215.

**0 GEOPH 326 Seismic Imaging**

★3 (fi 6) (either term, 3-0-0). Use of reflection and refraction seismology to image the Earth's interior, with application to gas/oil and mineral exploration and environmental assessment; study of current technologies utilized to acquire, image and interpret 2D and 3D data sets. Prerequisite: PHYS 281, MATH 215.

**0 GEOPH 332 Physical Properties of Geomaterials**

★3 (fi 6) (either term, 3-0-0). Overview of the fundamental physical properties of geophysically important materials; physics involved in the measurement of physical properties in the Earth especially in the context of geophysical well logging and laboratory measurement; integration of measurements with geological and geophysical field observations. Prerequisites: PHYS 271, 281, MATH 214, 215.

**0 GEOPH 421 Seismology and the Physical Structure of the Earth**

★3 (fi 6) (either term, 3-0-0). Seismology; solutions to the elastic wave equation in layered media; major components of the seismic field: body waves (including head waves, surface waves, and normal modes); ray approaches as high frequency approximations to the seismic field; source mechanisms; structure of the Earth; seismometers; inversion of seismic data. Pre- or corequisite: MATH 337. Prerequisites: PHYS 281, GEOPH 326.

**0 GEOPH 424 Electromagnetic and Gravity Fields**

★3 (fi 6) (either term, 3-0-0). Potential theory as applied to gravitational and electromagnetic exploration; magnetotellurics, frequency and time domain methods, and ground penetrating radar; theory and application of Maxwell's equations; forward and inverse techniques to image crustal and mantle structures. Pre- or corequisite: MATH 337. Prerequisites: PHYS 281, 381, GEOPH 325.

**0 GEOPH 426 Signal Processing in Geophysics**

★3 (fi 6) (either term, 3-0-0). Application of time series analyses and image processing techniques to large geophysical data sets; sampling of data and problems of aliasing; one and two dimensional Fourier transforms; the Z transformation; spectral analysis, filtering, and deconvolution; application of

computers in assignments. Prerequisites: MATH 311, GEOPH 326, PHYS 234 or equivalent.

**0 GEOPH 429 Upper Atmosphere and Space Physics**

★3 (fi 6) (either term, 3-0-0). Basic space plasma phenomena: the Earth's plasma and field environment; the solar cycle; generation of the solar wind; the interplanetary plasma and field environment; the solar-terrestrial interaction; magnetospheric substorms; the aurora borealis; magnetosphere-ionosphere interactions; effects of magnetospheric storms on man-made systems; use of natural electromagnetic fields for geophysical exploration. Pre- or corequisite: PHYS 381.

**0 GEOPH 431 Geophysical Inverse Theory**

★3 (fi 6) (either term, 3-0-0). Quantitative methods to determine the physical properties of the Earth from indirect geophysical observations; formal treatment of geophysical inverse theory; topics include linear and nonlinear inverse problems, regularization techniques, model norms and misfit, tomography, and case histories of interpretation and analysis. Prerequisites: PHYS 234, 381, MATH 311, 337, GEOPH 325, 326 or permission of Instructor.

**0 GEOPH 437 Environmental and Exploration Geophysics**

★3 (fi 6) (either term, 0-0-6). Electrical, electromagnetic, gravitational, magnetic, and survey data sets are obtained by the student during field school; these data are processed, modelled, and interpreted by the student in a computer workstation laboratory; final results are presented in the form of professional technical reports. Prerequisite: MATH 209, 214, or equivalent, GEOPH 325, PHYS 234 or equivalent. Strongly recommended corequisite: GEOPH 426. Students must have attended the field school held during the week prior to the start of the Fall Term.

**0 GEOPH 438 Seismic Data Processing**

★3 (fi 6) (either term, 0-0-6). A variety of seismic and ground penetrating radar data sets are obtained by the student during field school; these data are corrected, enhanced, and imaged in a computer workstation laboratory, leading to a final geologic interpretation. Results obtained by the student will be presented in the format of a series of professional technical reports. Prerequisites: MATH 209, 214, or equivalent, GEOPH 326, 426, PHYS 234 or equivalent. Students must have attended the field school held during the week prior to the start of the Fall Term.

### Graduate Courses

The following undergraduate courses may be taken for credit by graduate students: GEOPH 421, 424, 426, 429, 431, 437, 438.

**0 GEOPH 521 Global Geodynamics**

★3 (fi 6) (either term, 2-1s-0). Plate tectonics, continental breakup and assembly; mantle and lithosphere rheology; faulting and earthquakes; convection in the Earth and planets; hotspots and mantle plumes, plate accretion and subduction; dynamics of the core, planetary magnetism and the geodynamo. Prerequisite: Consent of Instructor.

**0 GEOPH 616 Tectonic Theories**

★3 (fi 6) (either term, 3-0-0).

**0 GEOPH 620 Rock Physics**

★3 (fi 6) (either term, 3-0-0).

**0 GEOPH 623 Inverse Problems in Geophysics**

★3 (fi 6) (either term, 3-0-0).

**0 GEOPH 624 Theoretical Seismology**

★3 (fi 6) (either term, 3-0-0).

**0 GEOPH 625 Physics of Macroscopic Mixtures**

★3 (fi 6) (either term, 3-0-0).

## 201.104 German, GERM

Department of Modern Languages and Cultural Studies:  
Germanic, Romance, Slavic  
Faculty of Arts

### Notes

- (1) The Department reserves the right to place students in the language course appropriate to their level of language skill.
- (2) Placement tests may be administered in order to assess prior background. Students with a German language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in an advanced course more suitable to their level of ability, or they may be encouraged to seek "Credit by Special Assessment" (see §44.5) where appropriate.
- (3) The Department will withhold credit from students completing courses for which prior background is deemed to make them ineligible. For example, 100-level courses are normally restricted to students with little or no prior knowledge in that language. Should a student with matriculation standing, or those possessing prior background (such as native speakers or those for whom it is their first language) register in the 100-level course, credit may be withheld.

- (4) See also INT D 350 and 519 for courses which are offered by more than one department or Faculty and which may be taken as an option or as a course in this discipline.
- (5) See also Scandinavian listings.

## Undergraduate Courses

### **G** **GERM 100 Beginners' German**

★6 (fi 12) (two term, 5-0-0). Designed to lead to mastery of spoken and written German. Note: Not open to students with native or near native proficiency or to students with German 30 or its equivalents in Canada and other countries.

### **G** **GERM 150 First-Year University German**

★6 (fi 12) (two term, 5-0-0). Designed to develop ability in speaking, reading, and writing German, using modern short stories, cultural readers, and audio-visual aids. Prerequisite: German 30, GERM 100, or the equivalent. Formerly GERM 200.

### **G** **GERM 165 Reading German for Beginners**

★6 (fi 12) (two term, 3-0-0). An intensive course to give beginning students a reading knowledge of German in the sciences, the arts and the humanities. Note: Not available to students who have successfully completed German 30, or GERM 100, or 101. Formerly GERM 215.

### **G** **GERM 264 Introduction to German Culture in a European Context**

★3 (fi 6) (either term, 3-0-0). Basic questions of culture in Germany, its European connections, and historical foundations as reflected in a series of prominent examples from the Middle Ages to the present. This course is taught in English and does not fulfill the Language other than English requirement.

### **G** **GERM 265 Advanced Reading German**

★6 (fi 12) (two term, 3-0-0). Reading of advanced texts in the sciences, the arts and the humanities. Systematic discussion of complex constructions which are characteristic of technical and scholarly literature. Note: Students who pass GERM 265 with a grade of 6 or better will be considered by the Department as having fulfilled the reading requirement for German for the PhD at the University of Alberta. Prerequisite: German 30, GERM 100, 101, 165 or their equivalents. Not open to students with credit in GERM 150.

### **G** **GERM 274 The Culture and Civilization of Austria: An Introduction**

★3 (fi 6) (either term, 3-0-0). The cultural legacy of Austria from the Habsburgs to the present. This course is taught in English and does not fulfil the language-other-than-English requirement of the BA degree.

### **G** **GERM 301 Advanced Grammar and Stylistics**

★6 (fi 12) (two term, 3-0-0). Theoretical and practical study of the more complex areas of German grammar, style, and idiomatic usage. Prerequisites: GERM 150 or consent of Department. Note: Not to be taken after completion of any 400-level German course except with special departmental permission.

### **GERM 306 German-English Contrastive Phonology**

★3 (fi 6) (either term, 3-0-0). Phonetic and phonemic analysis of English and German. Contrastive study includes application to teaching and learning. Prerequisite: GERM 150 or consent of Department. Note: This course will not fulfil the Language other than English requirement.

### **GERM 309 German-English Comparative Grammar**

★3 (fi 6) (either term, 3-0-0). Comparison of the form and function of the morphology and syntax of German and English. Prerequisite: GERM 150 or consent of Department. Not to be taken by students with credit in GERM 307 or 308. Note: this course will not fulfil the Language other than English requirement.

### **GERM 316 Introduction to German Applied Linguistics I: Theoretical Aspects**

★3 (fi 6) (either term, 3-0-0). Discussion of concepts in multilingualism, contrastive analysis, sociolinguistics, and pragmalinguistics as related to the study of German. Prerequisite: GERM 150 or consent of Department.

### **GERM 317 Introduction to German Applied Linguistics II: Practical Aspects**

★3 (fi 6) (either term, 3-0-0). Grammar models and their application to language learning and teaching, error analysis, contrastive stylistics, translation, languages for special purposes, and cultural studies. Prerequisite: GERM 150 or consent of Department.

### **G** **GERM 321 Modern German Prose: Nietzsche to Kafka**

★3 (fi 6) (either term, 3-0-0). Prose works by major German authors from the late 19th and early 20th century in translation. Intended to introduce students both to prominent themes and developments and to methods of literary criticism. Lectures, discussions, and papers in English.

### **GERM 333 Cultural Studies I**

★3 (fi 6) (either term, 3-0-0). Cultural developments in the German-speaking world from Germanic times to 1945. Prerequisite: GERM 150 or consent of Department. Not to be taken by students with credit in GERM 330, 331, or 332.

### **GERM 343 Cultural Studies II**

★3 (fi 6) (either term, 3-0-0). Developments in society, politics, and popular as

well as high culture from 1945 to the present in Germany, Austria, and Switzerland. Prerequisite: GERM 150 or consent of Department. Not to be taken by students with credit in GERM 340, 341, or 342.

### **GERM 351 Introduction to German Literary and Cultural Studies I**

★3 (fi 6) (either term, 3-0-0). This course deals with highlights of the German literary and cultural development on the basis of textual examples from Germanic times to the 18th century. Prerequisite: GERM 150 or consent of the Department. Note: Not to be taken by students with credit in GERM 350 or GERM 498 A1 taken in 1994-95.

### **GERM 352 Introduction to German Literary and Cultural Studies II**

★3 (fi 6) (either term, 3-0-0). This course deals with highlights of German literary and cultural development on the basis of textual examples from German Classical Weimar to the present. Prerequisites: GERM 150 or consent of Department. Note: Not to be taken by students with credit, in GERM 350 or GERM 498 B2 taken in 1994-95.

### **GERM 402 Advanced German Composition, Conversation, and Translation**

★3 (fi 6) (either term, 3-0-0). Prerequisite: GERM 301 or consent of Department. Not to be taken by students with credit in GERM 442.

### **GERM 404 Business German I**

★3 (fi 6) (either term, 3-0-0). Advanced German, both spoken and written skills, for the German business world. Pre- or corequisite: GERM 301 or consent of Department. Note: not to be taken by students with credit in GERM 311 or 312.

### **GERM 405 Business German II**

★3 (fi 6) (either term, 3-0-0). Continuation of GERM 404. Pre- or corequisite: GERM 301 or consent of Department. Note: not to be taken by students with credit in GERM 311 or 312.

### **GERM 406 Introduction to Germanic Linguistics**

★3 (fi 6) (either term, 3-0-0). The Germani. Runes, sound shifts and other major features of Germanic languages with emphasis on German. Prerequisite or corequisite: One of GERM 306, 316, 317, or consent of Department.

### **GERM 407 History of New High German**

★3 (fi 6) (either term, 3-0-0). Origin and development of modern standard German. Prerequisite: One of GERM 306, 316, 317, or consent of Department.

### **GERM 409 German Dialects**

★3 (fi 6) (either term, 3-0-0). A close look at some widely differing German dialects. Basic principles of German dialectology. Prerequisite: One of GERM 306, 316, 317, or consent of Department.

### **GERM 411 Middle High German I**

★3 (fi 6) (either term, 3-0-0). An introduction to the grammar of Middle High German and to selected literary texts. Prerequisite: GERM 351 or 352 or consent of Department.

### **GERM 412 Middle High German II**

★3 (fi 6) (either term, 3-0-0). Study of selected literary texts of classical Middle High German. Prerequisite: GERM 351 or 352 or consent of Department.

### **GERM 413 Topics in German Medieval Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisite: GERM 351 or 352 or consent of Department.

### **GERM 416 German Applied Linguistics I: Learning German as a Second/Foreign Language**

★3 (fi 6) (either term, 3-0-0). The course deals with the principles and processes in structured and unstructured language learning and with the different hypotheses and theories concerning language learning, in particular German. Prerequisite: One of GERM 306, 309, 316, 317, or consent of Department.

### **GERM 417 German Applied Linguistics II: The Social Context for Using German as a First/Second/Foreign Language**

★3 (fi 6) (either term, 3-0-0). This course introduces students to sociolinguistic research with a special focus on learning German. The social status of a language and its effects on a learner, the use of dialects and gender-specific language in English and German will be discussed. Prerequisite: One of GERM 306, 309, 316, 317, 416, or consent of Department.

### **GERM 426 Literature of the German Sturm und Drang**

★3 (fi 6) (either term, 3-0-0). This course deals with a unique German literary movement. It discusses the background and theories of the Sturm und Drang period and covers representative works of Herder, Gerstenberg, Hamann, Lenz, Leisewitz, as well as the young Goethe and Schiller. Prerequisites: GERM 351 or 352 or consent of Department.

### **GERM 435 Early German Romanticism**

★3 (fi 6) (either term, 3-0-0). A survey of the major theoretical and poetic works by the early Romantic authors Wackenroder, Tieck, Novalis, and Fr Schlegel, with special attention to the origins of the modern novel in theory and practice, the fairy-tale, and the artist-story. Prerequisite: GERM 351 or 352 or consent of Department.

### **GERM 441 Exercises in Translation: German into English**

★3 (fi 6) (either term, 3-0-0). Theory and practice of translation of texts in

contemporary and classical German literature. Prerequisite: GERM 301 or consent of Department.

**GERM 443 Topics in Translating German into English**

★3 (fi 6) (either term, 3-0-0). Theories, methods, and strategies of advanced translation. Prerequisite: GERM 441; pre-/corequisite: GERM 442; or consent of Department.

**GERM 460 Studies in a Genre**

★3 (fi 6) (either term, 3-0-0). Prerequisites: GERM 351 or 352 or consent of Department.

**GERM 470 Women in German Literature**

★3 (fi 6) (either term, 3-0-0). Selected writings by women and about women from various historical periods and genres. Selected historical periods and texts may vary in any given year. Prerequisites: GERM 351 or 352 or consent of Department.

**GERM 475 Studies in German Drama I**

★3 (fi 6) (either term, 3-0-0). Major developments in German drama to the early 19th century, with special attention to drama of the Enlightenment, the Storm and Stress, and the Classical Period. Prerequisites: GERM 351 or 352 or consent of Department. Note: Not to be taken by students with credit in GERM 448 or 457.

**GERM 476 Studies in German Drama II**

★3 (fi 6) (either term, 3-0-0). Major developments in German drama in the 19th and 20th centuries, with special attention to dramas of Realism, Naturalism, Expressionism, and epic and contemporary theatre. Prerequisites: GERM 351 or 352 or consent of Department. Note: Not to be taken by students with credit in GERM 448 or 457.

**GERM 480 Studies in German Prose I**

★3 (fi 6) (either term, 3-0-0). Major developments in German prose through to the late 19th century, with special attention to works representing German Classicism, Romanticism, Realism, and Naturalism. Prerequisites: GERM 351 or 352 or consent of Department. Note: Not to be taken by students with credit in GERM 449 or 456.

**GERM 485 Studies in German Literature I**

★3 (fi 6) (either term, 3-0-0). German literary texts from the perspective of a specific topic, theme, or problem (e.g. social unrest and reform, or nationalism). Prerequisites: GERM 351 or 352 or consent of Department.

**GERM 486 Studies in German Literature II**

★3 (fi 6) (either term, 3-0-0). German literary texts from the perspective of a specific topic, theme, or problem proposed (e.g. heroes, history and rebellion, or modern science and the scientist). Prerequisites: GERM 351 or 352 or consent of Department.

**GERM 499 Special Topics**

★3 (fi 6) (either term, 3-0-0).

**GERM 504 Directed Readings for Fourth-Year Honors Students**

★3 (fi 6) (either term, 0-3s-0).

**GERM 505 Honors Essay**

★3 (fi 6) (either term, 0-3s-0). Required of fourth-year Honors students (except those in the Combined Honors program) and prepared under the supervision of a member of the Department.

## Graduate Courses

**GERM 501 Reading Course: Grammar**

★3 (fi 6) (first term, 3-0-0). This course is designed for graduate students who wish to satisfy the language requirement for their department. An intensive study of essential grammar and translation of graded texts. Note: Not open to undergraduates.

**GERM 502 Reading Course: Tutorials**

★3 (fi 6) (second term, 3-0-0). These tutorials are designed for graduate students who have acquired the necessary knowledge of grammar and translation skills but require preparation for the proficiency examination to satisfy the language requirements for their department. Prerequisite: GERM 501 or consent of Department. Note: Not open to undergraduates.

**GERM 506 German-English Contrastive Phonology**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 507 German-English Contrastive Grammar: The Verbal System**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 509 Introduction to Germanic Linguistics**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 510 History of New High German**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 513 Studies in German Grammar**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 514 German Dialects**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 516 German Applied Linguistics I: Using German as a First/Second/Foreign Language**

★3 (fi 6) (either term, 3-0-0). This course deals with German text linguistics and pragmalinguistics. The focus will be on text analyses concerning specific text markers, characteristics, and intentions. The main topics of intercultural Germanistik will be discussed. Prerequisite: consent of Department.

**GERM 517 German Applied Linguistics II: Theory and Practice of Teaching German as a Second/Foreign Language**

★3 (fi 6) (either term, 3-0-0). This course surveys theories about the principles and processes in teaching German language, literature, culture, and civilization to adults. The students will be introduced to several theories of grammar, with an emphasis on pedagogical grammars. Prerequisite: consent of Department.

**GERM 518 German Applied Linguistics I: Learning German as a Second/Foreign Language**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 519 German Applied Linguistics II: The Social Context for Using German as a First/Second/Foreign Language**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 531 Middle High German I**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 532 Middle High German II**

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department.

**GERM 599 Directed Reading**

★3 (fi 6) (either term, 3-0-0).

**GERM 618 Enlightenment**

★3 (fi 6) (either term, 3-0-0).

**GERM 620 Classicism**

★3 (fi 6) (either term, 3-0-0).

**GERM 622 Goethe**

★3 (fi 6) (either term, 3-0-0).

**GERM 625 Romanticism**

★3 (fi 6) (either term, 3-0-0).

**GERM 634 Prose of the 19th Century**

★3 (fi 6) (either term, 3-0-0).

**GERM 637 Naturalism**

★3 (fi 6) (either term, 3-0-0).

**GERM 698 Topics in Germanic Linguistics**

★3 (fi 6) (either term, 3-0-0).

**GERM 699 Topics in German Literature**

★3 (fi 6) (either term, 3-0-0).

**GERM 900 Directed Research Project**

★6 (fi 12) (variable, unassigned).

## 201.105 Greek, GREEK

Department of History and Classics  
Faculty of Arts

### Notes

- (1) Prerequisite for all 400-level GREEK courses: GREEK 300 or 302, or consent of Department.
- (2) For additional related courses see Classics and Latin listings.

## Undergraduate Courses

**1 GREEK 101 Beginners' Greek I**

★3 (fi 6) (either term, 3-0-1). An introduction to Classical Greek which includes the study of the elements of Greek grammar and the reading of simple texts. Not open to students with credit in matriculation-level Greek or GREEK 100.

**1 GREEK 102 Beginners' Greek II**

★3 (fi 6) (either term, 3-0-1). A continuation of GREEK 101. Prerequisite: GREEK 101 or consent of Department. Not open to students with credit in GREEK 100.

**0 GREEK 301 Intermediate Greek I**

★3 (fi 6) (either term, 3-0-1). Review of grammar, reading of Greek texts; translation of simple sentences from English into Greek. Prerequisite: GREEK 100 or 102, or consent of Department. Not open to students with credit in GREEK 300.

**0 GREEK 302 Intermediate Greek II**

★3 (fi 6) (either term, 3-0-0). Selections from Greek poetry and prose. Prerequisite: GREEK 301 or consent of Department. Not open to students with credit in GREEK 300.

**GREEK 399 Readings in Greek Authors**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: GREEK 300 or 301, or consent of Department.

**GREEK 470 Greek Historians**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 475 Greek Drama**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 477 Greek Prose Authors**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 479 Koine Greek**

★3 (*fi 6*) (either term, 3-0-0). Readings and studies in the New Testament and the Church Fathers and other Koine writings.

**GREEK 481 Greek Epic**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 488 Greek Authors I**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 499 Individual Study in Greek Authors**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 500 Fourth-Year Honors Tutorial**

★3 (*fi 6*) (either term, 0-3s-0). Prerequisite: consent of Department.

## Graduate Courses

**GREEK 501 Greek Epic and Didactic Poetry**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 505 Greek Poetry**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 507 Greek Historiography**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 509 Greek Prose Writers**

★3 (*fi 6*) (either term, 3-0-0).

**GREEK 551 Topics in Greek Literature**

★3 (*fi 6*) (either term, 0-3s-0). Prerequisite: consent of Department.

**GREEK 699 Conference Course**

★3 (*fi 6*) (either term, 3-0-0).

## 201.106 Health Education, HE ED

Faculty of Physical Education and Recreation

**Note:** See also INT D 410 for a course which is offered by more than one department or faculty and which may be taken as an option or as a course in this discipline.

## Undergraduate Courses

**HE ED 110 Introduction to Personal Health and Well-Being**

★3 (*fi 6*) (either term, 3-0-0). An individual-based analysis of physical fitness and personal health issues. Emphasis on planning and managing one's own lifestyle for health and well-being within the context of the current health care system. Open to all students. Formerly HE ED 210.

**HE ED 220 Introduction to Personal Fitness**

★3 (*fi 6*) (either term, 3-0-0). A biological analysis of the contributions of physical activity to health. Emphasis is on the knowledge and understanding of basic concepts and methods of physical fitness and active living. Prerequisite: HE ED 110. Note: Credit will not be granted for both HE ED 220 and the former PESS 110.

**HE ED 311 Assessment of Fitness and Health**

★3 (*fi 6*) (either term, 3-0-2). Students will gain knowledge in fitness and lifestyle appraisal. Emphasis will be given to validity and reliability of fitness tests and factors involved in the assessment of health and lifestyle. For BPE students only. Prerequisites: PEDS 200 and PEDS 309.

**HE ED 320 Social Dimensions of Health Promotion**

★3 (*fi 6*) (either term, 3-0-0). An examination of social policies and systems as they affect health and wellbeing. A macro level approach to understanding health and health promotion in communities and the population at large. Specific attention will be paid to worksite, municipal, provincial and federal programs and policies. Prerequisite: HE ED 110 or consent of the Faculty.

**HE ED 321 Psychological Dimensions of Health Promotion**

★3 (*fi 6*) (either term, 3-0-0). An individual-based analysis of health-related behavior and behavior change. Emphasis will be placed upon social psychological approaches to understanding and changing such health-related behaviors as

physical activity involvement, dietary practices, smoking, alcohol and drug abuse within a social context. Prerequisite: HE ED 110 or consent of Faculty.

## 201.107 Health Promotion Studies, HPS

Centre for Health Promotion Studies  
Faculty of Graduate Studies and Research

## Graduate Courses

**HPS 501 Foundations of Health Promotion**

★3 (*fi 11*) (either term, 1-2s-0). A survey of the scientific literature on determinants of health status and subjective well-being, designed to review ecological approaches to health and the methodologies required for testing them. A variety of theoretical formulations of health and well-being are reviewed in relation to individuals, interpersonal relations, small groups, organizations, demographics, economics, and public policies. The relative impact of constructs at different levels of analysis is considered. HPS 501 is a pre- or corequisite for all other HPS courses. Not to be taken by students with credit in INT D 501.

**HPS 503 Introduction to Health Promotion Research**

★3 (*fi 11*) (either term, 3-0-0). Foundations of basic and applied research in health promotion. Consideration is given to a broad range of research strategies including qualitative and quantitative methods. Emphasis is on a critical understanding of why, when, and how to apply different research strategies to answer specific health promotion questions. Pre- or corequisite: HPS 501. Students with insufficient background in undergraduate statistics will be required to complete a qualifying course in this area. Not to be taken by students with credit in INT D 503.

**HPS 504 Health Promotion Planning and Evaluation**

★3 (*fi 6*) (either term, 0-3s-0). This course is designed to provide students with knowledge of the basic concepts, principles, facts and theories which relate to health program planning and program evaluation. Emphasis is on understanding the interface between and among planning principles, evaluation processes and organizational structures. The course also stresses the importance of analytical and communication skills as they apply to these processes. Prerequisites: HPS 501 and 503. Not to be taken by students with credit in INT D 504.

**HPS 505 Strategies in Health Promotion Practice**

★3 (*fi 11*) (either term, 0-3s-0). An analysis of the principles of intervention at individual, community, and policy development levels. Overview of the strategies used in the practice of health promotion/evaluation and their application in a variety of health promotion settings (e.g., schools, the workplace, and health centres). Prerequisites: HPS 501, NURS 531 and PERLS 541.

**HPS 506 Special Seminars**

★3-6 (*variable*) (either term, variable). Prerequisite: consent of Department. Content varies from year to year. Topics are announced prior to registration period. The student's transcript will carry a title descriptive of the content. May be repeated.

**HPS 509 Independent Studies/Research**

★3 (*fi 6*) (either term, 0-3s-0). Prerequisite: Departmental approval of plan of study. May be repeated.

**HPS 510 Health Promotion with Communities**

★3 (*fi 6*) (either term, 0-3s-0). In this course, learners will link health promotion theory with practice at the community level. Major themes include community definition and analysis, community development, working with coalitions and partnerships, and community-centered program planning and evaluation. Learners will also examine specific approaches (e.g., epidemiology, health education, social marketing, advocacy and policy development) and their application in health promotion with communities. Note: Credit will be granted for only one of HPS 510 or NURS 531.

**HPS 512 Health Promotion Practicum**

★3-6 (*variable*) (variable, unassigned). This course provides an opportunity for the student to work as part of an interdisciplinary team on a particular component of a health promotion project in the community. Normally, students will possess an academic background enabling them to assume responsibilities for planning and implementing interdisciplinary health promotion activities. Postgraduate Diploma prerequisite: HPS 501, NURS 531, PERLS 541. MSc Candidates prerequisite: HPS 501, 503, NURS 531 or PERLS 541 and an approved program planning/evaluation course. Note: ★3 required for Postgraduate Diploma and MSc (thesis); ★6 required for MSc (course-based). Not to be taken by students with credit in INT D 502.

**HPS 900 Capping Exercise**

★3 (*fi 6*) (variable, unassigned). Designed to evaluate students' ability to seek out, appraise, and integrate information in the study of health promotion. Development of a written proposal for program funding or a health promotion strategy. Conference style presentation and discussion. Normally students will be expected to complete all their course requirements prior to enrolling in HPS 900. Open to students in the MSc (course-based) only.

## 201.108 Hebrew, HEB

Department of Comparative Literature, Religion and Film/  
Media Studies  
Faculty of Arts

### Notes

- (1) The Department reserves the right to place students in the language course appropriate to their level of language skill.
- (2) Placement tests may be administered in order to assess prior background. Students with a Hebrew language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course more suitable to their level of ability, or they may be encouraged to seek "Credit by Special Assessment" (see §44.5) where appropriate.
- (3) The Department will withhold credit from students completing courses for which prior background is deemed ineligible to take. For example, 100-level courses are normally restricted to students with little or no prior knowledge in that language. Should a student with matriculation standing, or those possessing prior background (such as native speakers or those for whom it is their first language) register in the 100-level course, credit may be withheld.

### Undergraduate Courses

**HEB 499 Problems and Topics in Hebrew Language and/or Literature**  
★3-6 (variable) (variable, 0-3s-0). Prerequisite: consent of Department.

## 201.109 Histoire, HISTE

Faculté Saint-Jean

### Cours de 1er cycle

#### **HISTE 120 Histoire du monde depuis le XVIII<sup>e</sup> siècle**

★6 (fi 12) (aux deux semestres, 3-0-0). Cours de base du BA de 4 ans. Anciennement HISTE 220.

#### **HISTE 260 Introduction à l'étude de l'histoire du Canada de 1500 à 1867**

★3 (fi 6) (premier semestre, 3-0-0). Conçu pour servir de base aux cours de niveau supérieur en histoire canadienne. Auparavant HISTE 278; ce cours n'est pas accessible aux étudiants ayant des crédits pour HISTE 278. Anciennement HISTE 360.

#### **HISTE 261 Introduction à l'étude de l'histoire du Canada de 1867 à nos jours**

★3 (fi 6) (deuxième semestre, 3-0-0). Conçu pour servir de base aux cours de niveau supérieur en histoire canadienne. Auparavant HISTE 279; ce cours n'est pas accessible aux étudiants ayant des crédits pour HISTE 279. Anciennement HISTE 361.

#### **HISTE 360 Choix de sujets en histoire du Canada**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0).

#### **HISTE 366 L'Ouest canadien depuis 1870**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0).

#### **HISTE 374 Le Canada français jusqu'à la Confédération**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). L'évolution du Canada français étudiée dans sa globalité: économie, société, vie politique.

#### **HISTE 375 Le Canada français depuis la Confédération**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). L'évolution du Canada français étudiée dans sa globalité: économie, société, vie politique.

#### **HISTE 380 La francophonie hors-Québec et son histoire**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). La formation et l'évolution des communautés francophones hors-Québec, de l'établissement de l'Acadie à nos jours. Anciennement HISTE 399.

#### **HISTE 397 Histoire de la science I**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction au développement de la science, du point de vue intellectuel, institutionnel et idéologique, d'Aristote à la Révolution scientifique. Note: ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour HUME 301; ni pour ceux ayant des crédits en HIST 304 jusqu'en 1989-90 ou HIST 396 de 1990-91 à aujourd'hui.

#### **HISTE 398 Histoire de la science II**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction au développement de la science, du point de vue intellectuel, institutionnel et idéologique, de Newton à nos jours. Note: ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour HUME 303; ni pour ceux ayant des crédits en HIST 304 jusqu'en 1989-90 ou HISTE 396 de 1990-91 à aujourd'hui.

#### **HISTE 460 Thèmes d'histoire du Canada**

★3 (fi 6) (l'un ou l'autre semestre, 0-3s-0). Prérequis: ★6 d'histoire du Canada. HISTE 475 Thèmes d'histoire du Canada français au XX<sup>e</sup> siècle.

#### **HISTE 470 Thèmes en histoire sociale canadienne**

★3 (fi 6) (l'un ou l'autre semestre, 0-3s-0). Prérequis: un cours antérieur en histoire du Canada ou l'accord du Vice-doyen aux affaires académiques. Note: ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour HUME 402.

#### **HISTE 471 Thèmes en histoire intellectuelle canadienne**

★3 (fi 6) (l'un ou l'autre semestre, 0-3s-0). Prérequis: un cours antérieur en histoire du Canada ou l'accord du Vice-doyen aux affaires académiques. Note: ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour HUME 402.

#### **HISTE 475 Thèmes d'histoire du Canada français au XX<sup>e</sup> siècle**

★3 (fi 6) (l'un ou l'autre semestre, 0-3s-0). Plus particulièrement l'histoire de la francophonie hors-Québec. Prérequis: ★6 d'histoire du Canada.

## 201.110 History, HIST

Department of History and Classics  
Faculty of Arts

The courses listed below represent an extensive reorganization and modification of the Department's offerings. Because of changes in course numbers and/or content, students should compare their new course selections with courses previously taken, so as to avoid duplication or overlap. For Ancient History, see Classics listing.

### Notes

- (1) See also INT D 346, 475, and 498 for courses which are offered by more than one department or faculty and which may be taken as options or as a course in this discipline.
- (2) 400-level courses are normally conducted as seminars; all are variable content courses and the precise topics covered in any given course may vary from year to year. Some account, therefore, may be taken of the particular interests of students within the framework of the course.  
Normally, students who take these courses are expected to have at least ★12 in History; if they do not, they must obtain the consent of Department prior to their registration, and the Department will consider their special needs. For some courses there are additional specified requirements.
- (3) HIST 110, 111, 112, and 120 are designed to provide a foundation for senior and advanced history courses, and also background for studies in related humanities and social sciences.

The following table lists renumbered courses effective 1990/91:

Old	New	Old	New
HIST 200	HIST 100	HIST 340	HIST 231
HIST 220	HIST 120	HIST 339	HIST 320
HIST 300	HIST 200	HIST 343	HIST 232
HIST 301	HIST 204	HIST 344	HIST 332
HIST 302	HIST 205	HIST 345	HIST 333
HIST 303	HIST 206	HIST 347	HIST 337
HIST 304	HIST 396	HIST 348	HIST 338
HIST 308	HIST 302	HIST 350	HIST 250
HIST 310	HIST 301	HIST 351	HIST 251
HIST 313	HIST 211	HIST 360	HIST 260
HIST 316	HIST 215	HIST 361	HIST 261
HIST 318	HIST 217	HIST 382	HIST 392
HIST 319	HIST 299	HIST 384	HIST 395
HIST 320	HIST 305	HIST 386	HIST 393
HIST 321	HIST 306	HIST 388	HIST 385
HIST 328	HIST 308	HIST 389	HIST 382
HIST 330	HIST 312	HIST 391	HIST 241
HIST 331	HIST 313	HIST 392	HIST 242
HIST 334	HIST 315	HIST 396	HIST 246
HIST 335	HIST 316	HIST 397	HIST 247
HIST 336	HIST 317	HIST 398	HIST 298
HIST 338	HIST 318	HIST 498	HIST 500

The following table lists renumbered courses effective 1991/92:

Old	New	Old	New
HIST 409	HIST 494	HIST 441	HIST 431
HIST 411	HIST 407	HIST 442	HIST 432
HIST 412	HIST 408	HIST 443	HIST 433
HIST 413	HIST 402	HIST 444	HIST 434
HIST 415	HIST 403	HIST 447	HIST 437
HIST 416	HIST 404	HIST 454	HIST 457
HIST 423	HIST 410	HIST 455	HIST 458
HIST 432	HIST 415	HIST 459	HIST 453
HIST 433	HIST 416	HIST 493	HIST 341

Old	New	Old	New
HIST 434	HIST 417	HIST 494	HIST 342
HIST 435	HIST 418	HIST 495	HIST 441
HIST 436	HIST 419	HIST 496	HIST 442
HIST 439	HIST 425	HIST 497	HIST 446
HIST 440	HIST 430		

## Undergraduate Courses

### **O** HIST 110 The Pre-Modern World

★3 (fi 6) (either term, 3-0-0). World history from the end of the 6th century to the 15th century. Note: Students choosing HIST 110 for partial fulfilment of the Humanities Group A requirement must also take one of CLASS 110, HIST 111 or HIST 112.

### **O** HIST 111 The Early Modern World

★3 (fi 6) (either term, 3-0-0). World history from the 15th century through the 18th century. Note: Students choosing HIST 111 for partial fulfilment of the Humanities Group A requirement must also take one of CLASS 110, HIST 110, or HIST 112. Not open to students with credit in HIST 110 up to 1996-97.

### **O** HIST 112 The Modern World

★3 (fi 6) (either term, 3-0-0). The world since the beginning of the 19th century. Note: Students choosing HIST 112 for partial fulfilment of the Humanities Group A requirement must also take one of CLASS 110, HIST 110, or HIST 111. Not open to students with credit in HIST 120.

### **O** HIST 120 World History Since the 18th Century

★6 (fi 12) (two term, 3-0-0). Core course for the four-year BA.

### **L** HIST 190 Research Skills and Tools

★3 (fi 6) (either term, 3-0-0). Strongly recommended for prospective history students.

### **O** HIST 205 An Introduction to Modern Intellectual History

★3 (fi 6) (either term, 3-0-0). A survey of major trends in European intellectual history since the Enlightenment.

### **O** HIST 206 Introduction to the History of Women in Europe

★3 (fi 6) (either term, 3-0-0). Introduction to the study of women's history. Examines the position of women in Western societies from the Middle Ages to the 20th century.

### **O** HIST 207 Europe in the Central Middle Ages

★3 (fi 6) (either term, 3-0-0). Charlemagne to the 12th century. Not open to students with credit in HIST 200.

### **O** HIST 208 Europe in the Later Middle Ages

★3 (fi 6) (either term, 3-0-0). The 12th to the 15th century. Not open to students with credit in HIST 200.

### **O** HIST 209 Early Modern Europe

★3 (fi 6) (either term, 3-0-0). The Renaissance to the Enlightenment.

### **O** HIST 210 Europe in the 19th and 20th Centuries

★3 (fi 6) (either term, 3-0-0).

### **O** HIST 228 The Early History of the British Peoples

★3 (fi 6) (either term, 3-0-0). Survey of the development of and relations among the societies and cultures of the British Isles from early times to 1688.

### **O** HIST 229 Britain and Its Peoples in the Modern Era

★3 (fi 6) (either term, 3-0-0). Survey of the major themes and issues in the formation of modern Britain from 1688 to the present.

### **O** HIST 231 Scotland from Early Times to the Present Day

★3 (fi 6) (either term, 3-0-0). Survey of the history of Scotland from the Reformation to the present.

### **O** HIST 232 Ireland from Early Times to the Present Day

★3 (fi 6) (either term, 3-0-0). Survey of the history of Ireland from St Patrick to the present.

### **O** HIST 241 Colonial Latin America

★3 (fi 6) (either term, 3-0-0). Survey of Latin American history to 1810.

### **O** HIST 242 Modern Latin America

★3 (fi 6) (either term, 3-0-0). Survey of Latin American history since 1810.

### **O** HIST 244 Spirits, Prophets and Healers in Africa

★3 (fi 6) (either term, 3-0-0). Explores a range of indigenous and syncretic belief systems south of the Sahara from a historical perspective. Excludes Islam.

### **O** HIST 245 Islamic Belief Systems in Africa

★3 (fi 6) (either term, 3-0-0). Traces the historical evolution of Islam throughout the continent.

### **O** HIST 246 Africa from Medieval to Modern Times

★3 (fi 6) (either term, 3-0-0). African history to the 19th century.

### **O** HIST 247 Africa: From Colonialism to Self-Rule

★3 (fi 6) (either term, 3-0-0). African history since the 19th century.

### **O** HIST 250 American History to 1865

★3 (fi 6) (either term, 3-0-0). Survey of United States history from colonial times to the Civil War.

### **O** HIST 251 American History Since 1865

★3 (fi 6) (either term, 3-0-0). Survey of United States history from the Civil War to the present.

### **O** HIST 260 Pre-Confederation Canada

★3 (fi 6) (first term, 3-0-0).

### **O** HIST 261 Post-Confederation Canada

★3 (fi 6) (second term, 3-0-0).

### **O** HIST 280 East Asia to 1500

★3 (fi 6) (either term, 3-0-0). Survey of history of East Asia (China, Korea, Japan, Vietnam) to 1500.

### **O** HIST 281 East Asia from 1500

★3 (fi 6) (either term, 3-0-0). Survey of the history of East Asia (China, Korea, Japan, Vietnam) from 1500 to the present.

### **O** HIST 285 China and the West

★3 (fi 6) (either term, 3-0-0). A survey of Chinese-Western cultural interactions from the time of Marco Polo to the present.

### **L** HIST 290 Introduction to History as a Discipline

★3 (fi 6) (either term, 2-1s-0). Introduction to the basic concepts of historical inquiry and techniques of research and writing in History. Recommended for History majors. Prerequisite: A previous course in History and/or consent of Department.

### **O** HIST 291 Computer Applications for Historians

★3 (fi 6) (either term, 3-0-0). Use of the World-Wide Web (Internet), multimedia technologies and software application to enhance research skills for the historian.

### **O** HIST 294 An Introduction to the History of Sciences, Technology, and Medicine

★3 (fi 6) (either term, 3-0-0). Broad survey of topics in the history of science, technology, and medicine.

### **O** HIST 295 20th-Century Warfare

★3 (fi 6) (either term, 3-0-0). In-depth look at some of the conflicts of the 20th century, the course examines wars and revolutions including the two world wars, the Korean and Vietnam wars, African guerrilla wars, and the Gulf War. Analyze the causes and consequences of war and the evolution of weaponry. To be offered in alternate years.

### **O** HIST 296 World War Two

★3 (fi 6) (either term, 3-0-0). Emphasis on social and political aspects.

### **O** HIST 297 The History of Christianity

★3 (fi 6) (either term, 3-0-0). Lecture and discussion course about the development of one of the leading religious traditions in the world. Not open to students who have successfully completed CHRTC 297.

### **O** HIST 298 History of Human Conflict

★6 (fi 12) (two term, 3-0-0). History of the various facets of warfare and the causes and consequences of conflict. A variety of historical periods may be covered.

### **O** HIST 300 Topics in European History

★3 (fi 6) (either term, 3-0-0).

### **O** HIST 301 Early Medieval Europe 338-1050

★3 (fi 6) (either term, 3-0-0).

### **O** HIST 302 European Intellectual History from the Enlightenment

★3 (fi 6) (either term, 0-3s-0). A survey of major political, socio-economic ideas and movements since the Enlightenment.

### **O** HIST 304 Reform, Revolt, and Revolution: Europe 1300-1800

★3 (fi 6) (either term, 3-0-0). Examines and compare ecclesiastical and political reform movements, agricultural and urban revolts, peasant uprisings, the Reformation, Dutch Revolt, and English, American, and French 'Revolutions.'

### **O** HIST 305 France in Revolution, 1760-1870

★3 (fi 6) (either term, 3-0-0). An introduction to the history of France from the origins of the French Revolution to the downfall of Napoleon III.

### **O** HIST 306 France Since 1870

★3 (fi 6) (either term, 3-0-0). An introduction to the political, economic and social developments in France from the Third to Fifth Republic.

### **O** HIST 308 Germany Since Frederick the Great

★3 (fi 6) (either term, 3-0-0). A survey of modern German history since Frederick the Great (1740).

### **O** HIST 310 A History of the Habsburg Monarchy, 1526-1918

★3 (fi 6) (either term, 3-0-0). The multinational empire of the Habsburgs from the unification of Austria, Bohemia and Hungary to the destruction of the empire in World War I. Note: Not open to students with credit in HIST 307.



**HIST 311 History of the Byzantine Empire**

★3 (fi 6) (either term, 3-0-0).

**HIST 312 Foundations of East European History**

★3 (fi 6) (first term, 3-0-0). The ethnic, religious, social, and political factors which shaped the development of the peoples of East Central Europe from the Middle Ages through the Age of Enlightenment.

**HIST 313 Eastern Europe in the 19th Century**

★3 (fi 6) (either term, 3-0-0). History of the area, from the Napoleonic War to World War I; the Polish question; the evolution of the Habsburg Empire; formation of the nation-states in the Balkans.

**HIST 314 Eastern Europe Since World War I**

★3 (fi 6) (either term, 3-0-0). The recent history of Eastern Europe.

**HIST 315 Foundations of Ukrainian History**

★3 (fi 6) (either term, 3-0-0). The social, political and cultural development of Ukrainian lands from prehistory through the Enlightenment.

**HIST 316 19th-Century Ukraine**

★3 (fi 6) (second term, 3-0-0). The Ukrainian people in the Russian and Austro-Hungarian empires. From serfdom to capitalism. The national movement and the making of the modern nation.

**HIST 317 20th-Century Ukraine**

★3 (fi 6) (second term, 3-0-0). World War I and the emergence of the Ukrainian Republic. Ukrainian lands in the USSR and Poland during the interwar period. World War II and Nazi occupation. Soviet Ukraine since 1945.

**HIST 318 Medieval and Imperial Russia**

★6 (fi 12) (two term, 3-0-0). Medieval and Imperial Russia with an Epilogue on the Revolutions of 1917.

**HIST 322 Russia in the 20th Century**

★3 (fi 6) (either term, 3-0-0). An historical survey of domestic and foreign policy, from Nicholas II to Yeltsin. Not open to students who have successfully completed HIST 320.

**HIST 323 The Middle East in the Making: 1300-1920**

★3 (fi 6) (either term, 3-0-0). The rise and demise of the Ottoman Empire. An overview of the religious, cultural and political making of current-day North Africa, Near and Middle East, and Eastern Mediterranean. No Prerequisites: although HIST 120/111/112 would be helpful.

**HIST 324 Historical Writing: The Israelite Tradition**

★3 (fi 6) (either term, 3-0-0). A study of the Deuteronomistic History (the books from Joshua to 2 Kings in the Hebrew Bible) and of the Chronic History (the books of 1-2 Chronicles in the Hebrew Bible) in their ancient near eastern context.

**HIST 325 History of Domestic Technology**

★3 (fi 6) (either term, 3-0-0).

**HIST 326 Topics in History at the Movies**

★3 (fi 6) (either term, 3-0-0). This course will provide students with the historical tools to analyze history as it is presented in movies. The topics will vary according to the instructor(s).

**HIST 328 Everyday Life and Popular Culture in Early Britain**

★3 (fi 6) (either term, 3-0-0). How British peoples have lived, worked and understood their daily lives from ancient times until the Industrial Revolution.

**HIST 329 The Forming of England**

★3 (fi 6) (either term, 3-0-0). Survey of the emergence of the English state and culture from the collapse of Roman Britain to 1189.

**HIST 331 England in the Age of Robin Hood**

★3 (fi 6) (either term, 3-0-0). Survey of the history of England during the later Middle Ages (1189-1485).

**HIST 332 The Rise and Fall of the Tudor Regime**

★3 (fi 6) (either term, 3-0-0). From medieval kingdoms to the dawn of a single Britain, the turbulent era of Protestantism, revolutions and centralizing monarchs (1485-1660).

**HIST 335 Everyday Life and Popular Culture in Modern Britain**

★3 (fi 6) (either term, 3-0-0). How British peoples have lived, worked and understood their daily lives from the Industrial Revolution to the present.

**HIST 336 The Transformation of British Society, 1660-1851**

★3 (fi 6) (either term, 3-0-0). Political, economic and social changes that contributed to the making of modern Britain.

**HIST 338 Britain as a World Power**

★3 (fi 6) (either term, 3-0-0). A survey from the end of the Napoleonic Wars to the mid-twentieth century.

**HIST 339 The Second British Empire and the Commonwealth Experience in the 19th and 20th Century**

★3 (fi 6) (either term, 3-0-0).

**HIST 340 Topics in British History**

★3 (fi 6) (either term, 3-0-0).

**HIST 341 Land and Labor in Latin America**

★3 (fi 6) (either term, 3-0-0). Prerequisite: HIST 241/242 or consent of Department.

**HIST 342 Political and Social Revolution in Latin America**

★3 (fi 6) (either term, 3-0-0). Prerequisite: HIST 241/242 or consent of Department.

**HIST 343 Mexico**

★3 (fi 6) (either term, 3-0-0). Mexican history with emphasis on the modern period. Prerequisites: HIST 241 and 242 or consent of Department.

**HIST 344 British Exploration and Culture Contact**

★3 (fi 6) (either term, 3-0-0). Contact between British explorers and non-European societies during early phases of British expansion in the 16th and 18th centuries.

**HIST 346 Change and Continuity in 19th-Century Africa**

★3 (fi 6) (either term, 3-0-0). The course explores social, economic, and political changes during a century which saw the ending of the international slave trades and the beginnings of European colonialism. No prerequisite but HIST 246/396 is recommended.

**HIST 347 Topics in African History**

★3 (fi 6) (either term, 3-0-0).

**HIST 350 Comparative American and Canadian History**

★3 (fi 6) (either term, 3-0-0).

**HIST 351 History of Women in the United States**

★3 (fi 6) (either term, 3-0-0). A multicultural and multiracial history of women from the colonial period to the present.

**HIST 352 History of American Minorities**

★3 (fi 6) (either term, 3-0-0). The experiences of racial and ethnic minorities and the meanings of race and ethnicity in American history including such groups as African Americans and Asian Americans.

**HIST 353 History of American Medicine**

★3 (fi 6) (either term, 3-0-0). The social history of American health care and health practitioners. How sickness, health, and healing have changed over the course of American history.

**HIST 354 American Economic History**

★3 (fi 6) (either term, 3-0-0). American economic problems and policies in their historical setting.

**HIST 357 American Colonial History**

★3 (fi 6) (either term, 3-0-0). American colonial history from settlement to independence.

**HIST 360 Topics in Canadian History**

★3 (fi 6) (either term, 3-0-0).

**HIST 361 Military History of Canada**

★3 (fi 6) (either term, 3-0-0). Canadian armed conflicts from the Iroquois Wars to the Gulf War; emphasis will be on the evolution of weapons, tactics and military organization.

**HIST 362 History of Alberta**

★3 (fi 6) (either term, 3-0-0). Economic, social, and political realities that underlie the many images of Alberta.

**HIST 363 History of Canadian External Relations**

★3 (fi 6) (either term, 3-0-0).

**HIST 364 History of Social Welfare in Canada**

★3 (fi 6) (either term, 3-0-0).

**HIST 365 The Canadian West to 1885**

★3 (fi 6) (first term, 3-0-0). Native diplomacy and warfare, the development of fur trade societies, and European colonization to the suppression of the North-West Rebellion.

**HIST 366 The Canadian West Since 1885**

★3 (fi 6) (either term, 3-0-0). Economic, social, and political aspects of regional alienation, identity, and protest.

**HIST 367 History of Ukrainians in Canada**

★3 (fi 6) (either term, 3-0-0). Ukrainian-Canadian life within the context of Canadian immigration policies and nation building and the experiences of other ethnic groups.

**HIST 368 History of the Native Peoples of Canada to 1867**

★3 (fi 6) (either term, 3-0-0). Native cultures and societies, Native-newcomer relations, colonial Indian policy, and Native resistance to colonialism.

**HIST 369 History of the Native Peoples of Canada Since 1867**

★3 (fi 6) (either term, 3-0-0). Federal Indian policy, treaties, reserve life, Native political resurgence, and legal and constitutional developments.

**HIST 371 History of Women in Canadian Society**

★3 (fi 6) (either term, 3-0-0). The biological, social, economic, and political forces shaping women's lives from the colonization of New France to the present.

**HIST 372 History of Criminal Justice in Canada**

★3 (fi 6) (either term, 3-0-0). The evolution of the major institutions of the

criminal justice system: criminal law; the courts; police and prisons. Note: This course is intended primarily for students in the BA (Special) in Criminology program but is open to other interested students.

**O HIST 374 French Canada to Confederation**

★3 (fi 6) (either term, 3-0-0). The emergence of a distinctive Canadian society under the French Crown and its subsequent development within British North America.

**O HIST 375 French Canada Since Confederation**

★3 (fi 6) (either term, 3-0-0). The survival of the French Community in Canada within the context of Quebec nationalism, ethnic conflict, and constitutional reform.

**O HIST 376 Canada 1900 to 1945**

★3 (fi 6) (either term, 3-0-0). Booms and depressions, world wars, social strife, and political experiments mark one of the most turbulent and critical eras in the nation's history.

**O HIST 377 Canada Since 1945**

★3 (fi 6) (either term, 3-0-0). Economic, political, social and cultural developments in the postwar era.

**O HIST 379 History of Canadian Cities**

★3 (fi 6) (either term, 3-0-0). Perspectives on urban growth and city life in three distinct eras from colonial times to the present.

**O HIST 381 The Land of the Rising Sun: Japan to 1868**

★3 (fi 6) (either term, 3-0-0).

**O HIST 382 Search for a Destiny: Japan's Modern Era, 1868-Present**

★3 (fi 6) (either term, 3-0-0). Social, political, economic and technological development; motivations, policies, obstacles and achievements are emphasized.

**O HIST 383 The Civilization and Culture of Early China**

★3 (fi 6) (either term, 3-0-0). This course focuses on the formative periods of Chinese civilization from prehistory to circa 600.

**O HIST 384 History of Chinese Philosophy**

★3 (fi 6) (either term, 3-0-0). Historical development of the major philosophical traditions in pre-modern China.

**O HIST 385 Modern China**

★3 (fi 6) (either term, 3-0-0). The history of China from the Opium Wars to the present.

**O HIST 386 History of Science and Technology in China**

★3 (fi 6) (either term, 3-0-0). The development of science and technology in China from earliest times to the present.

**O HIST 387 Canada's Relations with East Asia**

★3 (fi 6) (either term, 3-0-0). A survey of Canada's contacts with China, Japan, Korea, and Vietnam from the mid-19th century to the present.

**O HIST 390 Imperial China from circa 600 to 1911**

★3 (fi 6) (either term, 3-0-0). The institutional and social history of imperial China from the Tang to the Manchu Ch'ing dynasties.

**O HIST 391 History of Technology**

★3 (fi 6) (either term, 3-0-0). History of technology from the building of the pyramids to the International Space Station.

**O HIST 394 History of Astronomy and Cosmology from Stonehenge to the Space Age**

★3 (fi 6) (either term, 3-0-0). An examination of the major themes in the history of astronomy and cosmology from the ancient world to the present day.

**O HIST 396 History of Medicine I**

★3 (fi 6) (either term, 3-0-0). Introduction to European medicine from Hippocrates to William Harvey and his immediate successors.

**O HIST 397 History of Science I**

★3 (fi 6) (either term, 3-0-0). Introduction to the intellectual, institutional, and ideological development of science, from Aristotle to the 'Scientific Revolution'.

**O HIST 398 History of Science II**

★3 (fi 6) (either term, 3-0-0). Introduction to the intellectual, institutional, and ideological development of science, from Newtonianism to the present day.

**O HIST 399 History of Medicine II**

★3 (fi 6) (either term, 3-0-0). Introduction to the changing content, practice, and organization of European medicine since 1700.

**L HIST 402 Women in Modern European History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 403 Topics in Medieval European History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 404 Topics in the Renaissance and Reformation**

★6 (fi 12) (two term, 0-3s-0).

**L HIST 407 Topics in the Intellectual History of Europe Since 1800**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 408 Topics in the Intellectual History of Europe Since the Late 19th Century**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 410 The French Revolution**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 411 Topics in the History of Modern France**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 414 Topics in the History of Modern Germany**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 415 Topics in Ukrainian History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 416 Topics in Eastern European History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 418 Topics in Russian History from Kievan Times to the Present**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 419 Topics in Soviet History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 420 Topics in the History of Early Modern Europe**

★3 (fi 6) (either term, 0-3s-0). Thematic studies in European cultural, religious, and social history emphasizing popular culture and religion.

**L HIST 421 Topics in the History of Europe**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 423 Topics in The Habsburg Empire: The Pluralist Laboratory**

★3 (fi 6) (either term, 3-0-0). The history of central Europe, with special focus on the cultural and political problem of a multi-ethnic society under the Habsburg monarchy.

**L HIST 429 Topics in British History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 430 Topics in the History of Anglo-Saxon England**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 431 Topics in the History of England from the Conquest (1066) to 1500**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 432 Topics in 16th-Century British History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 433 Topics in 17th-Century British History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 437 Topics in British Social History Since 1714**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 439 Topics in the British Foreign Policy 1815-1956**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 441 Topics in Latin American History to 1850**

★3 (fi 6) (either term, 0-3s-0). Prerequisite: HIST 241/242 or consent of Department.

**L HIST 442 Topics in Latin American History Since 1850**

★3 (fi 6) (either term, 0-3s-0). Prerequisite: HIST 241/242 or consent of Department.

**L HIST 445 The Bible and Its Readers Through History**

★3 (fi 6) (either term, 3-0-0). A study of particular sections of the Old Testament/Hebrew Bible as they were understood by different communities of readers in the light of their historical circumstances.

**L HIST 446 Themes and Issues in African History**

★3 (fi 6) (either term, 0-3s-0). Prerequisite: Previous course in African Studies or consent of Department.

**L HIST 448 New Approaches in Africa**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 450 Topics in American History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 452 Topics in 19th-Century America**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 453 Topics in 20th-Century America**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 454 Topics in American Women's History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 459 Topics in American History Since 1945**

★3 (fi 6) (either term, 0-3s-0).

- HIST 460 Topics in Canadian History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 464 Topics in the History of the Canadian West**  
★6 (fi 12) (two term, 0-3s-0).
- HIST 467 Topics in Alberta History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 468 Topics in the History of Ethnic Settlement**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 469 Topics in the Political and Constitutional History of Canada**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 470 Topics in Canadian Social History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 471 Topics in Canadian Intellectual History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 474 Topics in the History of French Canada**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 477 Topics in the History of Canadian External Relations**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 478 Topics in the History of the Canadian North**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 479 Topics in Canadian Native History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 480 Topics in Japanese History**  
★3 (fi 6) (either term, 0-3s-0). Prerequisite: A course in Asian history or consent of Department.
- HIST 481 Topics in Chinese History**  
★3 (fi 6) (either term, 0-3s-0). Prerequisite: A course in Asian history or consent of Department.
- HIST 483 Topics in the History of Chinese Thought**  
★3 (fi 6) (either term, 0-3s-0). An examination of the major traditions and developments of Chinese thought. How Confucian, Taoist, Legalist and Buddhist concepts shaped the politics, history and culture of traditional China is of particular interest to the course. Prerequisite: A previous course in Asian history or consent of Department.
- HIST 484 Topics in South-East Asian History**  
★3 (fi 6) (either term, 0-3s-0). Prerequisite: A course in Asian history or consent of Department.
- HIST 490 Topics in British Empire and Commonwealth History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 492 Topics in History and Theory**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 493 War and Society in the Modern World**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 494 Topics in Comparative History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 496 Topics in the History of Science**  
★3 (fi 6) (either term, 0-3s-0). Prerequisite: At least one of HIST 294, 396, 397, 398 or 399 or consent of Department.
- HIST 498 Directed Study**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 499 Topics in World History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 500 Introduction to Historiography for Honors Students**  
★6 (fi 12) (two term, 0-3s-0).
- HIST 501 Special Subject, Fourth Year Honors History**  
★6 (fi 12) (two term, 0-3s-0). Preparation of the Honors essay, required in the fourth year of the Honors program.
- HIST 502 Directed Study**  
★6 (fi 12) (two term, 0-3s-0). Note: For students in the fourth year of the Honors program.

## Graduate Courses

Note: Previous study in the area is prerequisite for each course.

- HIST 550 Advanced Topics in Historical Study**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 601 Philosophy of History and Methodology**  
★3 (fi 6) (either term, 0-3s-0).

- HIST 602 Research Methods and Resources in History**  
★1 (fi 2) (either term, 0-1s-0).
- HIST 603 History of Historical Writing**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 604 The Application of the Social Sciences to History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 605 Topics in the Nature of Historical Controversy**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 609 Directed Study**  
★3 (fi 6) (either term, 0-3s-0). This is a credit/fail course. Not open to students in the non-thesis program.
- HIST 610 Interpretations of World History**  
★3 (fi 6) (either term, 0-3s-0). A critical study, with emphasis on current examples, of works attempting to present a synthesis of world history.
- HIST 611 Topics in Modern World History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 615 Topics in the History of Early Modern Germany**  
★3 (fi 6) (either term, 0-3s-0). Thematic studies in German history, emphasizing popular religion and culture.
- HIST 616 Power Politics in Germany and Its Neighbouring States**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 620 Modernization in Twentieth Century France**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 630 Problems in Imperial Russian History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 631 Problems in 20th-Century Russian History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 633 Problems in Modern East European History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 640 Rural Society in Medieval England**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 643 The Institutional and Legal History of Early-Modern England**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 644 Reformation to Revolution: Topics in Intellectual History in Early Modern England**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 645 Britain: The First Industrial Nation**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 646 The British Empire and Commonwealth**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 650 Topics in United States Women's History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 655 Slavery and Anti-Slavery in the United States**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 658 Topics in American History Since 1945**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 660 Topics in Canadian History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 663 Change and Continuity in the Pre-Settlement West**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 664 Topics in Western Canadian History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 666 Topics in the History of British North America**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 669 Topics in the History of Canadian Regionalism**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 671 Social Conditions and Social Welfare in Canada Since 1867**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 676 Topics in Canadian Social History**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 678 History of Crime in Selected Western Societies Since 1500**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 685 Tradition and Modernity in China**  
★3 (fi 6) (either term, 0-3s-0).
- HIST 686 Topics in Modern Chinese History**  
★3 (fi 6) (either term, 3-0-0).

**HIST 687 Topics in Japanese History**

★3 (fi 6) (either term, 0-3s-0).

**HIST 691 Topics in Latin American History to 1850**

★3 (fi 6) (either term, 0-3s-0).

**HIST 692 Topics in Latin American History Since 1850**

★3 (fi 6) (either term, 0-3s-0).

**HIST 694 Missions, Imperialism, and the Modern World**

★3 (fi 6) (either term, 0-3s-0). The role of Christian missionaries in Western imperialism and in the formation of the modern global order.

**HIST 695 Slavery in Africa**

★3 (fi 6) (either term, 0-3s-0).

**HIST 696 Topics in the History of the Sciences**

★3 (fi 6) (either term, 0-3s-0).

**HIST 699 Research Seminar**

★3 (fi 6) (either term, 0-3s-0).

**HIST 800 Conference Course**

★6 (fi 12) (two term, 0-3s-0). Not open to graduate students in the Department of History.

**HIST 850 Advanced Topics in Historical Study**

★3 (fi 6) (either term, 0-3s-0). Not open to graduate or honors students in the Department of History.

**HIST 900 Directed Research Project**

★3 (fi 6) (variable, unassigned).

## 201.111 Human Ecology, HECOL

Department of Human Ecology  
Faculty of Agriculture, Forestry, and Home Economics

### Undergraduate Courses

**HECOL 100 Principles and Problem Solving in Human Ecology**

★3 (fi 6) (either term, 3-0-0). An introductory course exploring the range of approaches to human ecology. Various problem-solving models are investigated. Introduction to professional issues including ethics. Field visits included. Credit will be granted for only one of HECOL 100 and 102.

**HECOL 150 Introduction to Design**

★3 (fi 6) (either term, 3-0-3). An introductory course focused on the historical, cultural, and ecological significance of design as it relates to human well-being. The development of visual literacy and creative thinking skills are emphasized and explored in both lecture and studio. Credit will be granted for only one of HECOL 150, TCC 150, HECOL 450, or TCC 450.

**HECOL 170 Clothing as Near Environment**

★3 (fi 6) (either term, 3-0-3). Clothing as environment; study of the structure and properties of textile materials in the context of functional apparel design processes focusing on user needs. Credit will be granted for only one of HECOL 170 and TCC 270.

**HECOL 200 Family and Community Diversity**

★3 (fi 6) (either term, 3-0-0). An introduction to diversity as it is expressed locally and globally in individuals, families, and communities within such dimensions as time, geography, and economic, demographic, political, cultural, ethnic, generational, and historical factors. Credit will be granted for only one of FAM 110 and HECOL 200.

**HECOL 201 Material Culture**

★3 (fi 6) (either term, 3-0-0). The study of objects in a range of environments: personal, familial, and community (cultural and global) from a human ecology perspective. The creative process is integral to this course in which students are encouraged to understand the connection between well-being and objects in their own material environment. Credit will be granted for only one of HECOL 201 and 238.

**HECOL 210 Intimate Relationships**

★3 (fi 6) (either term, 3-0-0). A consideration of the sociological, psychological, and personal factors affecting the development, maintenance, and dissolution of intimate relationships today. Credit will be granted for only one of FAM 215 and HECOL 210.

**HECOL 211 Human Sexuality**

★3 (fi 6) (either term, 3-0-0). An inquiry into the nature of sexual behavior, its personal and cultural sources, and the personal, familial, and societal implications. Prerequisite: HECOL 200. Credit will be granted for only one of FAM 222 and HECOL 211.

**HECOL 212 Later Life Families**

★3 (fi 6) (either term, 3-0-0). An exploration of the interpersonal, personal, and physical needs of the aging family throughout the later stages of the family life

cycle. Offered in alternate years. Credit will be granted for only one of FAM 410 and HECOL 212.

**HECOL 250 Computer-Assisted Designing**

★3 (fi 6) (either term, 2-0-4). Introducing computer programs used for designing. Student interests are used in problem solving. Prerequisite: HECOL 150, or TCC 150 or equivalent. Credit will be granted for only one of HECOL 250 and TCC 350.

**HECOL 268 Survey of Historic Dress**

★3 (fi 6) (either term, 3-0-0). Introduction to the historical development of dress with contemporary applications in design, merchandising, arts performance, education, and museums. Resources include the Clothing and Textiles Collection. Credit will be granted for only one of HECOL 268 and TCC 268.

**HECOL 300 Human Ecological Perspectives on Policy Development and Evaluation**

★3 (fi 6) (either term, 3-0-0). Processes of policy development, implementation and analysis; Canadian policy environments, institutional frameworks and instruments; application of professional practice and to current social and economic issues. Credit will be granted for only one of CONS 430, FAM 411, HECOL 300, or TCC 467.

**HECOL 301 Program Planning and Evaluation**

★3 (fi 6) (either term, 3-0-1.5). Theories and processes of program planning, implementation, evaluation, and group dynamics from a human ecological perspective. Laboratory classes focus on practising skills and processes appropriate to professional practice and the student's career interests. Prerequisite: one of AGFOR 204; AFHE 304; and either HECOL 100 or 102; or consent of Instructor. Credit will be granted for only one of HECOL 301 and 380.

**HECOL 310 Parent-Child Relationships**

★3 (fi 6) (either term, 3-0-0). An exploration of parent-child relationships during childhood and adolescence. A variety of educational, preventive, and treatment approaches to working with these families will be discussed. Prerequisite: One of PSYCO 223 or EDPY 200. Credit will be granted for only one of FAM 323 and HECOL 310.

**HECOL 312 Family Challenges**

★3 (fi 6) (either term, 3-0-0). An examination of family dynamics related to positive family functioning. Specific prevention and intervention techniques such as motivational interviewing, family structure, and strategic intervention are discussed with reference to family challenges such as addictions, suicide, sexual abuse, eating disorders, and youth risk. Prerequisite: HECOL 200. Credit will not be granted for HECOL 312 if credit has been given for FAM 312 or FAM 412.

**HECOL 320 Fundamentals of Consumer Behavior**

★3 (fi 6) (either term, 3-0-0). An introduction to the factors affecting the consumer decision process, analysis of consumer behavior models and their application to consumer policy, consumer education, and marketing. Prerequisite: ECON 101 or completion of an approved economics module available from the Department of Human Ecology. Credit will be granted for only one of CONS 220, HECOL 320, MARK 320, or MARK 422.

**HECOL 321 Introduction to Family Finance**

★3 (fi 6) (either term, 3-0-0). An introduction to the principles of money management applied to family income and expenditure. Students learn the basic skills and tools required to identify financial goals, assess current resources, develop and implement a financial plan, and evaluate financial progress. Laboratories that include computer-aided instruction provide opportunities for applied learning. Prerequisites: ECON 101 and 102, or completion of an approved economics module available from the Department. Credit will be granted for only one of HECOL 321 and CONS 330.

**HECOL 322 Family Economic Issues**

★3 (fi 6) (either term, 3-0-0). An examination of current issues affecting the economic well-being of Canadian families and of government programs and policies which address those issues. Issues explored include poverty, work and family, the economics of aging, children and money, and intrafamily allocation of resources. Prerequisites: HECOL 200 or FAM 110, and either ECON 101 and ECON 102, or completion of an approved economics module available from the Department of Human Ecology. Credit will be granted for only one of HECOL 322 and CONS 340.

**HECOL 353 Textile Design**

★3 (fi 6) (either term, 2-0-4). An introductory studio course in various methods of printing and dyeing textiles. Prerequisites: One of ART H 102, 209, HECOL 150, TCC 150, or consent of Instructor. Credit will be granted for only one of HECOL 353 and TCC 252.

**HECOL 354 Apparel Design and Product Development I**

★3 (fi 6) (either term, 3-0-3). Principles of design and merchandising applied to apparel design and portfolio development. A creative problem-solving approach to the production of a line of clothing. Prerequisite: CTS Fashion Studies modules at the intermediate level or equivalent; HECOL 150; or consent of Instructor. Credit will be granted for only one of HECOL 354, TCC 254, HECOL 451, or TCC 457.

**HECOL 360 Dress and Culture**

★3 (fi 6) (either term, 3-0-0). The complex phenomenon of bodily adornment from a cross-cultural and global perspective with special attention to the tools and techniques of the construction of gender and identity. Students develop analytical skills to read clothing messages in film, on the street, and in their own lives. Prerequisite: HECOL 201 or TCC 238. Credit will be granted for only one of HECOL 360 and TCC 260.

**HECOL 370 Quality Assurance for Textiles and Apparel**

★3 (fi 6) (either term, 3-0-3). Exploration of quality assurance of textiles and apparel through materials testing. Performance of textiles relative to product standards and specifications. Prerequisite: HECOL 170 or TCC 270. Credit will be granted for only one of HECOL 370 and TCC 371. Offered in alternate years.

**HECOL 408 Issues in Professional Practice**

★3 (fi 6) (first term, 3-0-1.5). Professional development issues and alternative modes of practice are explored within the context of being a human ecology professional. Application of administrative and interpersonal skills for the workplace. Open to Human Ecology students who have completed ★84. Normally taken in the term preceding HECOL 409. Prerequisite: HECOL 301. Apply to Human Ecology office. Credit will be granted for only one of HECOL 408 and 480.

**HECOL 409 Practicum in Human Ecology**

★6 (fi 12) (second term, 0-1.5s-16). Supervised field experience. Students are placed in professional settings appropriate to their career goals. Attendance at a weekly integrative seminar is required. Open to Human Ecology students who have completed ★90. Prerequisite: HECOL 408. Apply to Human Ecology office. Credit will be granted for only one of HECOL 409, 481, or 482.

**HECOL 413 Working With Families**

★3 (fi 6) (either term, 3-0-0). Individual and group interventions and strategies for counseling. Overview of current research issues provides for discussion of methods, evaluation and outcome measures. Prerequisites: HECOL 200 or SOC 271 or consent of Instructor.

**HECOL 414 Seniors and Their Environments**

★3 (fi 6) (either term, 3-0-0). An introduction to the environments in which older people live. The course uses an ecological framework to study the symbolic, physical, interpersonal, community, and political environments of Canadian seniors. Prerequisite: HECOL 100 or consent of Instructor. Offered in alternate years. Credit will be granted for only one of FAM 420 and HECOL 414.

**HECOL 420 Advanced Topics in Consumer Behavior**

★3 (fi 6) (either term, 3-0-0). Advanced study of consumer behavior theories and their application to consumer research that informs marketing, consumer policy and consumer education. Prerequisite: CONS 220, HECOL 320, MARK 320 or MARK 422. Credit will be granted for only one of CONS 420, HECOL 420, MARK 420, or MARK 423. Offered in alternate years.

**HECOL 421 Advanced Topics in Family Finance**

★3 (fi 6) (either term, 3-0-3). Students develop skills required to pursue careers in financial planning, debt counseling, and retirement preparation. Basic financial management skills will be enhanced through case studies that examine in-depth key financial challenges faced by families including management of credit and debt, risk management, taxation, saving and investing, retirement and estate planning. Prerequisite: HECOL 321. Offered in alternate years.

**HECOL 440 Family and Consumer Policy Issues**

★3 (fi 6) (either term, 3-0-0). Analysis of current policy issues faced by Canadian families and consumers and the examination of policies and programs affecting family relationships and consumers in the marketplace. Prerequisite: HECOL 300. Credit will be granted for only one of CONS 430, FAM 411 or HECOL 440.

**HECOL 441 Textiles and Apparel in the Global Economy**

★3 (fi 6) (either term, 3-0-0). Production and distribution of textiles and apparel in a global context; issues and policy related to international trade agreements; impact of national and international consumer, labor, and environmental standards. Prerequisite: HECOL 300. Credit will be granted for only one of HECOL 441 and TCC 467.

**HECOL 442 Consumer Law**

★3 (fi 6) (either term, 3-0-0). An examination and evaluation of the laws affecting consumers in the marketplace with an emphasis on contract law and federal and provincial legislation as it applies to consumer transactions. Both domestic and international laws will be examined. Prerequisite: HECOL 440.

**HECOL 443 Family Law**

★3 (fi 6) (either term, 3-0-0). Family law regulates intimate and domestic relationships. This course examines from a user's perspective, how statutory and common law affects family relationship issues such as marriage and divorce, child custody and child welfare, adoption, and new reproductive technologies. Prerequisite: HECOL 440.

**HECOL 453 Textile Design II**

★3 (fi 6) (either term, 2-0-4). An advanced studio course in various methods of printing and dyeing textiles with a major component of independent study. Textiles from various cultures will be studied from a Human Ecology perspective.

Prerequisites: HECOL 353 or consent of Instructor. Credit will be granted for only one of TCC 352 or HECOL 453. To be offered in alternate years.

**HECOL 454 Apparel Design and Product Development II**

★3 (fi 6) (either term, 3-0-3). Advanced problems in apparel design and product development. Application of the functional design process to product development through research into consumer needs and material properties. Prerequisite: HECOL 354, or TCC 254. Credit will be granted for only one of HECOL 454 and TCC 454. Offered in alternate years.

**HECOL 460 Nineteenth and Twentieth Century Dress**

★3 (fi 6) (either term, 3-0-3). The class uses primary sources in museums, historic sites, art galleries, archives, and especially the University Clothing and Textiles Collection, to investigate dress within a material culture context. Prerequisite: HECOL 268 or TCC 268 or consent of Instructor. Credit will be granted for only one of HECOL 460 and TCC 468. Offered in alternate years.

**HECOL 461 Culture, Environment and Economy: Human Ecological Perspectives**

★3 (fi 6) (either term, 3-0-0). Research-oriented course exploring strategies for global equity and sustainability. This course focuses on initiatives for and by economically marginalized populations to achieve well-being. Includes field visits to local projects. Credit will be granted for only one of HECOL 461, 466 or TCC 466. Offered in alternate years.

**HECOL 462 Domestic Material Culture**

★3 (fi 6) (either term, 3-0-3). Investigation of the material culture of domestic environments including objects, homes, and communities. Research using departmental collections, museums, archives, historic sites, housing developments, and narratives of individuals, and members of families and communities. Prerequisite: HECOL 201, 238, or consent of Instructor. Offered in alternate years. Credit will be granted for only one of HECOL 462 and TCC 438.

**HECOL 472 Textile Fibres and Finishes**

★3 (fi 6) (either term, 3-0-3). Study of major classes of fibres: production, structure, properties; aesthetic and functional finishes. Prerequisites: CHEM 161 and 163, and one of HECOL 170, or TCC 270, or consent of Instructor. Credit will be granted for only one of HECOL 472 and TCC 472. Offered in alternate years.

**HECOL 490 Independent Investigation in Human Ecology**

★3 (fi 6) (either term, 3-0-3). Independent project or study of a topic in human ecology planned by the student with an instructor. Prerequisite: ★75 of University coursework and consent of Instructor.

**HECOL 492 Selected Topics in Family and Consumer Studies**

★3 (fi 6) (Spring/Summer, variable). Normally offered in Spring or Summer.

**HECOL 493 Selected Topics in Textiles and Clothing**

★3 (fi 6) (Spring/Summer, variable). Normally offered in Spring or Summer.

**HECOL 494 Selected Topics in Community Development**

★3 (fi 6) (Spring/Summer, variable). Normally offered in Spring or Summer.

**HECOL 495 Selected Topics in Housing**

★3 (fi 6) (Spring/Summer, variable). Normally offered in Spring or Summer.

## Graduate Courses

**HECOL 500 Perspectives in Human Ecology**

★3 (fi 6) (either term, 3-0-0). Historical and philosophical perspectives about the nature and purpose of human ecology as it has evolved from home economics; exploration of professional issues and alternative modes of professional practice. Restricted to graduate students.

**HECOL 501 Independent Project in Human Ecology**

★3 (fi 6) (either term, 0-0-6). Independent study of a topic in human ecology planned by the student in consultation with the Instructor. Independent studies may be taken more than once for credit.

**HECOL 532 Family Health and Wellness; Theoretical and Measurement Issues for Research and Practice**

★3 (fi 6) (either term, 0-3s-0). Models of family health and research related to these models. Examination of the health of families and the family's influence on health. Discussion of measurement and assessment issues. Applications to nursing, family studies and other health-related disciplines. (Course is cross-listed as NURS 532). Credit will only be granted for one of FAM 532, HECOL 532, or NURS 532.

**HECOL 550 Selected Topics in Human Ecology**

★3 (fi 6) (either term, variable). Topics of current interest. May be taken for credit more than once. Prerequisite: consent of Instructor.

**HECOL 552 Principles of Design**

★3 (fi 6) (either term, 3-0-3). Historical, cultural, and ecological significance of design as it relates to human well-being. The development of visual literacy and creative thinking skills are emphasized and explored in both lecture and studio. Prerequisite: consent of Instructor. Credit will be granted for only one of TCC 450 or HECOL 552.

**HECOL 554 Apparel Design and Product Development**

★3 (*fi 6*) (either term, 3-0-3). Principles of design and merchandising applied to apparel design and portfolio development. A creative problem-solving approach to the production of a line of clothing. Prerequisite: consent of Instructor. Credit will be granted for only one of TCC 457 or HECOL 554.

**HECOL 571 Textile Dyes and Color Science**

★3 (*fi 6*) (either term, 3-0-3). Study of major classes of dyes; color science and evaluation of color change; analysis of fibres by polarized light microscopy. Prerequisites: TCC 472, HECOL 472, or consent of Instructor. Credit will be granted for only one of HECOL 571 and TCC 571. Offered in alternate years.

**HECOL 577 Preventive Conservation of Museum Artifacts**

★3 (*fi 6*) (either term or Spring/Summer, 3-0-3). Examination, documentation, and preventive care of museum artifacts with a focus on textiles. Handling, storage, and display including agents of deterioration and risks to collections. Field trips augment the course. Prerequisites: One of ANTHR 206, HECOL 170, HECOL 268, or consent of Instructor. Offered in alternate years or Summer Institutes.

**HECOL 578 Textile Conservation Theory and Practice**

★3 (*fi 6*) (either term or Spring/Summer, 3-0-3). Theory and practice related to conservation of textiles and costumes. Ethics in conservation; deterioration; preservation including cleaning techniques and stabilization. Prerequisites: HECOL 472 and 577, or consent of Instructor. Offered in alternate years or Summer Institutes.

**HECOL 598 Historic Resources Internship I**

★3 (*fi 6*) (either term, 0-1s-8). Internship with an institution involved in historic resources conservation or curatorship. Normally offered in Spring/Summer by special arrangement. Prerequisite: consent of Department.

**HECOL 599 Historic Resources Internship II**

★3 (*fi 6*) (either term, 0-1s-8). Continuation of HECOL 598 (formerly TCC 598). Normally offered in Spring/Summer by special arrangement. Prerequisite: consent of Department.

**HECOL 600 Human Ecology Graduate Research Seminar**

★1 (*fi 2*) (first term, 0-1s-0). An exploration of selected elements of the research process, including proposal writing, funding, ethics, authorship and dissemination of research findings.

**HECOL 601 Ways of Knowing in Human Ecology**

★2 (*fi 4*) (first term, 0-2s-0). Enquiry into the nature, scope and object of human ecology knowledge; the distinct contributions of various modes of inquiry; and the relationship between ways of knowing and selected issues related to the acquisition of knowledge, such as ethics and research methods.

**HECOL 602 Research Methods In Human Ecology: Selected Topics**

★3 (*fi 6*) (either term, 0-3s-0). This course focuses on selected research methods as applied to Human Ecological research. Topics will vary from time to time as demand dictates and will be offered as resources permit. May be taken for credit more than once. Prerequisite: graduate standing and permission of Instructor.

**HECOL 603 Qualitative and Community-Based Approaches in Health Research**

★3 (*fi 6*) (either term, 0-3s-0). Theoretical understanding of qualitative and community-based research designs, including phenomenology, grounded theory, ethnography, biography and case study. Methods of data collection such as interviews, focus groups and participant observation. Strategies for data analysis and dissemination.

**HECOL 610 Review of Issues and Trends in Family Ecology and Practice**

★3 (*fi 6*) (either term, 0-3s-0). Content and philosophy of the study of the family from a human ecological perspective. Corequisite: HECOL 601 or consent of Instructor. Credit will only be granted for one of FAM 601 or HECOL 610.

**HECOL 611 Theory in Family Ecology**

★3 (*fi 6*) (either term, 0-3s-0). Consideration of family theory as it relates to research and practice. Pre- or corequisite: HECOL 610, FAM 601, or consent of Instructor. Credit will only be granted for one of FAM 602 or HECOL 611.

**HECOL 613 Graduate Practicum in Family Studies**

★3 (*fi 6*) (either term, 0-0-6). Selected practicum placements to integrate theory and practice in a variety of family agencies. Prerequisites: consent of Supervisor and Department. Credit will only be granted for one of FAM 613 or HECOL 613.

**HECOL 614 Seminar in Family Crisis**

★3 (*fi 6*) (either term, 0-3s-0). An analysis of the processes involved in family crisis. Family disorganization, reorganization, and change associated with various crises are considered. Prerequisite: one of FAM 110, HECOL 200, SOC 271, or consent of Instructor. Credit will only be granted for one of FAM 614 or HECOL 614.

**HECOL 615 Families and Aging**

★3 (*fi 6*) (either term, 0-3s-0). Current issues in mid- and later-life families including relationships between aging parents and adult children, grandparent relationships, family caregiving. Credit will only be granted for one of FAM 615 or HECOL 615.

**HECOL 616 Families and Work**

★3 (*fi 6*) (either term, 0-3s-0). Analysis of current work and family issues and policies.

**HECOL 618 Diversity and Health in Families and Communities**

★3 (*fi 6*) (either term, 0-3s-0). Theoretical approaches and practical issues regarding the provision of health care in Canada with a focus on aboriginal, refugee and immigrant families. Human ecological models and ethical issues will be examined within a framework of cultural diversity.

**HECOL 620 Seminar in Human Sexuality**

★3 (*fi 6*) (either term, 0-3s-0). Analysis of sexuality issues framed in a biopsychological context. Prerequisite: HECOL 211, FAM 222, or equivalent. Credit will only be granted for one of FAM 620 or HECOL 620.

**HECOL 630 Seminar in Consumer Studies**

★3 (*fi 6*) (either term, 0-3s-0). Examination of the research and theory related to consumer behavior, the application of these to consumer problems, and the implications for consumer education. Prerequisite: one of CONS 220, HECOL 320, MARK 320, MARK 422, or consent of Instructor. Credit will only be granted for one of CONS 630 or HECOL 630.

**HECOL 650 Seminar in Human Ecology: Selected Topics**

★3 (*fi 6*) (either term, 0-3s-0). May be taken for credit more than once. Prerequisite: consent of Instructor.

**HECOL 651 Advanced Independent Inquiry in Human Ecology I**

★3 (*fi 6*) (either term, 0-0-6). Prerequisite: consent of Instructor.

**HECOL 652 Advanced Independent Inquiry in Human Ecology II**

★3 (*fi 6*) (either term, 0-0-6). Prerequisite: consent of Instructor

**HECOL 660 Research in Cross-Cultural Clothing and Textiles**

★3 (*fi 6*) (either term, 0-3s-0). Focus to be in-depth and specific; topics selected will depend on the needs and interests of course participants and may be oriented to primary data (archival or field) and/or secondary sources. Prerequisite: consent of Instructor. Credit will be granted for only one of TCC 660 or HECOL 660.

**HECOL 665 Consumer Research in Textiles and Clothing**

★3 (*fi 6*) (either term, 0-3s-0). A study of conceptual frameworks for consumer research. Familiarization with the consumer research literature in textiles and clothing, with emphasis on developments in theory. Prerequisite: one of CONS 220, MARK 422, or HECOL 320, or consent of Instructor. Credit will be granted for only one of TCC 665 or HECOL 665.

**HECOL 668 Curatorial Research in Clothing and Textiles**

★3 (*fi 6*) (either term, 0-3s-0). Investigation of past, current, and potential research of concern to museum curators. Prerequisites: HECOL 460, 601, and 680; or TCC 369, 468 and 601; or consent of Instructor. Credit will only be granted for only one of TCC 668 or HECOL 668.

**HECOL 670 Topics in Advanced Fibre Science**

★3 (*fi 6*) (either term, 0-3s-0). Selected fibre science topics. Prerequisite: consent of Instructor. Credit will be granted for only one of TCC 670 or HECOL 670.

**HECOL 671 Topics in Apparel Performance Evaluation**

★3 (*fi 6*) (either term, 0-3s-3). Selected topics in functional performance and comfort evaluation of clothing. Prerequisite: consent of Instructor. Credit will be granted for only one of TCC 671 or HECOL 671.

**HECOL 680 Review of Issues and Trends in Textiles and Clothing**

★3 (*fi 6*) (either term, 0-3s-0). Content and philosophy of the study of textiles and clothing from a human ecological perspective. Corequisite: HECOL 601 or consent of Department. Credit will only be granted for one of TCC 601 or HECOL 680.

**HECOL 681 Theory in Textiles and Clothing**

★3 (*fi 6*) (either term, 0-3s-0). Consideration of textiles and clothing theory as it relates to research and practice. Pre-/corequisite: HECOL 680, TCC 601, or consent of Instructor. Credit will be granted for only one of TCC 602 or HECOL 681.

**HECOL 682 Fields of Practice, Applications and Evaluation**

★3 (*fi 6*) (either term, 0-3s-0). Study of the development of specific fields of practice from a human ecological perspective: examination of application, development, implementation, and evaluation issues. Credit will be granted for one of FAM 682 or HECOL 682.

**HECOL 690 Advanced Seminar in Research Issues in Human Ecology**

★1 (*fi 2*) (either term, 0-1s-0). An in-depth exploration of student and faculty research and the issues which comprise such research. Theoretical, methodological, and intervention issues from a variety of research paradigms are explored. May be taken more than once for credit.

**HECOL 900 Directed Research Project**

★6 (*fi 12*) (either term, 0-0-6). Comprises the capping exercise for the course-based Masters programs. Requirements include conducting an applied research project, and both a written project report and an oral presentation to the Department, and where appropriate, to relevant practising professionals.

## 201.112 Human Resource Management, HRM

Department of Strategic Management and Organization  
Faculty of Business

**Note:** Enrolment in all HRM courses is restricted to students registered in the Faculty of Business, or to students registered in specified programs that require Business courses to meet degree requirements and who have obtained prior approval of their Faculty.

Students who have completed IND R courses are not allowed to register in a HRM course with the same number.

### Graduate Courses

#### HRM 703 Seminar in Human Resource Management Foundations

★3 (fi 6) (either term, 3-0-0). A readings seminar that covers related core theories, research and best-practices applications. Topics cover the primary content areas of planning, job design/redesign, recruitment and selection, training and development, performance management, compensation, and various contemporary topics (e.g., international issues).

## 201.113 Humanités, HUME

Faculté Saint-Jean

### Cours de 1er cycle

#### HUME 420 Les grands écrits

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude interdisciplinaire et approfondie de textes importants relatifs à la pensée humaniste et qui proviennent de plusieurs milieux à différents stades du développement de l'humanité, comme le Yi-king-Le Livre des mutations, Bhagavad-Gîtâ, la Bible, l'Odyssée (Homère), La République (Platon), Géorgiques (Virgile), La Divine Comédie (Dante), Micromégas (Voltaire), The Wealth of Nations (Smith), The Origin of Species (Darwin), L'Homme et ses symboles (Jung).

## 201.114 Humanities Computing, HUCO

Department of Modern Languages and Cultural Studies:  
Germanic, Romance, Slavic  
Faculty of Arts

### Graduate Courses

#### HUCO 500 Survey of Humanities Computing

★3 (fi 6) (either term, 0-3s-0).

#### HUCO 510 Theoretical Issues in Humanities Computing

★3 (fi 6) (either term, 0-3s-0). Relationship of computing methods to humanities research from several theoretical perspectives.

#### HUCO 520 Technical Concepts and Approaches in Humanities Computing

★3 (fi 6) (either term, 0-3s-0).

#### HUCO 530 Project Design and Management in Humanities Computing

★3 (fi 6) (either term, 0-3s-0). Design, implementation, management and maintenance of Humanities Computing research projects.

#### HUCO 611 Computers and Culture

★3 (fi 6) (either term, 0-3s-0). Cultural implications of telecommunications and computing technology. Note: Not open to students with credit in ANTHR 531.

#### HUCO 612 Electronic Texts

★3 (fi 6) (either term, 0-3s-0). Creation, encoding, analysis and management of electronic texts.

#### HUCO 613 Cyberspace and Networked Culture

★3 (fi 6) (either term, 0-3s-0).

#### HUCO 614 Knowledge Management and Analysis in the Humanities

★3 (fi 6) (either term, 0-3s-0). Databases, textbases, graphical and statistical analysis.

#### HUCO 615 Computer Tools for Humanities Teaching and Learning

★3 (fi 6) (either term, 0-3s-0). Theory and practice of computer pedagogy in the Humanities.

#### HUCO 616 Multimedia for the Humanities

★3 (fi 6) (either term, 0-3s-0). Exploration of the nature and cultural significance of multimedia.

#### HUCO 617 Topics in Humanities Computing

★3 (fi 6) (either term, 0-3s-0).

#### HUCO 618 Directed Reading in Humanities Computing

★3 (fi 6) (either term, 0-3s-0).

## 201.115 Industrial Relations, IND R

Department of Strategic Management and Organization  
Faculty of Business

### Undergraduate Courses

**Note:** Refer to Organizational Analysis (ORG A) listings.

### Graduate Courses



#### 701 Seminar in Industrial Relations Foundations

★6 (fi 6) (either term, 3-0-0). Readings topics will include industrial relations systems theory, historical development and theories of the labor movement, comparative industrial relations systems, labor market theory (including neoclassical theory and recent challenges to neoclassical theory), and collective bargaining theory.

#### IND R 702 Seminar in Contemporary HRM/IR Issues

★3 (fi 6) (two term, 3-0-0). An examination of issues and research trends in the field of industrial relations and/or human resources management. Participants will present their own research and actively engage in the analysis and discussion of the work of others. This is a single term course taught over two terms.

#### IND R 704 Individual Research

★3 (fi 6) (either term, 3-0-0).

## 201.116 Informatique, INFOR

Faculté Saint-Jean

### Cours de 1er cycle

#### INFOR 100 Programmation pour ingénieurs

★3 (fi 6) (deuxième semestre, 3-0-3/2). Programmation informatique pour la solution de problèmes de génie. Langage Pascal. Librairies de sous-routines. Utilisation d'une station de travail avec un système d'opération UNIX.

## 201.117 Interdisciplinary Undergraduate and Graduate Courses, INT D

### Undergraduate Courses

#### 201.117.1 Faculty of Agriculture, Forestry, and Home Economics Courses

#### INT D 208 Introduction to Applied Biotechnology

★3 (fi 6) (first term, 3-0-0). A lecture course highlighting the improvements made in crops, livestock and forest trees through the application of biotechnology. Topics include ethics, and regulation of biotechnology, gene mapping, plant and animal tissue culture, recombinant DNA technologies and molecular farming. Prerequisite: BIOL 107 or consent of Instructor. [Agricultural Food and Nutritional Science]

#### INT D 303 Economics of World Agriculture

★3 (fi 6) (either term, 3-0-0). Economic issues in international agriculture including world food security, farming systems, agricultural trade and aid. The role of agriculture in development and means of improving the performance of agriculture worldwide. Foreign domestic agricultural policies and international trade protection measures, and potential reforms in relation to Canadian agricultural interests. Prerequisite: ECON 101/102. (Offered jointly by the Departments of Economics and Rural Economy). [Rural Economy]

#### INT D 365 Natural Resource Economics

★3 (fi 6) (either term, 3-0-0). Economics of natural resources with emphasis on renewable resources; resource scarcity, conservation, sustainability, water resource issues, fisheries, forestry, agriculture, recycling, property and tenure institutions, and public resource policy. Prerequisite: ECON 101; ECON 102 recommended. (Offered jointly by the Departments of Rural Economy and Renewable Resources). [Rural Economy]