

**DRAMA 609 Contemporary Approaches to Dramatic and Theatrical Critical Theories**

★3 (*fi 6*) (either term, 0-3s-0). An in-depth analysis of selected contemporary theories of aesthetics, drama and theatre, from Structuralism to the present.

**DRAMA 617 Dramaturgy II**

★3 (*fi 6*) (variable, 0-9L-0). Practical studies in dramaturgy. Prerequisites: DRAMA 607 and/or consent of Department.

**DRAMA 621 Research Seminar I**

★3 (*fi 6*) (either term, 0-3s-0). Selected topics in Theory and Criticism.

**DRAMA 622 Research Seminar II**

★3 (*fi 6*) (either term, 0-3s-0). Selected topics in Theory and Criticism.

**DRAMA 623 Research Seminar III**

★3 (*fi 6*) (either term, 0-3s-0). Selected topics in Theatre History and Theatrical Theory.

**DRAMA 624 Research Seminar IV**

★3 (*fi 6*) (either term, 0-3s-0). Selected topics in Theatre History and Theatrical Theory.

**DRAMA 625 Research in Canadian Drama I**

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

**DRAMA 626 Research in Canadian Drama II**

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

**DRAMA 640 Voice Pedagogy I**

★3 (*fi 6*) (two term, 0-2s/2-6). Study of theory and pedagogical approaches to teaching voice, speech and text for the theatre.

**DRAMA 641 Voice Pedagogy II**

★3 (*fi 6*) (two term, 0-2s/2-6). Advanced study of theory and pedagogical approaches to teaching and coaching voice, speech and text for the theatre, and for presentation skills. Prerequisite: DRAMA 640.

**DRAMA 642 Vocal Coaching for the Theatre I**

★3 (*fi 6*) (either term, 0-12L-0). Observation and analysis of approaches to coaching voice, speech and text for the theatre.

**DRAMA 643 Vocal Coaching for the Theatre II**

★3 (*fi 6*) (either term, 0-12L-0). Advanced observation, analysis and supervised teaching and coaching of voice, speech and text for the theatre and for presentation skills. Prerequisite: DRAMA 642.

**DRAMA 644 Vocal Coaching for the Theatre III**

★3 (*fi 6*) (either term, 0-12L-0). Supervised and independent teaching and coaching of voice, speech and text for the theatre and for presentation skills. Prerequisite: DRAMA 643.

**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 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.

## 221.94 Earth and Atmospheric Sciences, EAS

Department of Earth and Atmospheric Sciences  
Faculty of Science

### Undergraduate Courses

#### 221.94.1 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.

**0 EAS 192 Cultures, Landscapes and Geographic Space**

★3 (*fi 6*) (either term, 3-0-0). Introduction to geographical techniques and the

spatial organization of human landscapes and significance of the distribution of human activity. Not open to students with credit in EAS 190 or 191. [Faculty of Arts]

**0 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, 192 or one social science core course in the Faculty of Arts. [Faculty of Arts]

**0 EAS 294 Natural Resources and the Environment**

★3 (*fi 6*) (either term, 3-0-0). Geographic concepts and perspectives on renewable and non-renewable natural resources. Prerequisite: One of EAS 100, 101, 102, 190, 191, 192, 201 or 210. Not to be taken by students with credit in EAS 290 or 291. [Faculty of Arts]

**0 EAS 295 Human Dimensions of Environmental Hazards**

★3 (*fi 6*) (either term, 2-1s-0). Interactions between environmental hazards, individuals and communities; risk reduction strategies by members of the public and management agencies. Prerequisite: One of EAS 100, 101, 102, 190, 192, 201 or 210. [Faculty of Arts]

**0 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. [Faculty of Arts]

**0 EAS 392 Research Methods in Human Geography**

★3 (*fi 6*) (either term, 3-0-0). 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, SOC 210 or STAT 141. [Faculty of Arts]

**0 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. [Faculty of Arts]

**0 EAS 395 Health, Space and Place**

★3 (*fi 6*) (either term, 2-1s-0). Geographic research on health and disease, including environmental, social, individual and institutional factors. Prerequisites: Any 100-level human geography (19X) course plus any one 200-level (29X) human geography course. [Faculty of Arts]

**0 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. [Faculty of Arts]

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

★3 (*fi 6*) (either term, 2-0-1). 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. [Faculty of Arts]

**0 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. [Faculty of Arts]

**0 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. [Faculty of Arts]

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

★3-6 (*variable*) (variable, 3-0-0). Prerequisite: Any EAS 39X course. [Faculty of Arts]

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

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: EAS 497. [Faculty of Arts]

#### 221.94.2 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.

**0 EAS 100 Planet Earth**

★3 (fi 6) (either term, 3-0-3). Introduction to the origin and evolution of the Earth and the solar system. Introduction to plate tectonics and the rock cycle. Simple energy balances and interactions between radiation and the atmosphere, land, oceans, ice masses, and the global hydrological cycle. Evolution of life, biogeography, and global climate in the context of geologic time. The carbon cycle. Human interaction with the Earth. Mineral and energy resources. Not available to students with credit in EAS 101 or 102. [Faculty of Science]

**0 EAS 105 The Dynamic Earth Through Time**

★3 (fi 6) (either term, 3-0-3). The plate tectonic framework of a dynamic Earth as it relates to the origin of major groups of minerals and rocks. Earthquakes, structural geology, and the origin of mountain belts. Surface processes and their sedimentary products. History of life and extinctions. Not available to students with credit in EAS 101. Prerequisite: EAS 100 or 102. [Faculty of Science]

**EAS 110 Earth Science Field School**

★3 (fi 6) (second term, 7 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: One of EAS 100, 101, 201 or 210. [Faculty of Science]

**0 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 100 for prerequisite purposes. Not available to students with credit in EAS 100, 101 or EAS 210. Corequisite: EAS 201. [Faculty of Science]

**0 EAS 201 Earth Science I**

★3 (fi 6) (either term, 3-0-0). Origin of the earth and solar system, the atmosphere and ocean basins. Minerals, igneous, metamorphic and sedimentary rocks, geological time and the history of life. Plate tectonics and mountain building. Surface processes and landforms, groundwater, and mineral and energy resources. Prerequisite: Any 100-level Science course. Not available to students with credit in EAS 100, 101 or 102. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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 100, 101, 102, 201 or 210. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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 100, 101, 201 or 210. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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 100 or 102. [Faculty of Science]

**0 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 100, 101, 103, 201 or 210. [Faculty of Science]

**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, 105 or 201. Intended for students in Engineering programs. Restricted to students in Engineering programs. [Faculty of Science]

**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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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, 105 or 210. [Faculty of Science]

**0 EAS 224 Mineralogy I**

★3 (fi 6) (first term, 3-0-3). Principles of crystallography, physical and chemical properties of minerals, determinative mineralogy. Prerequisite: One of EAS 101, 105 or 210. [Faculty of Science]

**0 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 100, 101, 102, 201 or 210. [Faculty of Science]

**0 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 or 105. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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, 105, 201 or 210. [Faculty of Science]

**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. [Faculty of Science]

**0 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: One of EAS 101, 103, 105, or 210. [Faculty of Science]

**0 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: One of EAS 101, 103, 105, or 210. [Faculty of Science]

#### **0 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 100 or 102 or BIOL 108. [Faculty of Science]

#### **0 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 100 or 102. [Faculty of Science]

#### **0 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 aqueous systems. Introduction to organic geochemistry and global geochemical cycles. Prerequisite: CHEM 101 and either CHEM 102 or 161 and EAS 224. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **0 EAS 323 Introduction to Hydrogeology**

★3 (fi 6) (either 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 hydrochemistry and transport processes. Prerequisites: One of EAS 100, 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. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **0 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 100 or 102 and MATH 113. [Faculty of Science]

#### **0 EAS 330 Stratigraphy**

★3 (fi 6) (either term, 3-0-3). The science of rock strata, including their origin, age relationships, form, distribution, facies characteristics, and geologic history; types of stratigraphy; methods of stratigraphic analysis; sequence stratigraphic models. Prerequisite: EAS 222 or 235.

#### **0 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. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **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. [Faculty of Science]

#### **0 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 (GIS) to the environmental sciences. Examples from resource management and the earth and biological sciences are discussed. Labs impart technical experience with ARC/INFO. Prerequisites: EAS 221. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **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. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **0 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 hydrologic 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. [Faculty of Science]

#### **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: WKEXP 411 and 412. [Faculty of Science]

#### **0 EAS 420 Geochemistry II**

★3 (fi 6) (either term, 3-0-3). A broad overview of low-temperature geochemical processes associated with soil, sediment, and aqueous systems. Element mobility from the onset of weathering to chemical precipitation of minerals in the oceans, to diagenesis. Interactions between metals, minerals, and microbes. Prerequisite: EAS 320.

#### **0 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. [Faculty of Science]

#### **0 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. [Faculty of Science]

#### **0 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. [Faculty of Science]

**O 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. [Faculty of Science]

**EAS 426 Undergraduate Thesis**

★6 (fi 12) (variable, 3-0-0). Required for Honors students in their final year. Restricted to honors and specialization students in EAS. Prerequisite: Any 300-level EAS course. [Faculty of Science]

**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. [Faculty of Science]

**EAS 428 Directed Study II**

★3 (fi 6) (either term, 3-0-0). Prerequisite: EAS 427. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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 methods to exploration for ore deposits. Prerequisite: EAS 433. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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, 225 or 250. [Faculty of Science]

**O 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. [Faculty of Science]

**O 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. [Faculty of Science]

**O EAS 475 Physical Oceanography**

★3 (fi 6) (either term, 3-2s-0). Introduction to the oceans; basic equations; air-sea interface; barotropic circulation; baroclinic flows; thermohaline effects; gravity waves; global flow field; formation and transport of water masses; large-scale ocean transport. Prerequisite: MATH 214 (or MATH 217), MATH 215 (or MATH 317), PHYS 146 and a 300-level EAS course or consent of instructor. [Faculty of Science]

## Graduate Courses

### 221.94.3 Faculty of Arts Courses

**O 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. [Faculty of Arts]

**O EAS 591 Advanced 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. Research project. Classes concurrent with EAS 491. Not available to students with credit in EAS 491. [Faculty of Arts]

**O EAS 592 Advanced Geographical Information Systems for Social Science**

★3 (fi 6) (either term, 3-0-0). 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.

Research project. Classes concurrent with EAS 492. Not available to students with credit in EAS 492. [Faculty of Arts]

**0 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. [Faculty of Arts]

**0 EAS 594 Advanced 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. Research project. Classes concurrent with EAS 494. Not available to students with credit in EAS 494. [Faculty of Arts]

## 221.94.4 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). [Faculty of Science]

**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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 EAS 524 Paleocology 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 EAS 527 Geomicrobiology**

★3 (fi 6) (either term, 3-0-0). Processes in low temperature environments (less than 100 degrees C) where biological processes play a significant role in geochemical cycling. Microbial-metal-mineral interactions will be studied in terms of weathering and soil formation, clay formation; nutrient cycling, metal sorption, biomineralization, diagenetic reactions, life in extreme environments, as well as industrially-significant processes such as bioremediation of toxic metals/radionuclides, acid mine drainage, bioleaching and bio-oxidation of refractory ores. [Faculty of Science]

**0 EAS 530 Principles of Ichnology**

★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. [Faculty of Science]

**0 EAS 531 Advanced Clastic Sedimentology**

★3 (fi 6) (either term, 3-0-0). The principles of sequence stratigraphy are used to analyze depositional processes and stratal stacking patterns in marine to nonmarine clastic systems. The architecture and dynamics of depositional environments are studied in relation to the external controls on sedimentation. Applications are directed to a variety of depositional systems and tectonic settings. [Faculty of Science]

**0 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. [Faculty of Science]

**0 EAS 535 Selected Topics in Petrology**

★3 (fi 6) (either term, 0-3s-0). Offered on demand. [Faculty of Science]

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

★3 (fi 6) (either term, 0-3s-0). Topics in geochemistry, petrology and mineralogy. [Faculty of Science]

**0 EAS 537 Low Temperature Geochemistry**

★3 (fi 6) (either 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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 compressive 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. Offered in alternate years. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 EAS 582 Advanced Geochemistry of Ore Deposits**

★3 (fi 6) (either term, 3-0-0). 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 methods to exploration for ore deposits. Research project. Classes concurrent with EAS 434. Not available to students with credit in EAS 434. [Faculty of Science]

**0 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. [Faculty of Science]

**0 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. [Faculty of Science]

**0 EAS 585 Advanced Digital Remote Sensing**

★3 (fi 6) (either term, 3-0-3). 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. 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. Classes concurrent with EAS 451. Not available to students with credit in EAS 451. [Faculty of Science]

**0 EAS 586 Advanced 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. Classes concurrent with EAS 436. Not available to students with credit in EAS 436. [Faculty of Science]

**0 EAS 587 Advanced Physical Oceanography**

★3 (fi 6) (either term, 3-2s-0). Introduction to the oceans; basic equations; air-sea interface; barotropic circulation; baroclinic flows; thermohaline effects; gravity waves; global flow field; formation and transport of water masses; large-scale ocean transport. Research project. Prerequisite Consent of Instructor. Classes concurrent with EAS 475. Not available to students with credit in EAS 475. [Faculty of Science]

**221.95 East Asian Studies, EASIA**

Department of East Asian Studies  
Faculty of Arts

**Undergraduate Courses****0 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.

**0 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. Prerequisite: EASIA 101 or consent of Department.

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

★3 (fi 6) (either term, 3-0-0). Cultural texts and social changes in contemporary Japan. Prerequisite: EASIA 101 or consent of Department.

**0 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. Prerequisite: EASIA 101 or consent of Department.

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

★3 (fi 6) (either term, 3-0-0). Works from China, Japan and Korea. Readings and lectures in English. Note: This course will not fulfill the language other than English requirement of the BA. Prerequisite: EASIA 101 or consent of Department.

**EASIA 425 Topics in East/West Critical Theory**

★3 (fi 6) (either term, 3-0-0). Readings in English of East Asian and Euro-American philosophers and critics. Prerequisite: One 200-level literary theory course or 200-level PHIL course or consent of Department

**EASIA 426 Globalization and the Cultures of East Asia**

★3 (fi 6) (either term, 3-0-0). Cultural production from China and Japan and its role in historical and contemporary globalization. Prerequisite: EASIA 101.

**EASIA 480 Honors Seminar**

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

**EASIA 490 Honors Thesis**

★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.

**221.96 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****0 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.

**0 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.

**0 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.

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

★3 (fi 6) (either 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 and 102 or equivalent.

**0 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.

**O 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.

**O 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.

**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 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.

**L 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.

**L ECON 331 Labor Economics**

★3 (fi 6) (either 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.

**L 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.

**L 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.

**L 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.

**L 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.

**L 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.

**L 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.

**L 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.

**L 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 369 Economics of the Environment**

★3 (fi 6) (either term, 3-0-0). Economic growth and the deterioration of the environment; types and causes of environmental deterioration; theory, policy, and measurement relating to environmental deterioration; recreation economics; and current Canadian environmental topics. Prerequisite: ECON 101 or equivalent. (Offered jointly by the Departments of Economics and Rural Economy.)

**L 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 or 472. Prerequisite: ECON 281 or equivalent.

**L 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.

**L 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 and 282; MATH 113 and 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 and 282 and STAT 141 and ECON 299 or equivalent. Note: Not open to students with credit in AREC 313 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 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 and 386 and 387 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. Prerequisite or Corequisite: ECON 481 and 482 or consent of the Department.

**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) (either 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) (either 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) (either term, 3-0-0). Oligopoly theory, cartel formation, product differentiation and advertising, entry into markets and strategic entry deterrence, research and development. Prerequisites: ECON 384 and MATH 113 or consent of Department.

#### **ECON 472 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, 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). Analysis of the objectives, instruments and methods of macroeconomics policy using contemporary macroeconomics theory and examples from the policy experience of Canada and other nations. Prerequisites: MATH 113 and ECON 385 or consent of Department.

## Graduate Courses

#### **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 and 387, 481 and 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 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 521 International Economics I**

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

#### **ECON 522 International Economics II**

★3 (fi 6) (either term, 3-0-0).

#### **ECON 540 Monetary Economics I**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ECON 481 and 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 and 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 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 599 Applied Econometrics**

★3 (fi 6) (either term, 3-0-0). The role of economic theory in the process of specification and estimation of models. Interpretation and critical evaluation of applied work by means of selected topics in economics and econometrics. Prerequisite: ECON 598 or equivalent.

#### **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).

## 221.97 Economie, ECONE

Faculté Saint-Jean

### Cours de 1er cycle

#### **O 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.

#### **O 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(s): ECONE 101 ou l'approbation du Vice-doyen aux affaires académiques.

#### **O 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. Préalable(s): ECONE 101 ou l'approbation du Vice-doyen aux affaires académiques. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour ECON 383 ou MANEC 301.

#### **O 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. Préalable(s): ECONE 101 et 102 ou l'approbation du Vice-doyen aux affaires académiques. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour 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. Préalable(s): ECONE 101 et 102, STATQ 151 ou STAT 141 et MATHQ 113. Note: Ce cours doit être suivi avant ECONE 399.

#### **ECONE 323 Economie internationale**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Aperçu des principes de l'économie internationale. Application de ces principes à la politique économique. L'accent est mis sur des sujets comme le commerce international, l'investissement étranger et la balance des paiements. Prérequis: ECONE 101/102 ou l'accord du Doyen.

#### **O ECONE 369 Economie 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(s): ECONE 101 ou l'approbation du Vice-doyen aux affaires académiques.

#### **O 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). Préalable(s): ECONE 281 et 299 ou l'approbation du Vice-doyen aux affaires académiques.

#### **ECONE 399 Introduction à l'économétrie**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-1). Introduction aux méthodes statistiques utilisées dans l'analyse des problèmes économiques empiriques. Présentation et développement des principaux sujets de l'économétrie, avec un accent sur les techniques de régression linéaire. Préalables: ECONE 281, 282 et 299 ainsi que STATQ 151 ou l'équivalent.

## 221.98 Education, EDU

Faculty of Education

### Undergraduate Courses

#### **EDU 200 Introduction to Cognitive Strategies**

★3 (fi 6) (either term, 3-0-0). Provides students with a background in the concepts underlying basic cognitive (learning) and its application to life long learning and performance in post-secondary education. The curriculum is designed to help students gradually improve their learning strategies, skill, knowledge, attitudes, and motivation so that they can become more effective lifelong learners. Prerequisite: consent of Fresh Start Academic Advisor, see §§190.5 and 190.5.1.

#### **EDU 250 The Profession of Teaching**

★3 (fi 6) (either term, 3-0-0). Explores the complex roles of teachers as professionals in contemporary schools. Students will become familiar with the scope and expectations of the role of the teacher and the framework within which teachers work. Credit cannot be obtained if credit has already been obtained in EDFX 200 or EDFXP 151.

### Graduate Courses

#### **EDU 503 Foundations of Curriculum**

★3 (fi 6) (first term, 3-0-0). Explores curriculum in public education from a variety of perspectives. Studies theoretical models to identify issues, concerns, challenges, and controversies that arise in educational curriculum and pedagogy. Prerequisite: Registration in Master of Education in Educational Studies (Leadership and School Improvement). Sections may be offered in a Cost Recovery format at an increased rate of fee assessment. See section 22.2.5 of the Calendar.

**EDU 510 Fundamentals of Educational Research**

★3 (fi 6) (second term, 3-0-0). Explores the findings of educational research, and works to apply the results of research to educational problems. Focuses on conceptualizing methods of educational research to specific and individual educational sites and issues. Prerequisite: Registration in Master of Education in Educational Studies (Leadership and School Improvement). Sections may be offered in a Cost Recovery format at an increased rate of fee assessment see section 22.2.5 of the Calendar.

**EDU 511 Introduction to School Improvement**

★3 (fi 6) (Spring/Summer, 3-0-0). Introduces the current state of knowledge, research, and theory in the field of education. Focuses upon teaching and learning within schools and other educational organizations in ways that synthesize educational experience with professional research knowledge. Studies educational change in that improves organizations. Prerequisite: Registration in Master of Education in Educational Studies (Leadership and School Improvement). Sections may be offered in a Cost Recovery format at an increased rate of fee assessment see section 22.2.5 of the Calendar.

**EDU 512 Leadership in Educational Settings**

★3 (fi 6) (Spring/Summer, 3-0-0). Examines the historical context of current thinking about educational leadership. Explores how leadership literature informs practice, while critically examining that literature from both theoretical and practical perspectives. Analyzes values and ethical principles in school leadership; complex dilemmas of educational leadership; and, works to develop a personal philosophy of educational leadership. Prerequisite: Registration in Master of Education in Educational Studies (Leadership and School Improvement). Sections may be offered in a Cost Recovery format at an increased rate of fee assessment see section 22.2.5 of the Calendar.

**EDU 513 Leadership for Educational Change**

★3 (fi 6) (Spring/Summer, 3-0-0). Introduces the relationship of research to educational leadership. Focuses upon synthesizing extant research literature and the need to address a specific leadership need within a school site using appropriate research methods. Studies how educational research can play a leadership role in the improvement of schools. Sections may be offered in a Cost Recovery format at an increased rate of fee assessment ; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**EDU 514 Planning for Educational Change**

★3 (fi 6) (Spring/Summer, 3-0-0). Introduces how educational research can enhance educational change toward school improvement. Focuses on utilizing appropriate research methods to create a site-based research proposal for a specific school site. Focuses on planning educational research that improves schools. Sections may be offered in a Cost Recovery format at an increased rate of fee assessment; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**EDU 515 Conducting Educational Research**

★3 (fi 6) (either term, 3-0-0). Intended as a practical course to enable MES students to complete the research project proposed during the second summer residency for their Master's degree. Sections may be offered in a Cost Recovery format at an increased rate of fee assessment; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**EDU 593 Special Seminar in Educational Studies: Selected Topics**

★3 (fi 6) (either term, variable). Content varies from term to term. Topics announced prior to registration period. The student's transcript carries title descriptive of content. May be repeated. Pre-requisite: Registration in Master of Education in Educational Studies Program. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**EDU 597 Special Seminar in Educational Studies: Selected Topics**

★3 (fi 6) (either term, variable). Content varies from term to term. Topics announced prior to registration period. The student's transcript carries title descriptive of content. May be repeated. Pre-requisite: Registration in Master of Education in Educational Studies Program. Sections may be offered in a Cost Recovery format at an increased rate of fee assessment refer to the Fees; Payment Guide in the University Regulations and Information for Students section of the Calendar.

**EDU 900 Directed Research Project**

★3 (fi 6) (either term, 3-0-0). Intended as a practical course to enable MES students to complete the research project proposed during the second summer residency for their Master's degree. Sections may be offered in a Cost Recovery format at an increased rate of fee assessment ; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**221.99 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. Concomitant(s): EDUC 201. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour 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. Concomitant(s): 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.

**221.100 Education - Adult, EDAE**Department of Educational Policy Studies  
Faculty of Education**Undergraduate Courses****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 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; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**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; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**EDAE 475 Project in Adult & Postsecondary Education**

★3 (fi 6) (either term, 3-0-0). This is a project-based course undertaken in a postsecondary or community setting. Students may not receive credit for both EDFX 475 and EDAE 475. 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; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**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.

## 221.101 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 357 Teaching of Accounting in Automated Data Processing and Accounting

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

## 221.102 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 400 Conference Seminar

★1-12 (*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.

### 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.

## 221.103 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. Co-requisite: Courses in the Introductory Professional Term for the Elementary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 325.

#### 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. Corequisite: Courses in the

Introductory Professional Term for the Elementary Education Route (for sections of EDEL 321 offered in the IPT). Successful completion is required prior to being granted permission to continue into the second week of EDFX 325. Note: This course is offered in the Introductory Professional Term and in ED CORE II. Students in the Physical Education Minor should enroll in EDEL 321 during the IPT.

#### 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. Students may not receive credit for both EDEL 330 and EDEL 372. Corequisite: Courses in the Introductory Professional Term for the Elementary Education Route (for sections of EDEL 330 offered in the IPT). Successful completion is required prior to being granted permission to continue into the second week of EDFX 325. Note: This course is offered in the Introductory Professional Term and in ED CORE II. Students in the Math/Science Minor should enroll in EDEL 330 during the IPT.

#### 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 345 Introduction to Curriculum and Instruction in Elementary School Health Education

★3 (*fi 6*) (either term, 3-0-0). Designed to prepare students to teach Health Education effectively in the elementary school setting. The focus will be on curriculum, strategies, planning, and resources to meet student needs.

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

★3 (*fi 6*) (either term, 0-3L-0). 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 394 Selected Topics in Elementary Education I

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

#### 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 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 Issues in Elementary Mathematics Education**

★3 (*fi 6*) (either term, 3-0-0). Focus is on current issues in mathematics education related to teacher and student roles, mathematical tasks and tools, and the learning environment. 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). An introduction to theory and practice of teaching second languages in the elementary classroom. Focus is on curricular planning, teaching methods and techniques, materials and resources, and assessment. Will include a field placement in an off-campus second language, immersion, or bilingual classroom for one half day per week. 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.

#### **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 457 Theory and Practice in Early Childhood Education**

★3 (*fi 6*) (either term, 3-0-0). Gives students an in-depth understanding of some of the major contemporary theories and philosophies of Early Childhood Education. Examines how choice and self direction can enhance children's learning and thinking in the elementary school. Students will be involved in planning, and evaluating integrated curriculum projects in the elementary classroom. Prerequisite: EDEL 355 and Introductory Professional Term; or consent of Department. Students must be registered concurrently in EDEL 458. Students may not receive credit for both EDEL 457 and 456.

#### **EDEL 458 Practical Experience with Curriculum Models in Early Childhood Education**

★3 (*fi 6*) (either term, 0-0-3). This lab-based course will provide opportunities to gain practical experiences in a variety of early childhood education settings. These include observations, analysis and discussion in relation to the examination of contemporary Early Childhood Education theories in EDEL 457, as well as planning, implementing and evaluating a series of educational experiences related to a particular topic of investigation undertaken by the children at the University of Alberta's Child Study Centre. Prerequisites: EDEL 355 and Introductory Professional Term; or consent of Department. Students must be registered concurrently in EDEL 457. Students may not receive credit for both EDEL 458 and 456.

#### **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). Examines a variety of theoretical perspectives on language and literacy and explores their implications for work with children. Questions of language acquisition, the role of language in learning, the development of literacy, and sociocultural influences are explored. 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). Focuses on the acquisition of skills in diagnostic assessment and remediation of reading and writing difficulties in children and adults. The influences of various theoretical perspectives and social issues on diagnosis and remediation are also explored. Students must enroll in EDEL 508 and 509 in the same year. Pre- or corequisite: EDEL 505 or consent of Department.

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

★3 (*fi 6*) (either term, 3-0-3). Provides advanced study in the diagnosis and remediation of reading and writing difficulties. Students will develop expertise with a variety of assessment and intervention strategies while extending their understanding of how various theories and social issues affect the nature and extent of the support provided to people with reading and writing difficulties. Students must enroll in EDEL 508 and 509 in the same year. Prerequisite: EDEL 508 or consent of Department.

#### **EDEL 510 Children's Literature in the Elementary School**

★3 (*fi 6*) (either term, 3-0-0). Focuses on approaches to teaching across the curriculum that will allow students to explore the value of literature in the lives of children; the development of a literature program; the creation of environments that enable children to respond to and grow through literature; the relationships between literature and literacy; and current research in literature in education. 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). Explores the development and implementation of elementary language arts programs in schools. The roles played by teachers, consultants and administrators in developing, implementing, refining and monitoring language arts programs are analyzed in relation to concepts of leadership in language arts. Prerequisite: EDEL 505 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 Classroom-Based Research in Elementary Mathematics Education**

★3 (*fi 6*) (either term, 3-0-0). Current issues in teaching and learning mathematics will be examined through classroom-based research and practice. Classroom events, mathematical tasks, and student work will be used as sites for critique, inquiry and investigation into theory and practice of teaching mathematics to children.

#### **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 525 Trends and Issues in Classroom Practice**

★6 (*fi 12*) (either term, 3-0-0). Focuses on elements of teaching and learning in relation to actual needs, problems, issues of elementary school, classroom practice as identified by participants. Emphasis will be placed on developing collegial relationships with other educators in the course-based Master's program and has been designed to accommodate educators who are currently in the workplace.

#### **EDEL 530 Language, Inquiry and School Science**

★3 (*fi 6*) (either term, 3-0-0). School science is framed by a perspective which acknowledges the social and cultural nature of learning in science and the ways in which language mediates the social practices of specific communities. Explores the practices of talking, reading and writing in school science. Prerequisite: a 400-level science education course 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**

★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 559 Principles of Curriculum Planning and Pedagogy in Early Childhood Settings**

★3 (*fi 6*) (either term, 3-0-3). A course in planning and implementing integrated curricula for children from preschool to grade three building upon principles of child development and learning. Students may not receive credit for both EDEL 558 and EDEL 559.

#### **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 567 Introduction to Educational Research**

★3 (*fi 6*) (either term, 0-3s-0). This introductory research methodology course is intended to support graduate students' understanding of the many ways in which educational research is conceptualized and conducted. Students will develop their ability to read educational research critically and with understanding in order to support their work as researchers and practicing professionals. Prerequisite: consent of Department.

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

★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 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). Provides an advanced and in-depth examination of theories and models of language acquisition and development. The characteristics, purposes, and limitations of language theories and models are explored through the critical study of a range of theoretical perspectives. Prerequisite: EDEL 505 or consent of Department.

#### **EDEL 650 Curriculum Foundations and Inquiry**

★3 (*fi 6*) (either term, 0-3s-0). A required course for doctoral students in the Department of Elementary Education. Engages students in advanced examination of the historical foundations of the curriculum field, contemporary issues in curriculum, and current influences on curriculum. Through readings, discussions, and assignments, course participants will examine a number of perspectives for inquiring into educational practice, situating their own practice within the wider context of the field of curriculum studies, interpreting the language of curriculum, and considering the role of teachers in mediating curriculum with their students. The epistemological, ontological, axiological, and ideological bases for the forms of curriculum theory and inquiry will be studied. Prerequisite: EDEL 561 or consent of the Department.

#### **EDEL 660 Advanced Research in Education**

★3 (*fi 6*) (either term, 0-3s-0). This is a required course for doctoral students in the Department of Elementary Education. Provides students with opportunities to explore issues in educational research from a philosophical and historical perspective. Prior to choosing methods and data sources, a researcher must first be aware of and be able to defend his/her theoretical framework which is based on an understanding of ontology, epistemology, methodology and ethics. The purpose of this course is to expose students to the perspectives, issues and questions in these four areas so that they may begin to develop a philosophical understanding of the research process. Prerequisite: EDEL 567 or consent of the Department.

#### **EDEL 665 Qualitative Research Methods in Education**

★3 (*fi 6*) (either term, 3-0-0). Provides for in-depth study of qualitative research. Attention is given to research design, data collection, analysis, interpretation, and reporting. Credit cannot be given for this course if the student has already completed EDEL 568.

#### **EDEL 667 Interpretive Inquiry**

★3 (*fi 6*) (either term, 3-0-0). Intended to support participants in examining the topics within interpretive inquiry in depth; writing about their research approaches, and undertaking analyses and interpretations of data. Intended to be helpful to students wishing to undertake research that can be understood as basic or generic qualitative research or as interpretive inquiry. Prerequisite: EDEL 665 or equivalent.

#### **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 900 Directed Research Project**

★3 (*fi 6*) (variable, unassigned).

## 221.104 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 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). Focuses on the principles and practices related to planning, building and maintaining information resource collections and resource-sharing systems, as well as handling the issues and demands that arise related to information resources in schools.

#### **EDES 542 Inquiry-Based Instruction**

★3 (*fi 6*) (either term, 3-0-0). Planning, implementing and evaluating inquiry-based learning experiences in schools. Includes media and information literacy, the process approach to student research, collaborative planning, and the role of the teacher-librarian.

#### **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). Focuses on the principles and practices of organizing print and non-print resources generally acquired in school libraries. The primary goal is to familiarize students with current operations and techniques associated with the organization for access, physical processing and maintenance of collections of learning resources. Focuses on the professional tasks of cataloging and classifying information.

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

★3 (*fi 6*) (either term, 3-0-0). Focuses on the principles and practices of organizing print and non-print resources generally acquired by school libraries. The primary goal is to familiarize students with current operations and techniques associated with the organization for access, physical processing and maintenance of collections of learning resources. Focuses on the professional tasks of cataloging and classifying information.

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

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

#### **EDES 549 Leadership in Information Literacy**

★3 (*fi 6*) (either term, 0-3s-0). Current issues and challenges related to the development of information literacy programs in schools are examined in this course using a case-based learning approach. Designed to help teacher-librarians draw from major theoretical frameworks within their profession to address problems of practice. Prerequisites: LIS 540, EDES 542, and EDES 545; or consent of Department.

#### **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).

## 221.105 Education - Field Experience, EDFX

Division of Field Experiences  
Faculty of Education

#### **Notes**

- (1) Field Experience courses other than EDFX 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 the Fee Payment Guide in the University Regulations and Information for Students section of the calendar.
- (3) The course prefix for Education (Field Experience) courses has changed from EDFXP to EDFX.

## Undergraduate Courses

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

★3 (*fi 6*) (either term, 5 weeks full-time in schools). Prerequisite: EDPY 200. Note: This prerequisite does not apply to After Degree students. Co-requisites: EDPS 310 and EDEL 321 or EDEL 330, EDPY 301 and EDPY 303. Note: Successful completion of ALL FOUR of the corequisites is required prior to students being granted permission to continue into their second week of EDFX 325. Requires payment of additional miscellaneous fees (see §22.2.3). Students are not permitted to enroll or work on courses additional to the IPT.

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

★3 (*fi 6*) (either term, 5 weeks full-time in schools). Prerequisite: EDPY 200. Note: This prerequisite does not apply to After Degree students. Co-requisites: EDPS 310 and EDSE 3XX (Curriculum and Teaching in Secondary Minor), EDPY 301 and EDPY 303. Note: Successful completion of ALL FOUR of the co-requisites is required prior to students being granted permission to continue into their second week of EDFX 350. Requires payment of additional miscellaneous fees (see §22.2.3). Students are not permitted to enroll or work on courses additional to the IPT.

### 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. Co-requisites: EDEL3XX (★3 from Education Core II not yet completed) and EDPS 410. Note: Successful completion of the co-requisites is required prior to students being granted permission to commence EDFX 425. Requires payment of additional miscellaneous fees (see §22.2.3). Students are not permitted to enroll or work on courses additional to the APT.

### 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. Co-requisites: EDEL3XX (★3 from Education Core II not yet completed) and EDPS 410. Note: Successful completion of the co-requisites is required prior to students being granted permission to commence EDFX 426. Requires payment of additional miscellaneous fees (see §22.2.3). Students are not permitted to enroll or work on courses additional to the APT.

### 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, ★24 in the Major, EDSE 4XX (Curriculum and Teaching in Secondary Major), and 4XX (Curriculum and Teaching in Secondary Major). Co-requisite: EDSE 451. Note: Successful completion of the prerequisites is required prior to students being granted permission to commence EDFX 450. Requires payment of additional miscellaneous fees (see §22.2.3). Students are not permitted to enroll or work on courses additional to the APT.

### 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 490 Additional Placement in an Education Related and/or Outside Alberta Context

★1-3 (*variable*) (variable, variable). Prerequisites: Introductory Professional Term and Advanced Professional Term Field Experiences, and permission of the Associate Dean, Field Experiences.

### 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.

## 221.106 Education - Instructional Technology, EDIT

Department of Educational Psychology  
Faculty of Education

### Undergraduate Courses

#### **L** 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 'Details of Courses' section. 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.

#### **O** 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.

#### **O** 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 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 202 or EDPY 202 or EDIT 485 or EDPY 485 or consent of Department. Students will not be granted credit for EDIT 489 and EDPY 489.

### 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.

#### **O** 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) (either term, 3-0-0). 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. 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 572 and 573, 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.

## 221.107 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: EDPY 200 except for After Degree students. Co-requisite: Courses in the Introductory Professional Term for either the Elementary Education Route or Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDPY 325 or EDPY 350.

#### **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 EDPS 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 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. Successful completion is required prior to being granted permission to commence EDPY 425 or EDPY 426. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

#### **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 in Developing Countries**

★3 (fi 6) (either term, 3-0-0). This course has a hemispheric focus (developing areas in the South), and aims to help students critically understand and examine the role formal systems of education can play in stimulating inclusive and sustainable social development possibilities in the countries of Africa, Asia, Latin America, the Caribbean region, and, selectively, in the specific cases of indigenous populations who may be underdeveloped in the context of otherwise advanced economic and political systems. 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 EDPS 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 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 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 EDPS 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 Adult Learning and Development**

★3 (fi 6) (either term, 3-0-0). In this course we will examine key issues in adult learning and development, using concepts discussed in the literature. Content areas include theories of adult learning and development, and related concepts such as learning styles and orientations, personality, motivation, and intelligence. Students may not receive credit for both EDPAE 521 and EDPS 521.

**EDPS 522 Citizenship Education: Global Contexts**

★3 (fi 6) (either term, 3-0-0). Focuses on citizenship education as a primary program for the development of societies with special reference to South countries. The concepts as well as the possible practices of citizenship and citizenship education will be analyzed to discern and critique their influence on spaces of educational and social development.

**EDPS 523 Education and Development Theory**

★3 (fi 6) (either term, 3-0-0). Analyzes the role of education in the development process from a global perspective, with particular attention paid to Asia, Africa, and Latin America. Explores the various explanations for social, political, and economic development put forward by selected writers. 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 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 536 Critical Pedagogies and Transformative Practices in Indigenous Education**

★3 (fi 6) (either term, 3-0-0). This course is concerned with the practices and strategies of transformative pedagogies for indigenous education. It examines the nature of critical pedagogy and its application in indigenous education sites as a tool for policy analysis and for social and political transformation. A central focus of the course is the development of indigenous educational strategies of resistance and transformation addressing colonization.

**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 EDPAE 540 and EDPS 540.

**EDPS 541 Organizational Learning and Change**

★3 (fi 6) (either term, 3-0-0). Introduces various theoretical and conceptual orientations to organizational learning and organizational change, and involves students in practical projects exploring learning and change in organizational contexts such as workplaces, communities, schools, and post-secondary institutions.

**EDPS 544 Critical and Feminist Pedagogical Research**

★3 (fi 6) (either term, 3-0-0). Examines historical and contemporary perspectives shaping critical and feminist pedagogies, both of which support inclusive and holistic teaching and research practices. Explores how these perspectives can inform research designs and methods for studying policy development, program design, and professional practice. Intent is to have students conduct analysis in relation to their own educational projects and professional interests.

**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 EDPAE 545 and EDPS 545.

**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 554 The Epistemology and Ethics of Educational Research**

★3 (fi 6) (either term, 3-0-0). Provides opportunity to explore epistemological and ethical issues that arise both in the conduct of educational research and in its application to practice.

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

★3 (fi 6) (either term, 3-0-0). This course examines the theoretical, conceptual, philosophical and practical aspects of adult instruction using dimensions such as instructor, learner, intentions, context, content, strategies and assessment. Students may not receive credit for both EDPAE 560 and EDPS 560.

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

★3 (fi 6) (either term, 3-0-0). The course examines program planning models and issues in contexts such as the workplace, community and post-secondary institutions. Students may not receive credit for both EDPAE 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 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 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 EDPAE 577 and EDPS 577.

**EDPS 580 Contemporary Issues in Education: Perspectives on Policy and Practice**

★3 (fi 6) (either term, 3-0-0). Introduces students to foundational approaches to contemporary issues in Canadian and international education contexts. Introduces multidimensional approaches associated with the history, sociology, and philosophy of education to help students understand and critically assess educational policy and practice.

**EDPS 581 Introduction to Evaluating Educational Research**

★3 (fi 6) (either term, 3-0-0). Introduces students to a critical interpretation and evaluation of research in the specializations within the Department of Educational Policy Studies, using a wide range of orientations and approaches. Students may not receive credit for both EDPS 508 and EDPS 581.

**EDPS 585 Needs Assessment and Program Evaluation**

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

**EDPS 590 Foundations of Education: Perspectives on Canadian Issues**

★3 (fi 6) (either term, 3-0-0). Focuses on a critical examination of Canadian educational issues from philosophical, historical, sociological and cultural perspectives. Themes may include multiculturalism, educational reform and governance, the global economy and new technologies, changing nature of educational goals, and transformations in teaching.

**EDPS 591 Foundations of Education: Perspectives on International Issues**

★3 (fi 6) (either term, 3-0-0). Critically examines the role of education in the problems and prospects of international development. As an inclusive construct, development comprises enhancements in the economic, social, political, cultural and technological well-being of people's lives. Examines contemporary societal issues that influence and/or are influenced by educational policies and programs.

Perspectives from regions and groups such as Africa, Asia, Latin America, Europe, the Oceania-Pacific, the Caribbean, the Middle East, and communities indigenous to different parts of the world will be included.

#### **EDPS 594 Group Processes in Educational Leadership**

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: consent of Department. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar. 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 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 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 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 636 Indigenous Ontologies in the Global Context**

★3 (*fi 6*) (either term, 3-0-0). This course is concerned with the impact of the multifaceted processes of globalization on the lived realities of indigenous peoples with particular reference to education and schooling. These issues will be engaged across macro and micro levels to examine the international arena, the nation state and new forms of regionalism in the context of the reshaping of global order. Open to doctoral students. Other students require consent of the instructor.

#### **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 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 Postsecondary Education**

★3 (*fi 6*) (either term, 3-0-0). This course examines the challenges and opportunities posed by the complex environments in which postsecondary institutions operate. Various theoretical lenses will be used to study such aspects of colleges and

universities as the institutional mission, values and societal/cultural role, teaching and research, accessibility, lifelong learning, equity and diversity, changing faculty and student roles, and curriculum. Students may not receive credit for both EDAL 672 and EDPS 672.

#### **EDPS 680 Policy Research and Education**

★3 (*fi 6*) (either term, 3-0-0). Focuses on a critical and disciplined examination of education and policy issues by drawing on a variety of theoretical orientations. Identifies the centrality of policy research within different educational contexts: adult education, K-12, post-secondary, and aboriginal schooling in Canada and internationally. Students will explore a multiplicity of ways to combine the study of policy with the study of practice, politics, culture and power.

#### **EDPS 681 Frameworks for Research in Educational Policy Studies**

★3 (*fi 6*) (either term, 3-0-0). Explores the philosophical underpinnings of selected research frameworks within the specializations of the Department of Educational Policy Studies. Students may receive credit for only one of EDAL 611, EDPS 611 and EDPS 681.

#### **EDPS 690 Social Learning and Responsibility in Adult Education**

★3 (*fi 6*) (either term, 3-0-0). Extends opportunities for advanced study in adult learning, focusing upon social learning and responsibility. Participants will explore situative and socio-cultural understandings of the learning process from different theoretical perspectives, and apply these to contexts of adult learning in formal settings, community action, and workplace organizations. Prerequisite: EDPS 521 or equivalent or consent of Department.

#### **EDPS 900 Directed Research Project**

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

## 221.108 Education - Psychology, EDPY

Department of Educational Psychology  
Faculty of Education

**Note:** The course prefix for Education (Psychology) courses has changed from EDPY 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 EDPY 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. Prerequisites: EDPY 200 except for After Degree students. Co-requisite: Courses in the Introductory Professional Term for either the Elementary Education Route or Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 325 or EDFX 350.

#### **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. Co-requisite: Courses in the Introductory Professional Term for either the Elementary Education Route or Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 325 or EDFX 350.

#### **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 EDPY 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 EDPY 475.

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

★3 (fi 6) (either term, 3-0-0). Focuses on principles of language learning, language learners, and learning contexts. Pre-/corequisite: an approved introductory course in Linguistics.

**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 EDPYS 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 EDPYS 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 EDPYS 355, EDPYS 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 EDPYS 307 or EDPYS 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 Assessment and Programming for Children with a Specific Reading Disability**

★3 (fi 6) (either term, 3-0-0). Intent is to (a) provide students with a theoretical understanding of specific reading disabilities, (b) introduce students to widely used assessment tools and the interpretation of assessment results, and (c) develop competence in designing and implementing successful interventions for students with specific reading disabilities. Restricted to Special Education Minors in the Elementary or Secondary Route. Prerequisite: EDPY 452 or 468 or consent of the instructor.

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

★3 (fi 6) (first term, 3-0-1). Note: Special Education Minors-Secondary Route only. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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 EDPYS 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 EDPYS 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 EDPYS 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; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

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

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

**EDPY 502 Single-Case Research Design**

★3 (fi 6) (either term, 3-0-0). Focuses on theory and practice of research on the effects of intervention on an individual or small group.

**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 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 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 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 542 Cross-Cultural Counselling**

★3 (fi 6) (either term, 3-0-0). Designed to establish a theoretical and practical understanding of the factors that influence the nature and effectiveness of the cross-cultural counselling process. Includes multicultural counselling competencies, ethics in cross-cultural counselling interactions, models of racial and cultural identity development, multicultural assessment procedures, and culture-specific (emic) and universal (etic) helping styles.

**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 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 syncretical 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 581 Psychological Aspects of Bilingualism and Bilingual Education**

★3 (fi 6) (either term, 3-0-0). Introduction to the study of bilingualism. Deals with the following questions: What is bilingualism? How do we measure bilingualism? How does a person become bilingual? What are the consequences of individual and societal bilingualism? Prerequisites: LING 101; LING 320; or equivalent with consent of Department.

**EDPY 584 Teaching Students with Severe Disabilities**

★3 (fi 6) (either term, 3-0-0). Prepares teachers and other professionals to work with students with severe and multiple disabilities in school and community settings.

**EDPY 585 Teaching and Learning Grammar in Second Language Education**

★3 (fi 6) (either term, 3-0-0). Explores how grammar teaching can be contextualized according to the principles of communicative language teaching. Theories concerning the relationship between adult learners' implicit and explicit knowledge of grammar will be reviewed, and different approaches to grammar instruction will be explored. Students may not receive credit for both EDPY 420 and EDPY 585. Prerequisite: LING 204; EDPY 416; EDPY 418; or equivalent with consent of Department.

**EDPY 588 Teaching English as a Foreign Language**

★3 (fi 6) (either term, 3-0-0). Issues relating to the teaching of English as a global language are explored. A general approach to analyzing the teaching of English as a foreign language in different settings is developed. Topics may include: functions of language; diglossia; World Englishes; language endangerment; language planning; communicative language teaching in non-Western settings; content-based instruction; washback in language testing. Prerequisite: EDPY 416; or equivalent with 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 590 Classroom Research Issues in Second Language Learning**

★3 (fi 6) (either term, 3-0-0). Introduction to applied linguistics research in second or foreign language classrooms. Topics typically include: methods of classroom research; teacher-student interaction; the effect of feedback on learner errors; form-focussed instruction; strategy training. Prerequisite: EDPY 416, 418, 501; or equivalent with 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) (second term, 0-3s-0). A research seminar course designed to help students develop and defend a doctoral level research proposal in educational psychology. Although this is a second term course, students are also required to attend several course sessions in the first term. Please consult with the course instructor prior to registration. 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 612 Research Practicum in Psychological Studies in Education**

★6 (fi 12) (two term, 3-3s-8). This doctoral level practicum is designed to provide students with the opportunity to acquire community-research experience. There are two components to the course: (a) the community research placement, and (b) the professional development seminars. The professional development seminars are designed to address a number of topics in this area, as well as expose students to a number of current professional issues facing educational psychologists working in the research community. Prerequisites: completed first year of doctoral studies. Consent of department.

**EDPY 614 Social and Emotional Development**

★3 (fi 6) (either term, 3-0-0). Examines current theoretical, methodological, and applied issues in social and emotional behavioural development. Discussion of atypical development will also be incorporated. Open to Master's and Ph.D. students in the Department of Educational Psychology. Other students require consent of the Department. Prerequisite: EDPY 509 or EDPY 517 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 621 Advanced Seminar in Special Education**

★3 (fi 6) (either term, 0-3s-0). Deals with the theoretical foundations and current applied developments in the field of special education and student exceptionality. Prerequisite: consent of Department

**EDPY 630 Counselling Psychology Internship**

★1 (fi 2) (two term, variable). Students in the Doctoral Counselling Program must successfully complete a 1,600 hour internship accredited by the Canadian Psychological Association (or equivalent). Students are expected to 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 of Psychology**

★3 (fi 6) (either term, 3-0-0). Provides a historical examination of the philosophical and scientific development of the discipline of psychology. 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 650 School Psychology Internship**

★1 (fi 2) (two term, variable). A supervised training program designed to provide the intern with a planned, programmed sequence of training experience. Students in the doctoral program in School Psychology must successfully complete an approved 1,600 hour internship. Prerequisites: Consent of Department, successful completion of coursework and candidacy exam.

**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).

**221.109 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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of 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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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 to include Music 230 and 315. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of 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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of EDFX 350.

**EDSE 388 Curriculum and Teaching for Secondary School Career and Technology Studies: Technology Education and**

★3 (fi 6) (either term, 3-0-0). Prerequisite: ★9 in the Minor subject area. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of 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. Co-requisite: Courses in the Introductory Professional Term for the Secondary Education Route. Successful completion is required prior to being granted permission to continue into the second week of 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 405 An Introduction to Curriculum Studies**

★3 (fi 6) (either term, 3-0-0). Intended as an introduction to the major discourses and themes that define the field of curriculum studies. It is focused in particular on the Albertan and Canadian contexts. EDSE 405 can be taken as an option by fourth year undergraduate students in the Bachelor of Education program.

**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. Co-requisite: EDSE 413 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 413 Curriculum and Teaching in Secondary School Art II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 412 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 418 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 418 Curriculum and Teaching in Secondary School Career and Technology Studies: Business & Technology II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 417 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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 required Drama courses as specified in Education section of the Calendar under the heading Components of the Program. Co-requisite: EDSE 423 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 423 Curriculum and Teaching Secondary School Drama II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 422 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 424 Theory and Practice of Drama/Theatre in Education**

★3 (fi 6) (either term, 3-0-3). 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. Emphasizes 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 249 or 259.

**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. Co-requisite: EDSE 428 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 428 Curriculum and Teaching in Secondary School English Language Arts II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 427 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 433 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 433 Curriculum and Teaching in Secondary School Career and Technology Studies: Human Ecology II**

★3 (fi 6) (either term, 3-0-1). Co-requisite: EDSE 432 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 438 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 438 Curriculum and Teaching in Secondary School Mathematics II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 437 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 439 Specialized Methods in Secondary School Mathematics Teaching**

★3 (fi 6) (either term, 3-0-0). This course inquiries into the metaphors, images, and language patterns that are used to give shape and meaning to concepts in secondary school mathematics. A principal intention is to examine the relationships

between common conceptual difficulties and the figurative commitments implicit in mathematical notions.

**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 to include Music 211, 217 and 315. Co-requisite: EDSE 444 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 444 Curriculum and Teaching in Secondary School Music II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 443 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 448 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 448 Curriculum and Teaching in Secondary School Physical Education II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 447 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

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

★3 (fi 6) (either term, 3-0-0). Prerequisites: Introductory Professional Term and ★24 in the Major subject area. Co-requisite: Courses in the Advanced Professional Term for the Secondary Education Route including EDFX 450. Students may not receive credit for both EDFX 451 and EDSE 451.

**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. Co-requisite: EDSE 453 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 453 Curriculum and Teaching in Secondary School Biological Sciences II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 452 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 456 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 457 Curriculum and Teaching in Secondary School General Sciences II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 456 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 461 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 461 Curriculum and Teaching in Secondary School Physical Sciences II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 460 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 469 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 469 Curriculum and Teaching in Secondary School Second Language II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 468 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 474 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 474 Curriculum and Teaching in Secondary School Social Studies II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 473 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 489 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 489 Curriculum and Teaching in Secondary School Career and Technology Studies: Technology Education II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 488 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**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. Co-requisite: EDSE 494 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 494 Curriculum and Teaching in Secondary School Career and Technology Studies: Resources II**

★3 (fi 6) (either term, 3-0-0). Co-requisite: EDSE 493 and EDSE 451. Successful completion is required prior to being granted permission to commence EDFX 450.

**EDSE 495 Curriculum and Teaching in Secondary School Career Education**

★3 (fi 6) (either term, 3-0-3).

## 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 'Details of Courses' section.

**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.

**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 'Details of Courses' section.

**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 'Details of Courses' section.

**EDSE 508 Media and Popular Culture in the Curriculum**

★3 (fi 6) (either 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.

**0 EDSE 510 Research Methods in Secondary Education**

★3 (*fi 6*) (first term, 3-0-0). An introductory research methods and methodology course. The intent is to acquaint students with the many and varied methods of educational research, and the means of conducting research and presenting research findings. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**EDSE 511 Research Design in Secondary Education**

★3 (*fi 6*) (either term, 3-0-0). Designed to enable students to conceptualize and design a thesis proposal for their Master's degree. Prerequisite: EDSE 510 or consent of Department.

**EDSE 512 Research Project in Secondary Education**

★3 (*fi 6*) (either term, 3-0-0). Intended as a practical course to enable course-based students to conceptualize and design a research project for their Master's degree. Prerequisite: EDSE 510 or consent of Department. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

**0 EDSE 515 Special Topics in Art Education**

★3 (*fi 6*) (either term, 3-0-0). This course examines special topics in art education.

**0 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.

**0 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.

**0 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.

**0 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.

**0 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.

**0 EDSE 565 Current Issues in Science, Mathematics and Technology Education**

★3 (*fi 6*) (second term, 0-3s-0). Participants read and discuss a selection of recent research and theoretical papers in the fields of science, mathematics and technology education. Addresses the implications of the issues raised for pedagogical practice and social policy. Although this is a second term course, students are also required to attend several course sessions in the first term.

**0 EDSE 566 Philosophy of Science: Implications for Teaching**

★3 (*fi 6*) (either term, 0-3s-0). Addresses both epistemology and philosophy of science in relation to classroom science education. Students are introduced to major perspectives in contemporary philosophy of science. They critically examine and reflect on how such perspectives relate to the practices of science teaching.

**0 EDSE 567 Science, Technology, Society and Environment: Implications for Teaching**

★3 (*fi 6*) (either term, 0-3s-0). Addresses the natures of science and of technology, and their interactions with one another and with social issues. The role of science and technology in modern Western society as examined, and issues of environmental responsibility, bioethics, alternative cultural beliefs about science

and society, and the implications of science, technology, society and environment (STSE) for classroom science teaching are explored.

**0 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.

**0 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.

**0 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.

**0 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.

**0 EDSE 580 Curriculum and Teaching for Religious and Moral Education**

★3 (*fi 6*) (either term, 3-0-0).

**0 EDSE 599 Conference Seminar**

★1-12 (*variable*) (variable, variable). Selected topics. Prerequisites: consent of Instructor and Department.

**0 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.

**0 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.

**0 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.

**0 EDSE 607 Action Research Practicum**

★3 (*fi 6*) (second term, 3-0-0). Prerequisites: EDSE 503, 504, and 606 or consent of Department.

**0 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.

**0 EDSE 610 Advanced Research Seminar in Secondary Education**

★3 (*fi 6*) (either term, 0-3s-0). A doctoral level research seminar that deals with selected topics and addresses all stages of the research process. Prerequisite: consent of Department.

**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 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 665 Current Issues in Science, Mathematics and Technology Education**

★3 (fi 6) (second term, 0-3s-0). Advanced seminar course in which participants read and discuss a selection of recent research and theoretical papers in the fields of science, mathematics and technology education. Addresses the implications of the issues raised for pedagogical practice and social policy. Although this is a second term course, students are also required to attend several course sessions in the first term. Restricted to doctoral students. Students may not receive credit for both EDSE 565 and 665.

#### **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 670 Postcolonial Perspectives, Theories and Curriculum**

★3 (fi 6) (either term, 3-0-0). Students consider key concepts and reading practices in postcolonial studies and explore their relationship to and significance for teaching, learning, and curriculum.

#### **EDSE 900 Directed Research Project**

★3 (fi 6) (either term, unassigned).

## 221.110 Electrical and Computer Engineering, ECE

Department of Electrical and Computer Engineering  
Faculty of Engineering

### Undergraduate Courses

#### **ECE 200 Technical Communication in Computer and Electrical Engineering**

★2 (fi 4) (either term, 2-0-0). Description of the areas of study in electrical and computer engineering and the related industry in Alberta. Introduction to technical communication in the electrical engineering discipline. Concepts of effective written and oral technical communication, both individual and team delivered: audience identification, planning and research, drafting prose elements and creating persuasive visual graphics. Case studies based on presentations by invited industrial speakers. Student oral presentations.

### Graduate Courses

#### **ECE 502 Probability and Random Processes for Electrical Engineers**

★3 (fi 6) (either term, 3-0-0). Review of probability theory, random variables, probability distribution and density functions, characteristic functions, convergence of random sequences, and laws of large numbers. Analysis of random processes, including stationarity, ergodicity, autocorrelation functions power spectral density, and transformation of random processes through linear systems. Application to communication systems.

#### **ECE 510 Computer System Architecture**

★3 (fi 6) (either term, 3-0-0). Evolution of computer architecture and factors influencing the design of hardware and software elements of computer systems. Instruction set design; processor micro-architecture and pipelining; cache and virtual

memory organizations; protection and sharing; I/O architectures; VLIW machines; vector supercomputers; multithreaded architectures; symmetric multiprocessors, DSP processors, and other parallel computers.

#### **ECE 511 Digital ASIC Design**

★4.5 (fi 6) (either term, 3-0-3). Design of digital application-specific integrated circuits (ASICs) 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. Note: Only one of the following courses may be taken for credit: ECE 511 or E E 552.

#### **ECE 512 Digital System Testing and Design for Testability**

★3 (fi 6) (either 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. Design for testability (DFT), scan test, built-in self-test, boundary scan. Memory testing, error control code. DFT CAD tools. Note: Only one of the following courses may be taken for credit: ECE 512 or E E 651.

#### **ECE 521 Software Requirements Engineering and Software Design**

★3.8 (fi 6) (either term, 3-0-3/2). Understanding needs of software-intensive systems. Converting the statement of needs into complete and unambiguous description of the requirements. Techniques for elicitation, analysis, and specification of requirements. Mapping of requirements into a description of their implementation. Software design techniques for capturing and expressing a different view of the system. Elements of architectural design, abstract specification, interface design, data structure and algorithm design.

#### **ECE 522 Software Construction, Verification and Evolution**

★3.8 (fi 6) (either term, 3-0-3/2). Construction of software components identified and described in design documents. Translation of a design into an implementation language. Program coding styles. Concepts, methods, processes, and techniques supporting the ability of a software system to change, evolve, and survive. Verification of software ensuring fulfillment of the requirements. Validation of software products at different stages of development: unit testing, integration testing, system testing, performance testing, and acceptance testing.

#### **ECE 523 Software Project Management and Software Quality**

★3.8 (fi 6) (either term, 3-0-3/2). Methods and techniques for defining project objectives, assessing project needs and resources, developing estimates for the work to be performed, establishing the necessary commitments, and defining the plan for the work. Technical aspects of the software development process: activities, practices, and transformations used to develop and maintain software. The concepts, methods, and techniques for managing risks. The procedures and standards for producing high-quality software products. Quality planning and control. Verification and validation activities. Measurement of product and process attributes.

#### **ECE 530 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. Note: May not be taken for credit if credit has already been obtained in either E E 529 or E E 627.

#### **ECE 541 Digital Signal Processing**

★3 (fi 6) (either term, 3-0-0). Discrete-time signals and systems, Discrete Fourier Transform, Fast Fourier Transform, Fourier analysis, short-time Fourier transform, wavelet transform. Digital filters, optimal filter design, polyphase filterbanks, subband analysis. Random signal analysis, Karhunen-Loève expansion, power spectrum estimation, autoregressive models.

#### **ECE 551 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. Note: Only one of the following courses may be taken for credit: ECE 551 or E E 633.

#### **ECE 553 Digital Integrated Circuit Design**

★3.8 (fi 6) (either term, 3-0-3/2). Review of semiconductor materials, integrated circuit processing, and basic design flows using CAD tools. Electrical characteristics of interconnect, passive elements, diodes, MOSFETs and logic gates. Sequential elements, memory and datapath circuits. Pad design. Chip-level design including

power and clock distribution. Scaling theory. Testing and design for testability. Emerging technologies. Note: Only one of the following courses may be taken for credit: ECE 553 or E E 483 or 653.

#### **ECE 558 Microfabrication and Nanofabrication Topics I**

★3 (fi 6) (either term, 3-0-0). Vacuum principles: gas kinetics and flow, pumping speed theory, pumping methods, pressure, measurement, sorption processes, vacuum system design basics. Thin film growth by sputtering, evaporation and chemical techniques. Characterization and classification of optical, electrical and mechanical properties. Applications of thin films. Note: May not be taken for credit if credit has already been obtained in either E E 641 or 642.

#### **ECE 559 Microfabrication and Nanofabrication Topics II**

★3 (fi 6) (either term, 3-0-0). The VLSI fabrication process for microelectronics and MEMs applications. Overview of processing steps: silicon wafer material, oxidation, lithography, diffusion and ion implantation, chemical vapor deposition, metallization. Process model. Yield, packaging, and assembly. Note: Only one of the following courses may be taken for credit: ECE 559 or E E 619.

#### **ECE 560 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. The separation principle. Quadratic optimal control. Note: Only one of the following courses may be taken for credit: ECE 560 or E E 660.

#### **ECE 561 Nonlinear Control Systems**

★3 (fi 6) (either term, 3-0-0). Nonlinear system examples. Stability in the sense of Lyapunov. Lyapunov functions. The invariance principle. Lyapunov-based design. Backstepping. Input-output stability. Passivity and small-gain theorems. Input to state stability. Dissipativity. Note: Only one of the following courses may be taken for credit: ECE 561 or E E 666.

#### **ECE 570 Computational Electromagnetics**

★3 (fi 6) (either term, 3-0-0). Review of techniques and applications in computational electromagnetics. Finite-Difference Time-Domain solution of Maxwell's equations: boundary conditions, numerical stability, numerical dispersion, near-to-far field transformation. Introduction to Finite-Elements Technique: basis and weighting functions, Galerkin's method, nodal and edge elements, variational formulation, applications. Introduction to the Method of Moments: integral formulation of electrostatics, Green's function, point matching and Galerkin's method, treatment of open regions.

#### **ECE 571 Optical and Quantum Electronics**

★3 (fi 6) (either term, 3-0-0). Optical resonators. Interaction of radiation and atomic systems. Fabry-Perot lasers, specific laser systems. Modelocked and Q-switched lasers. Second-harmonic generation and parametric oscillation, electro-optic modulation of laser beams. Interaction of light with sound. Semiconductor lasers: theory and applications. Ultrafast lasers and phenomena.

#### **ECE 582 Information Theory and Channel Coding**

★3 (fi 6) (either term, 3-0-0). Information theory as applied to digital signals. Source coding. The channel coding theorem, linear error control codes, and algebraic error correction coding. Concatenation of codes and iterative decoding.

#### **ECE 583 Digital Communications**

★3 (fi 6) (either term, 3-0-0). Analysis and design of digital communication systems based on probability theory, signal space representation and optimum detection principles. Modulation techniques and their performance in AWGN and dispersive channels. Channel equalization, carrier and symbol synchronization. Note: Only one of the following courses may be taken for credit: ECE 583 or E E 656.

#### **ECE 601 MSc Research Project Definition**

★0.5 (fi 1) (second term, 0-1s-0). Preparation of a report defining the proposed MSc thesis research.

#### **ECE 602 PhD Research Project Definition**

★0.5 (fi 1) (second term, 0-1s-0). Preparation of a report defining the proposed PhD thesis research.

#### **ECE 612 Semiconductor Memory Circuits and Architectures**

★3 (fi 6) (either term, 3-0-0). Memory circuits and architectures of several families of semiconductor memories, with emphasis on DRAM. Topics include SRAM, DRAM, flash, ferroelectric memories, sensing, decoding speed-area-power trade-offs, redundancy, interfaces and novel applications. Focused literature review and a design project. Note: Only one of the following courses may be taken for credit: ECE 612 or E E 625.

#### **ECE 613 VLSI CAD Algorithms**

★3 (fi 6) (either term, 3-0-0). Design of algorithms for VLSI CAD tools. Review of algorithmic graph theory, optimization methods and computational complexity; algorithms for layout compaction, placement and partitioning, routing, simulation, logic synthesis, and verification.

#### **ECE 614 SIMD Parallel Processor Architectures and Applications**

★3 (fi 6) (either term, 3-0-0). Single Instruction stream, Multiple Data stream (SIMD) parallel processor architectures and their applications. Course work includes a focused literature review and a parallel programming project. Note: Only one of the following courses may be taken for credit: ECE 614 or E E 654.

#### **ECE 621 Software Technology Evaluation**

★3.8 (fi 6) (either term, 3-0-3/2). Introduction to mechanisms for comparing and evaluating various software artifacts and procedures. Quantitative comparison, based upon scientific practice and discipline, of such objects as: software engineering techniques, processes, methods, tools and systems. Provides a solid basis for comparing new research against the existing state of the art.

#### **ECE 630 Circuit Design Techniques for Power Electronics**

★3 (fi 6) (either term, 3-0-0). Introduction to power semiconductors, switchmode power supplies, MOSFET and IGBTs, current and voltage sensing, pulse width modulation control, printed circuit board design software. Design project.

#### **ECE 631 Simulation Techniques for Power Electronics**

★3 (fi 6) (either term, 3-0-0). Introduction to simulation tools, transient analysis, power semiconductor models, circuit elements for electric drives, functional simulation of switchmode power supplies, control techniques. Simulation project.

#### **ECE 632 Electromagnetic Modeling of Electromechanical Systems**

★3 (fi 6) (either term, 3-0-0). Electromagnetics in electromechanical devices. Traditional electromagnetic models. Finite element analysis applied to magnetostatic, frequency and time domains. Consideration of linear and non-linear materials. Solution of non-linear models using Newton-Raphson equations. Motion.

#### **ECE 633 Modeling and Simulation of Electromagnetic Transients in Electrical Circuits**

★3 (fi 6) (either term, 3-0-0). Electromagnetic transients. Modeling basic elements, transmission lines and power electronic apparatus. Real time transient simulation including FACTS and HVDC.

#### **ECE 634 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. Note: Only one of the following courses may be taken for credit: ECE 634 or E E 528.

#### **ECE 643 Multimedia Signal Processing**

★3 (fi 6) (either term, 3-0-0). History of multimedia systems, multimedia authoring. Digital audio and color representation. Text, audio, and image compression, television fundamentals, digital video compression and streaming principles, high definition TV standard, audio, image and video processing techniques. Corequisite: ECE 541 or consent of Instructor. Note: Only one of the following courses may be taken for credit: ECE 643 or E E 587.

#### **ECE 644 Digital Image and Video Processing**

★3 (fi 6) (either term, 3-0-0). Image and video processing: problems and applications. Two-dimensional unitary transforms. Image analysis, feature extraction, edge detection, image segmentation. Image restoration: inverse filter, least-squares filtering, deconvolution. Digital video: segmentation, filtering, and analysis. Storage and retrieval. Low bitrate and object-based techniques, digital library, search and retrieval. Prerequisite: ECE 643 or EE BE 540 or consent of Instructor.

#### **ECE 651 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. Note: Only one of the following courses may be taken for credit: ECE 651 or E E 671.

#### **ECE 658 Fabrication and characterization of Microelectromechanical Systems**

★3 (fi 6) (either term, 3-0-0). Fabrication and characterization of MEMs devices: state-of-the-art technologies for RF, electronic, optical, and fluidic MEMs devices. MEMs devices: sensors, actuators, resonant structures, optical switches and filters, microfluidics for chemical and biological sensing, analysis and manipulation.

#### **ECE 659 Applications of Nanotechnology**

★3 (fi 6) (either term, 3-0-0). Quantum, nanophotonic, nanoelectronic and nanobiotechnological devices. Fabrication techniques for devices: self-assembly, organic and hybrid materials and devices, lithographic technologies. Applications of nanotechnology devices in computing, human health, telecommunications.

#### **ECE 662 Sampled Data Control Systems**

★3 (fi 6) (either term, 3-0-0). Analysis and design of sampled data 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. Note: Only one of the following courses may be taken for credit: ECE 662 or E E 662.

#### **ECE 664 Nonlinear Control Design with Applications**

★3 (fi 6) (either term, 3-0-0). Model based design methods for systems described by nonlinear differential equations. Exact error linearization for nonlinear observer

design. Approximate linearization methods. Adaptive linearization for robustness. Differential flatness. Trajectory planning.

#### **ECE 671 Nonlinear Optics and Nanophotonics**

★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. Nanocomposites, quantum well and quantum dot devices, photonic bandgap crystals. Applications to engineering laser and fiber optic communication systems. Note: Only one of the following courses may be taken for credit: ECE 671 or E E 684.

#### **ECE 673 Laser Applications**

★3 (fi 6) (either term, 3-0-0). Laser systems and beam optics. Fundamentals of laser materials interaction including laser absorption, energy transport and laser ablation mechanisms. Laser applications in microscale engineering, nanoscale engineering, photonics, science and medical science. Note: Only one of the following courses may be taken for credit: ECE 673 or EE 645.

#### **ECE 674 Radio Astronomy Techniques**

★3 (fi 6) (either term, 3-0-0). Radiometry; galactic background and sources; antennas and arrays as spatial frequency filters; aperture synthesis; earth-rotation synthesis; interferometry; correlation receivers. Note: Only one of the following courses may be taken for credit: ECE 674 or E E 628.

#### **ECE 675 Plasma Engineering**

★3 (fi 6) (either term, 3-0-0). Engineering of plasmas for applications in fusion, space, astrophysics, microelectronic processing, plasma-assisted manufacturing and microwave generation. Characterization of the plasma state, charged particle dynamics in electric and magnetic fields, the two-fluid model, magnetohydrodynamic model, linear and nonlinear waves, atomic and collisional processes, transport properties.

#### **ECE 681 Survivable Networks**

★3 (fi 6) (either term, 3-0-0). 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. Note: Only one of the following courses may be taken for credit: ECE 681 or E E 681.

#### **ECE 682 Error Control Coding**

★3 (fi 6) (either term, 3-0-0). Advanced state-of-the art algorithmic channel coding and decoding for reliable digital data communications over noisy communications channels. Channel capacity and performance bounds. Trellis coding and trellis coded modulation. Concatenated coding, turbo codes. Turbo coded modulation. Prerequisites: ECE 502 and 582.

#### **ECE 683 Broadband Digital Communications**

★3 (fi 6) (either term, 3-0-0). Direct sequence and frequency hopping spread spectrum techniques, and code division multiple access (CDMA). Orthogonal frequency division multiplexing and multicarrier CDMA. Capacity of multiple-input multiple-output systems, space-time coding, and space-time layering. Principles of multi-user detection with optimum and sub-optimum approaches. Selected industry standards. Prerequisites: ECE 502, 582, and 583.

#### **ECE 684 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. Prerequisites: ECE 502 and 583.

#### **ECE 685 Photonic Devices for Communications**

★3 (fi 6) (either term, 3-0-0). Overview of integrated photonic devices for information and communications applications. Light-matter interactions in waveguides: material response and dispersion, absorption and emission. Guided waves in structured media: modal theory, loss and gain mechanisms in guided modes. Coupled-mode theory and application to basic guided-wave devices. Active control of light by electrical and optical control signals. Switching, modulation, and bistable devices. Photonic crystals and selected topics. Note: Only one of the following courses may be taken for credit: ECE 685 or E E 682.

#### **ECE 710 Advanced Topics in Computer Engineering**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 720 Advanced Topics in Software Engineering**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 730 Advanced Topics in Power Engineering**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 740 Advanced Topics in Digital Signal Processing**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 750 Advanced Topics in Micro- and NanoSystems**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 760 Advanced Topics in Control**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 770 Advanced Topics in Electromagnetics**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 780 Advanced Topics in Communications**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 790 Advanced Topics in Biomedical Engineering**

★3 (fi 6) (either term, 3-0-0).

#### **ECE 900 Directed Research Project**

★6 (fi 12) (variable, unassigned).

#### **ECE 910 Directed Research Project**

★3 (fi 6) (variable, unassigned).

## 221.111 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

#### **0 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.

#### **0 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.

## 221.112 Electrical Engineering, E E

Department of Electrical and Computer Engineering  
Faculty of Engineering

### Undergraduate Courses

#### **E E 231 Numerical Analysis for Electrical and Computer Engineers**

★3.8 (fi 6) (either term or Spring/Summer, 3-0-3/2). The analysis of various numerical techniques for solving Electrical and Computer Engineering problems. Topics include numerical integration, differentiation, numerical solution of ordinary differential equations (ODEs), finding roots of nonlinear equations, the solution of linear systems of equations and the solution of optimization problems. Consideration of the sources of error in numerical computation. Prerequisites: E E 240, MATH 101, MATH 102. Corequisite: MATH 201.

#### **E E 238 Continuous Time Signals and Systems**

★3.5 (fi 6) (either term, 3-1s-0). Introduction to linear systems and signal classification. Delta function and convolution. Fourier series expansion. Fourier transform and its properties. Laplace transform. Analysis of linear time invariant (LTI) systems using the Laplace transform. Prerequisites: E E 240, MATH 102 and 201. Note: only one of the following courses may be taken for credit: E E 238 or 335.

#### **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: Ohm's, KVL, KCL. Resistive voltage and current dividers. Basic loop and nodal analysis. Dependent sources. Circuit theorems: linearity, superposition, maximum power transfer, Thevenin, Norton. Time domain behavior of inductance and capacitance, energy storage. Sinusoidal signals, complex numbers, phasor and impedance concepts. Magnetically coupled networks. Single phase power and power factor. Prerequisites: MATH 101, 102.

**E E 250 Electrical Circuits II**

★4.3 (fi 6) (second term or Spring/Summer, 3-1s-3/2). Nonlinear circuit analysis. Diodes: ideal and simple models, single phase rectifiers. Ideal and finite gain op-amps. Treatment of RLC circuits in the time domain, frequency domain and s-plane. Two port networks. Prerequisites: E E 240, MATH 102 and 201. Corequisite: E E 238 or 335.

**E E 280 Introduction to Digital Logic Design**

★3.8 (fi 6) (either term, 3-0-3/2). Boolean algebra, truth tables, 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. Arithmetic circuits. Introduction to computer-aided design and simulation tools for digital design and implementation. Requires payment of additional miscellaneous fees (see §22.2.3). 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 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 238 or 335, and MATH 309 or 311.

**E E 330 Introduction to Power Engineering**

★3 (fi 6) (either term, 3-0-0). DC and AC magnetic circuit analysis. Ideal and non-ideal transformers. Introduction to per-unit calculation. Three-phase network and symmetrical components theory. Introduction to power systems. Generation, transmission and distribution of power. 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**

★3.5 (fi 6) (either term, 3-1s/2-1/2). 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 238 or 335. Credit may not be obtained in both E E 338 and 438.

**E E 340 Electronic Devices**

★4.3 (fi 6) (first term, 3-1s-3/2). PN junction semiconductor basics, charge flow and diode equation. Zener diodes. BJT and MOSFET devices and operating regions. Amplifier basics: biasing, gain, input and output resistance, analysis and design. Large signal effects. Differential amplifiers. Requires payment of additional miscellaneous fees (see §22.2.3). Prerequisite: E E 250.

**E E 350 Analog Electronics**

★4.3 (fi 6) (either term, 3-1s-3/2). Frequency response of transistor amplifiers: basic high frequency model, dominant pole calculation and design. Feedback

application in amplifier circuits. Op-amp circuit design, real op-amps, open and closed loop response. Filters and tuned amplifier circuits. A/D and D/A converter circuits. Requires payment of additional miscellaneous fees (see §22.2.3). Prerequisite: E E 340.

**E E 351 Digital Electronics**

★4.3 (fi 6) (either term, 3-1s-3/2). MOS digital circuits, logic gates, threshold voltages. MOS logic families: design and simulation. CMOS timing: propagation delay, rise and fall times. Storage elements, memory, I/O and interfacing. Prerequisites: E E 280 or CMPUT 329, and E E 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 469. Prerequisites: E E 250, and 238 or E E 335.

**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 Probability for Electrical and Computer Engineers**

★3.5 (fi 6) (either term, 3-1s-0). Deterministic and probabilistic models. Basics of probability theory: random experiments, axioms of probability, conditional probability and independence. Random variables: cumulative distribution and probability density functions, functions of a random variable, expected values, Markov and Chebyshev inequalities, goodness-of-fit tests, transform methods. Multiple random variables: vector random variables, independence, joint cdf and pdf, conditional probability and expectation, functions of multiple random variables, jointly Gaussian random variables. Sums of random variables: the laws of large numbers, central limit theorem, confidence intervals. Prerequisite: E E 231. Corequisite: E E 238 or 335.

**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 238 or 335.

**E E 400 Engineering Design Project I**

★2.5 (fi 6) (first term, 1-0-3). The first of two design courses that must be taken in the same academic year. Student teams research, propose, design, develop, document, prototype, and present a practical engineering system or device; teams exercise creativity and make assumptions and decisions based on technical knowledge. This first course includes project definition, planning, and initial prototyping. Formal reports and presentation of the project proposal is required. Corequisites: E E 350, 380.

**E E 401 Engineering Design Project II**

★2.5 (fi 6) (second term, 1-0-3). The second of two design courses that must be taken in the same academic year, in which student teams develop an electronic system or device from concept to working prototype. Emphasis is placed on continued execution of the project plan developed in E E 400. Formal interim and final reports are required; groups demonstrate and present their designs. Prerequisite: E E 400 in the preceding Fall term.

**E E 404 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. Note: Only one of the following courses may be taken for credit: E E 404 or 514.

**E E 430 Power Systems I**

★3 (fi 6) (either term, 3-0-0). Power system components and performance; per unit analysis of power systems; transmission line parameters; transmission line steady state operation; load flow methods; economic operation of power systems. Prerequisite: E E 330. Note: Only one of the following courses may be taken for credit: E E 430 or 521.

**E E 431 Power Electronics**

★3.8 (fi 6) (either term, 3-0-3/2). Introduction to power electronics. AC-DC conversion. DC-AC conversion. DC-DC conversion. AC-AC conversion. Prerequisite: E E 340. Note: May not be taken for credit if credit has already been obtained in either E E 530 or 531.

**E E 432 Variable Speed Drives**

★3.8 (fi 6) (either term, 3-0-3/2). Introduction to variable speed drives. Frequency, phase and vector control of induction motors. Dynamic models for induction motors. Permanent magnet synchronous and brushless dc motor drives. Prerequisite: E E 332. Note: Only one of the following courses may be taken for credit: E E 432 or 531.

**E E 433 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 introduction to power system protection. 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 430 or 521 or consent of Instructor. Note: Only one of the following courses may be taken for credit: E E 433 or 525.

**E E 441 Digital Filters**

★3.8 (fi 6) (either term, 3-0-3/2). Review of discrete-time signals and systems. Design of FIR filters: windowing methods, Least square design methods, Parks-McClellan technique. Design of IIR filters: Butterworth and Chebyshev analog lowpass prototype filters, analog frequency transformations, bilinear transformation method, allpass filters, ladder and lattice structures, compensation for phase distortion, and startup transient effects. Filter structures and implementations: direct-forms, cascade and parallel structures. Sensitivity to coefficient quantization. Implementation of digital filter algorithms. Practical applications in digital multimedia. Prerequisite: E E 338. Note: Only one of the following courses may be taken for credit: E E 441 or 539.

**E E 451 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. Note: Only one of the following courses may be taken for credit: E E 451 or 571.

**E E 452 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. Note: Only one of the following courses may be taken for credit: E E 452 or 572.

**E E 453 Integrated Circuit Design**

★3.8 (fi 6) (either term, 3-0-3/2). Very Large Scale Integration (VLSI) design techniques and their application. Electrical characteristics of MOSFET devices and CMOS circuits. Use of CAD tools for simulation and integrated circuit layout. Modeling delays, advanced digital logic circuit techniques, memory. Prerequisites: CMPE 480 or E E 480. Note: Only one of the following courses may be taken for credit: E E 453 or 483 or 653.

**E E 454 Nanoelectronics**

★3 (fi 6) (either term, 3-0-0). Review of quantum mechanics for engineering applications, including calculations of the band structure of solids and molecules; carrier transport in nanotransistors, including semiclassical transport (Boltzmann equation) and an introduction to quantum transport; applications to emerging devices in electrical engineering, such as carbon nanotube transistors, silicon nanowires, and molecular electronics.

**E E 455 Engineering of Nanobiotechnological Systems**

★3 (fi 6) (either term, 3-0-0). Microfluidic and nanobiotechnological devices. Fabrication techniques for devices: self-assembly, lithographic technologies. Applications of nanobiotechnology in computing, electronics, human health, environment and manufacture.

**E E 457 Microfabrication and Devices**

★3 (fi 6) (either term, 2-0-2). Microfabrication processes for CMOS, bipolar, MEMS, and microfluidics devices. Laboratory safety. Deposition processes of oxidation, evaporation and sputtering. Lithography, wet and dry etch, and device characterization. Note: Consent of Department required. Note: Only one of the following courses may be taken for credit: EE 457 or 573.

**E E 459 Introduction to Nanotechnology**

★3 (fi 6) (either term, 3-0-0). Existing micro/nanofabrication and characterization technologies including advanced nanolithography and soft lithography techniques. Overview of scanned probe microscopy techniques such as AFM, STM, and NSOM. Introduction to nanomaterials such as fullerenes, carbon nanotubes, and block copolymers. Quantum mechanical effects and properties of nanostructures. Overview of applications of nanotechnology in microelectronics, photonics and MEMS devices.

**E E 460 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. Note: Only one of the following courses may be taken for credit: E E 460 or 561.

**E E 461 Digital Control**

★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. Note: Only one of the following courses may be taken for credit: E E 461 or 566.

**E E 462 Fundamentals of Control Systems Engineering**

★3.8 (fi 6) (second term, 3-0-3/2). Laplace transforms. Transfer function models of physical systems. First and second order systems. Stability and properties of feedback. PID controllers. Frequency domain analysis and design. Digital control. Case studies. Prerequisites: MATH 201. Note: This course may not be taken for credit if credit has already been obtained in either EE 357 or 469.

**E E 470 Electromagnetics of Waveguides**

★3.8 (fi 6) (either term, 3-0-3/2). Distributed circuits, propagation and radiation of energy. Transient and time harmonic signals in transmission lines, including impedance matching. Microwave and optical waveguides. Prerequisite: E E 315. Note: Only one of the following courses may be taken for credit: E E 316 or 470.

**E E 471 Photonics I**

★3.8 (fi 6) (either term, 3-0-3/2). Electromagnetic wave propagation at optical frequencies and approximations. Thermal and luminescent light sources, optical beams. Ray and Gaussian optics and simple optical components. Wave optics, polarization, interference, interferometric devices. Light-matter interactions. Optics of crystals; polarizers and waveplates. Photodetectors. Photonic engineering applications. Prerequisite: E E 315. Note: Only one of the following courses may be taken for credit: E E 471 or PHYS 362.

**E E 472 Photonics II**

★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 471 or PHYS 362 or consent of Instructor. Note: Only one of the following courses may be taken for credit: E E 472 or E E 596.

**E E 473 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 E E 316 or 470; or consent of Instructor. Note: Only one of the following courses may be taken for credit: E E 473 or 591.

**E E 474 Introduction to Plasma Engineering**

★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. Note: Only one of the following courses may be taken for credit: E E 474 or 583.

**E E 488 Performance of Communication Systems**

★3.8 (fi 6) (either term, 3-0-3/2). Description and analysis of random processes, stationary and cyclostationary processes and their power spectral density. Characterization of noise in electric circuits. Evaluation of output signal-to-noise ratio in baseband analog communication systems in additive white Gaussian noise. Performance of amplitude and angle modulated analog communication systems. Performance of pulse code modulation and bandpass digital communication systems. Prerequisites: E E 387 and 390. Note: Only one of the following courses may be taken for credit: E E 488 or 588.

**E E 489 Telecommunication Systems Engineering**

★3 (fi 6) (either term, 3-0-0). Telephony basics, subscriber loop plant, 2 Wire-4 Wire conversion, loss plan for echo-loss-delay. Traffic theories: Poisson, Erlang B, Engset, Erlang C, efficiency of large groups. Optimum alternate route design, network architecture, volume, stability assurance, call routing, multi-stage circuit switch design, central office functions, time-space-time and space-time-space switching. Point-to-point fibre links, optical networks. Prerequisites: E E 387 and 390. Note: Only one of the following courses may be taken for credit: E E 489 or 589.

**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 496 Nanoengineering Option Research Project Seminar**

★0.5 (fi 2) (first term, 0-1s-0). Organizational seminars for the research project in the following term.

**E E 497 Nanoengineering Option Research Project**

★3 (fi 6) (second term, 0-0-6). Engineering Physics (Nanoengineering Option) student research projects.

**E E 498 Special Topics in Electrical Engineering**

★3 (fi 6) (first term, 3-0-0). 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 Department of Electrical and Computer Engineering or other appropriate departments.

**E E 499 Special Topics in Electrical Engineering**

★3 (fi 6) (second term, 3-0-0). 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 Department of Electrical and Computer Engineering or other appropriate departments.

**Graduate Courses**

See listing of Electrical and Computer Engineering (ECE) graduate courses.

**221.113 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. Syntax, variables, statements, control structures, functions, data structures, files, pointers, memory use, searching, sorting, recursion. Focus on procedural programming using C/C++.

**221.114 Engineering, General, ENGG**

Faculty of Engineering

**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) (either 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.

## Graduate Courses

### ENGG 600 Engineering Ethics and Integrity

★0.5 (*fi 1*) (either term, 0-1s-0). The technical and professional duties and responsibilities of the engineer. Academic integrity and research ethics. The ethics of the engineering profession, technical and professional organizations. Safety. The impact of engineering decisions on society. Intellectual property. Note: Restricted to Engineering Graduate Students.

## 221.115 Engineering Management, ENG M

Department of Mechanical Engineering  
Faculty of Engineering

## Graduate Courses

### ENG M 530 Engineering Project Management

★3 (*fi 6*) (either term, 3-0-0). Introduction to project management tools, techniques, templates, and methodologies. This course examines the eight knowledge areas of the Project Management Institute (PMI) which provide an integrated approach to managing engineering projects. Prerequisites: ENGG 310 or 401 and completion of at least six academic terms, or consent of instructor.

### 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

★3.5 (*fi 6*) (either term, 3-1s-0). Advanced topics in engineering economics including operating and capital budgets, financial statement use by managers, replacement analysis, cost of capital and leasing.

### 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 666 Knowledge Management

★3 (*fi 6*) (either term, 3-0-0). Knowledge Management (KM) concepts, Knowledge Acquisition, Building & Sharing Corporate Memory, Knowledge Driven Innovation, Knowledge Capital Value, Knowledge Professionals, KM Technologies, Case Studies, Team Projects. Prerequisite/Co-requisite: approval of instructor.

### 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).

## 221.116 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.

## 221.117 English, ENGL

Department of English and Film Studies  
Faculty of Arts

**Note:** Courses in the Department of English and Film Studies 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 Writing, WRITE. Except as noted, WRITE courses may be taken as ENGL courses.

## Undergraduate Courses

### Notes

- (1) Most students will take ENGL 111, 112, 113, or 114, any of which will serve as the prerequisite to all senior English courses, or will fulfill degree requirements for faculties that require ★6 of first-year English. All four of these full year courses study selected works from a range of genres (poetry, drama, fiction or nonfiction). Students with credit in ENGL 100 or 101 may not take current ENGL 111, 112, 113, or 114. 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 111/112/113/114 requirement.
- (2) No more than ★6 in junior English, or equivalent, may be taken for credit in an undergraduate program.
- (3) Junior English courses require a substantial amount of writing in essays and tests, and devote a minimum of 30% of class time to writing instruction.
- (4) All senior courses have as prerequisite ENGL 111, 112, 113, 114 or equivalent; prerequisites for 400-level courses are ★12 of senior ENGL, ★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) Courses at the 200 level need not be tied to any one national literature or historical period.
- (6) Not all senior courses are offered in any given year.

**ENGL 104 Readings in Poetry**

★3 (*fi 6*) (either term, 3-0-0). A close study of selected modern and traditional verse to introduce 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 111 Language, Literature and Culture**

★6 (*fi 12*) (two term, 3-0-0). Studies in the literary and cultural uses of language. Not to be taken by students with ★6 credit in approved junior English.

**ENGL 112 English Literature in Historical Perspective**

★6 (*fi 12*) (two term, 3-0-0). Studies in the social and cultural history of literature in English. Not to be taken by students with ★6 credit in approved junior English.

**ENGL 113 English Literature in Global Perspective**

★6 (*fi 12*) (two term, 3-0-0). Studies in the literatures of the English-speaking world. Not to be taken by students with ★6 credit in approved junior English.

**ENGL 114 Aboriginal Literature and Culture**

★6 (*fi 12*) (two term, 3-0-0). Studies in Aboriginal knowledge, values, and identity in oral tradition, literary expression, and other cultural texts. Not to be taken by students with ★6 credit in approved junior English. Note: Sections reserved for students in the TYP Program include a 3 hour seminar component in addition to the 3 hour lecture component.

**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 208 Reading Histories: Making Books**

★3 (*fi 6*) (either term, 3-0-0). An introduction to the social and cultural history of material text, and to the critical concepts and methods key to its study, that emphasizes the relationship between the production of books and the production of culture. Prerequisite: ★6 of junior English.

**ENGL 209 Reading Histories: Making Readers**

★3 (*fi 6*) (either term, 3-0-0). An introduction to the social and cultural history of reading, and to the critical concepts and methods key to its study, that emphasizes the relationship between reading and the production of culture. Prerequisite: ★6 of junior English.

**ENGL 210 Reading Histories: Histories in Texts**

★3 (*fi 6*) (either term, 3-0-0). An introduction to the critical concepts and methods for reading literary texts historically that emphasizes the relationship between representation and history. Prerequisite: ★6 of junior English.

**ENGL 212 Introduction to the English Language**

★3 (*fi 6*) (either term, 3-0-0). Introduces the grammar of English sounds, words, and sentences as a basis for further studies in language and literature. Prerequisite: ★6 of junior English.

**ENGL 217 Textualities: Signs and Texts**

★3 (*fi 6*) (either term, 3-0-0). An introduction to theories of signification and textuality, and to the issues and debates surrounding the relationship between language systems and the production of meanings, as they bear on literary analysis. Prerequisite: ★6 credits of junior English.

**ENGL 218 Textualities: Reading and Interpretation**

★3 (*fi 6*) (either term, 3-0-0). An introduction to theories of reading and interpretation, and to the issues and debates surrounding the relationship between literary events and the reception of meanings, as they bear on literary analysis. Prerequisite: ★6 of junior English.

**ENGL 219 Textualities: Narrative Theory and Poetics**

★3 (*fi 6*) (either term, 3-0-0). An introduction to narratology and poetics, as well as to the practices of close reading and the formalist analysis of literary texts, as they bear on literary analysis. Prerequisite: ★6 of junior English.

**ENGL 220 Reading Politics: Gender and Sexuality**

★3 (*fi 6*) (either term, 3-0-0). An introduction to dynamics of gender and sexuality in literary and other cultural texts, and to the critical concepts and methods key to their study. Prerequisite: ★6 of junior English.

**ENGL 221 Reading Politics: Class and Ideology**

★3 (*fi 6*) (either term, 3-0-0). An introduction to dynamics of class and ideology

in literary and other cultural texts, and to the critical concepts and methods key to their study. Prerequisite: ★6 of junior English.

**ENGL 222 Reading Politics: Race and Ethnicity**

★3 (*fi 6*) (either term, 3-0-0). An introduction to dynamics of race and ethnicity in literary and other cultural texts, and to the critical concepts and methods key to their study. Prerequisite: ★6 of junior English.

**ENGL 223 Reading Politics: Empire and the Postcolonial**

★3 (*fi 6*) (either term, 3-0-0). An introduction to dynamics of colonization and its resistances in literary and other cultural texts, and to the critical concepts and methods key to their study. Prerequisite: ★6 of junior English.

**ENGL 224 The Literary Institution**

★3 (*fi 6*) (either term, 3-0-0). An introduction to theories of the literary institution and to the issues and debates surrounding literary criticism as a social and political practice that takes place within the horizon of history and under certain systemic constraints. Prerequisite: ★6 of junior English.

**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: ★6 of junior English.

**ENGL 300 Social and Cultural History of the English Language**

★3 (*fi 6*) (either term, 3-0-0). Studies in the historical development of the English Language. Prerequisite: ★6 of junior English. Note: not to be taken by students with credit in former ENGL 311.

**ENGL 301 Social and Cultural History of Genre**

★3 (*fi 6*) (either term, 3-0-0). Studies in the theory and practice of genre. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 302 Literary and Cultural Theories**

★3 (*fi 6*) (either term, 3-0-0). Studies in critical and theoretical currents within literary studies. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 303 Computing Technology and Culture: Cyberculture**

★3 (*fi 6*) (either term, 3-0-0). Studies in cyberculture as a theoretical concept and a literary practice. Prerequisite: ★6 of junior English.

**ENGL 304 Computing Technology and Culture: Literary Computing**

★3 (*fi 6*) (either term, 3-0-0). Studies in new media texts and the literary applications of computing. Prerequisite: ★6 of junior English.

**ENGL 305 Literature and Religion**

★3 (*fi 6*) (either term, 3-0-0). Studies in selected texts, movements, and traditions that reflect the interaction of religion with literature and culture. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 308 Aboriginal/Indigenous Literature: Intellectual Traditions**

★3 (*fi 6*) (either term, 3-0-0). Studies of the contributions of the First Nations, Métis and American Indian writers to the formation of Aboriginal/ Indigenous intellectual and community traditions. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 309 Aboriginal/Indigenous Literature: Literary Movements**

★3 (*fi 6*) (either term, 3-0-0). Studies in the literary and cultural currents within Aboriginal/Indigenous writing. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 312 Postcolonial Literature and Culture: African Writing in English**

★3 (*fi 6*) (either term, 3-0-0). Selected works from the African context. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 313 Postcolonial Literature and Culture: Caribbean Writing in English**

★3 (*fi 6*) (either term, 3-0-0). Selected works from the Caribbean context. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 314 Postcolonial Literature and Culture: Irish Writing in English**

★3 (*fi 6*) (either term, 3-0-0). Selected works from the Irish context. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 315 Postcolonial Literature and Culture: Indian Writing in English**

★3 (*fi 6*) (either term, 3-0-0). Selected works from the Indian context. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 320 Old English Language and Literature**

★6 (*fi 12*) (two term, 3-0-0). Studies in the language and literature of Anglo-Saxon England. Prerequisite: ★6 of junior English.

**ENGL 324 Medieval Literature and Culture: Chaucer**

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

**ENGL 325 Medieval Literature and Culture: Medieval Texts**

★3 (*fi 6*) (either term, 3-0-0). Selected works from the English context, 13th to 15th century. Note: not to be taken by students with credit in the former ENGL 321 or 322. Prerequisite: ★6 of junior English.



**ENGL 327 Medieval Literature and Culture: Medieval and Tudor Drama**

★3 (fi 6) (either term, 3-0-0). Selected dramatic works from the English context, 13th to 16th century. Prerequisite: ★6 of junior English.

**ENGL 336 Early Modern Literature and Culture: 16th-Century Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the English context. Prerequisite: ★6 of junior English.

**ENGL 337 Early Modern Literature and Culture: Drama**

★3 (fi 6) (either term, 3-0-0). Selected dramatic works from the English context, 16th and 17th centuries. Prerequisite: ★6 of junior English.

**ENGL 338 Early Modern Literature and Culture: Shakespeare**

★6 (fi 12) (two term, 3-0-0). Prerequisite: ★6 of junior English. Note: Not to be taken by students with credit in ENGL 239 or 339.

**ENGL 339 Early Modern Literature and Culture: Studies in Shakespeare**

★3 (fi 6) (either term, 3-0-0). Prerequisite: ★6 of junior English. Note: Not to be taken by students with credit in ENGL 338.

**ENGL 340 Early Modern Literature and Culture: 17th-Century Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the English context. Prerequisite: ★6 of junior English.

**ENGL 341 Restoration and 18th-Century Literature and Culture: Restoration and Early 18th-Century Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the British context, 1660 to 1750. Prerequisite: ★6 of junior English.

**ENGL 343 Restoration and 18th-Century Literature and Culture: Late 18th-Century Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the British context, 1740 to 1800. Prerequisite: ★6 of junior English.

**ENGL 344 Early Modern Literature and Culture: Milton**

★3 (fi 6) (either term, 3-0-0). Prerequisite: ★6 of junior English. Note: Not to be taken by students with credit in ENGL 340.

**ENGL 347 Restoration and 18th-Century Literature and Culture: Drama**

★3 (fi 6) (either term, 3-0-0). Selected dramatic works from the British context, 1660 to 1800. Prerequisite: ★6 of junior English.

**ENGL 348 Restoration and 18th-Century Literature and Culture: The Novel**

★3 (fi 6) (either term, 3-0-0). Selected prose fiction from the British context, 1660 to 1800. Prerequisite: ★6 of junior English.

**ENGL 349 19th-Century British Literature and Culture: The Novel**

★3 (fi 6) (either term, 3-0-0). Selected novels from the British context, 1800 to 1900. Prerequisite: ★6 of junior English.

**ENGL 350 19th-Century British Literature and Culture: Romantic Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the British context, 1789 to 1830. Prerequisite: ★6 of junior English. Note: Not to be taken by students with credit in ENGL 351.

**ENGL 352 19th-Century British Literature and Culture: Early Victorian Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the British context, 1830 to 1870. Prerequisite: ★6 of junior English.

**ENGL 353 19th-Century British Literature and Culture: Late Victorian Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the British context, 1870 to 1900. Prerequisite: ★6 of junior English.

**ENGL 354 Pre-20th-Century Transnational Literature and Culture**

★3 (fi 6) (either term, 3-0-0). Studies in literary and cultural currents before 1900 that resist or exceed national definition. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 355 American Literature and Culture: American Minority Literature**

★3 (fi 6) (either term, 3-0-0). Selected works by minority writers in America. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 356 American Literature and Culture: Reading American Technologies**

★3 (fi 6) (either term, 3-0-0). Studies in issues and problems of technology in works from the American context. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 357 American Literature and Culture: Reading American Ideologies**

★3 (fi 6) (either term, 3-0-0). Studies in issues and problems of ideology in works from the American context. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 358 American Literature and Culture: Early American Writing--Colonial, Revolutionary, Antebellum**

★3 (fi 6) (either term, 3-0-0). Selected works from the American context, first contact to 1865. Prerequisite: ★6 of junior English.

**ENGL 359 American Literature and Culture: Reading American Origins**

★3 (fi 6) (either term, 3-0-0). Studies in issues and problems of origination in works from the American context. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 360 American Literature and Culture: Race and Belonging in American Writing**

★3 (fi 6) (either term, 3-0-0). Studies in issues and problems of racialization in works from the American context. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 361 American Literature and Culture: The American Modern - Postbellum and Early 20th Century**

★3 (fi 6) (either term, 3-0-0). Selected works from the American context, 1865 to 1945. Prerequisite: ★6 of junior English.

**ENGL 362 American Literature and Culture: Toward the Now - Later 20th and Early 21st Century**

★3 (fi 6) (either term, 3-0-0). Selected works from the American context, 1945 to the present. Prerequisite: ★6 of junior English.

**ENGL 363 Early 20th-Century Literature and Culture: Modernism and Modernity**

★3 (fi 6) (either term, 3-0-0). Studies in high, low and late modernism, and the international avant-grade to mid-century. Note: not to be taken by students with credit in former ENGL 370. Prerequisite: ★6 of junior English.

**ENGL 364 Late 20th-Century Literature and Culture: Modernism and Modernity**

★3 (fi 6) (either term, 3-0-0). Studies in post-modernism and the international avant-garde since mid-century. Prerequisite: ★6 of junior English.

**ENGL 365 Early 20th-Century British Literature and Culture**

★3 (fi 6) (either term, 3-0-0). Selected works from the British context to mid-century. Prerequisite: ★6 of junior English. Note: not to be taken by students with credit in ENGL 370.

**ENGL 366 Late 20th-Century British Literature and Culture**

★3 (fi 6) (either term, 3-0-0). Selected works from the British context since mid-century. Prerequisite: ★6 of junior English.

**ENGL 367 Contemporary Literature and Culture**

★3 (fi 6) (either term, 3-0-0). Selected works from the contemporary context. Prerequisite: ★6 of junior English.

**ENGL 368 Early 20th-Century Literature and Culture: Drama**

★3 (fi 6) (either term, 3-0-0). Selected dramatic works in English to mid-century. Prerequisite: ★6 of junior English.

**ENGL 369 Late 20th-Century Literature and Culture: Drama**

★3 (fi 6) (either term, 3-0-0). Selected dramatic works in English since mid-century. Prerequisite: ★6 of junior English.

**ENGL 373 Canadian Literature and Culture: Writing and Colonization**

★3 (fi 6) (either term, 3-0-0). Selected works from the Canadian context, first contact to 1900. Prerequisite: ★6 of junior English. Note: not to be taken by students with credit in ENGL 371.

**ENGL 374 Canadian Literature and Culture: Early 20th-Century Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the Canadian context to mid-century. Prerequisite: ★6 of junior English. Note: Not to be taken by students with credit in ENGL 372.

**ENGL 375 Canadian Literature and Culture: Reading Canadian Cultures**

★3 (fi 6) (either term, 3-0-0). Studies in the cultural politics of representation in Canadian texts. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 376 Canadian Literature and Culture: Late 20th-Century Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the Canadian context since mid-century. Prerequisite: ★6 of junior English. Note: not taken by students with credit in ENGL 372.

**ENGL 377 Canadian Literature and Culture: Canadian Drama and Performance**

★3 (fi 6) (either term, 3-0-0). Selected works by Canadian dramatists and performance artists. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 378 Canadian Literature and Culture: Contemporary Cultural Texts**

★3 (fi 6) (either term, 3-0-0). Selected works from the contemporary Canadian context. Prerequisite: ★6 of junior English.

**ENGL 379 Canadian Literature and Culture: Canadian Minority Literature**

★3 (fi 6) (either term, 3-0-0). Selected works by minority writers in Canada. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 380 Canadian Literature and Culture: Reading the Local**

★3 (fi 6) (either term, 3-0-0). Studies in regional writing in Canada. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 384 Popular Culture: Reading Popular Texts**

★3 (fi 6) (either term, 3-0-0). Studies in the popular tradition. Content and period focus may vary. Note: not to be taken by students with credit in the former ENGL 383. Prerequisite: ★6 of junior English.

**ENGL 385 Popular Culture: Issues in Popular Culture**

★3 (fi 6) (either term, 3-0-0). The theory and practice of popular culture studies. Content and period focus may vary. Note: not to be taken by students with credit in the former ENGL 383. Prerequisite: ★6 of junior English.

**ENGL 386 Popular Culture: Working-Class Texts and Cultures**

★3 (fi 6) (either term, 3-0-0). Studies in spoken and written forms of working-class cultures. Content and period focus may vary. Note: not to be taken by students with credit in the former ENGL 383. Prerequisite: ★6 of junior English.

**ENGL 388 Children's Literature and Culture: Oral Traditions**

★3 (fi 6) (either term, 3-0-0). Studies in texts from oral traditions, their modern derivatives, and historical, critical and theoretical approaches to oral texts. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 389 Children's Literature and Culture: Print Traditions**

★3 (fi 6) (either term, 3-0-0). Studies in texts from the print traditions, including picture books, historical, critical and theoretical approaches to print texts. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 390 Women's Writing: Writing by Women pre-1900**

★3 (fi 6) (either term, 3-0-0). Selected works by women writers in English before the twentieth century. Content and period focus may vary. Prerequisite: ★6 of junior English. Note: Not to be taken by students with credit in former ENGL 390.

**ENGL 391 Women's Writing: Writing by Women Post-1900**

★3 (fi 6) (either term, 3-0-0). Selected works by women writers in English since 1900. Content and period focus may vary. Prerequisite: ★6 of junior English. Note: not to be taken by students with credit in ENGL 391 Writing by Women II.

**ENGL 392 Queer Writing**

★3 (fi 6) (either term, 3-0-0). Studies in the movements, literatures, and cultures of sexual minorities, including gay, lesbian, bisexual and transgendered people. Content and period focus may vary. Prerequisite: ★6 of junior English.

**ENGL 401 Studies in Authors**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 402 Studies in Genres**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 405 Studies in Poetry**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 406 Studies in Prose**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 407 Studies in Texts and Cultures**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 408 Studies in Comparative Literatures in English**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 409 Studies in Literary Periods and Cultural Movements**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 424 Studies in the History of Books**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 425 Studies in the History of Reading**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 426 Studies in Literary and Cultural Histories**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 430 Studies in Theory**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of

senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 465 Studies in Gender and Sexualities**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 466 Studies in Class and Ideology**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 467 Studies in Race and Ethnicity**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 481 Studies in Empire and the Postcolonial**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 482 Studies in Drama and Performance**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 483 Studies in Popular Culture**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 484 Studies in Literature and Film**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 486 Studies in Computer Technologies and Culture**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 487 Studies in Children's Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**ENGL 489 Studies in Emergent Cultures and Minority Texts**

★3 (fi 6) (either term, 3-0-0). Prerequisites: ★6 of junior English and ★12 of senior-level English, ★6 of which must be at the 300 level. Note: variable content course which may be repeated.

**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 569 Studies in Literary Criticism**

★3 (fi 6) (either term, 3-0-0).

**ENGL 577 Studies in the English Language**

★3 (fi 6) (either 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 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 673 Studies in Victorian Literature**

★3 (fi 6) (either 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 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).

**221.118 English as a Second Language, ESL**

Faculty of Extension

**Undergraduate Courses****ESL 140 English for Academic Purposes 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. Classes are scheduled three times a week for the entire term, except in Spring and Summer terms when classes are scheduled four times a week. Prerequisites: Minimum scores of 70 on TOEFL iBT (530 on TOEFL paper-based) or appropriate cut-off scores for other standardized academic proficiency tests recognized by the Office of the Registrar and Student Awards. Offered four times a year.

**ESL 145 English for Academic Purposes 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. Classes are scheduled three times a week for the entire term, except in Spring and Summer terms when classes are scheduled four times a week. Prerequisite: ESL 140. Offered four times a year.

**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. Scheduled four times a year.

**221.119 Enseignement pratique, ENPRQ**

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****221.119.1 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). Préalable(s): EDUC 200 ou l'équivalent et une note de C+ ou plus dans le test d'admission aux stages. Note: 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). Préalable(s): EDUC 200 ou l'équivalent et une note de C+ ou plus dans le test d'admission aux stages. Note: Ce cours occasionne des frais additionnels (voir \$22.2.3).

**221.119.2 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). Préalable(s): Stage I. Note: 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). Préalable(s): Stage I. Note: Ce cours occasionne des frais additionnels (voir \$22.2.3).

**221.120 Entomology (Biological Sciences), ENT**Department of Biological Sciences  
Faculty of Science**Notes**

- (1) See the following sections for listings of other Biological Sciences courses: Bioinformatics (BIOIN); Biology (BIOL); Botany (BOT); Genetic (GENET); Microbiology (MICRB); Zoology (ZOOL).
- (2) See the following sections for listings of other relevant courses: Interdisciplinary Studies (INT D); Immunology and Infection (IMIN); Marine Science (MA SC); Paleontology (PALEO).

**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 302 Insect Development**

★3 (fi 6) (second term, 3-0-3). Reproduction, embryonic, and postembryonic development. Prerequisite: BIOL 201 or CELL 201. ZOOL 250 is recommended.

**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 380 Forest Entomology

★3 (fi 6) (second term, 3-0-3). Characteristics of major North American forest insects. Roles of insects in forest ecosystems. Roles of insects in forest ecosystems. Insects destructive to wood and wood products. Principles of control. Prerequisite: BIOL 208. Course jointly offered by the Departments of Biological Sciences and Renewable Resources. Note: Credit may not be obtained for both ENT 208 and 308.

### 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.

### ENT 427 Terrestrial Arthropod Diversity

★3 (fi 6) (first term, 2-0-6). Evolution, distribution, and classification of terrestrial arthropods, with emphasis on hexapods. Students practice identification using museum collections, build keys and databases, and make a substantive collection of regional insects. Prerequisite: Any one of ENT 207, 220, 380, or ZOOL 351; BIOL 335 is a useful corequisite. May not be taken for credit if credit already obtained in ZOOL 427.

## 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, 541, 550, 555, 560; CHEM 361, 363, 461; CELL 300, 301; IMIN 371, 372, 452; INT D 421; MA SC 400, 401, 402, 410, 412, 420, 425, 430, 437, 440, 445, 470, 480; MIMI 405, 415, 520; NEURO 472; NU FS 363; PALEO 318, 319; PHARM 601.

### 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.

## 221.121 Environmental and Conservation Sciences, ENCS

Departments of Agricultural, Food and Nutritional Science;  
Renewable Resources; and Rural Economy  
Faculty of Agriculture, Forestry, and Home Economics

**Note:** See also Agricultural and Resource Economics (AREC), 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.

## Undergraduate Courses

### ENCS 201 Wildlife Biodiversity and Ecology

★3 (fi 6) (second term, 3-0-3). Introduction to animals in the context of conservation, interactions with people, and roles in natural ecosystems. Labs provide a survey of North American animal life, both vertebrate and invertebrate, with emphasis on recognition of higher taxa and on hierarchical classification. Field trip. Requires payment of additional miscellaneous fees (see §22.2.3). [Renewable Resources]

### ENCS 207 Environmental and Conservation Sciences Field School

★3 (fi 6) (Spring/Summer, 3 weeks). Combines the concepts, theories and practices of environmental and conservation sciences in an off-campus field experience. Field skill proficiency in planning, measurement, analysis and reporting is emphasized for biophysical and socioeconomic components of the environment. Prerequisites: ★45 university credit and REN R 110. Requires payment of additional

miscellaneous fees (see §22.2.3). Consent of instructor is required for students outside the Faculty of Agriculture, Forestry, and Home Economics. [Renewable Resources] Credit may not be obtained in this course if previous credit has been obtained for ENCS 308.

### ENCS 260 History and Fundamentals of Environmental Protection and Conservation

★3 (fi 6) (second term, 3-0-0). A philosophical and sociological exploration of historical and contemporary perspectives on human-environmental relationships and their implications. Explores these perspectives in a framework of critical thinking and through case studies. [Renewable Resources]

### ENCS 271 The Politics of Food and Natural Resources

★3 (fi 6) (either term, 3-0-0). Students will gain a sociological understanding of contemporary Canadian politics in the food and natural resources sectors. Examination of the nature of political organizations and policymaking in Canada; the particular roles played by the state, the "public," and certain sectors of civil society, including social movements, industry organizations, labour unions, scientific organizations, and rural and aboriginal peoples. Contemporary case studies may include climate change and energy dependence, genetic engineering in agribusiness, the organic food products movement, mining in the circumpolar north, forestry expansion in the boreal region and cod management in the Atlantic fisheries. No prerequisites. [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 required, sampling strategies, how data should be collected and analyzed and ultimately communicated to pass legal and scientific scrutiny. Prerequisites: ENCS 201, PL SC 221; ENCS 203 or REN R 250; SOILS 210; ECON 102; STAT 151; ENCS 207; or equivalents. Consent of instructor required for students outside the Faculty of Agriculture, Forestry, and Home Economics. [Renewable Resources]

### ENCS 352 Natural Resource and Environmental Law

★3 (fi 6) (first 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, 3-0-0). Global soil and water resources and their current rates of degradation. The main processes of degradation (erosion, loss of organic matter, salinization, pollution) and their causes. Consequences of degradation and conservation of resources through improved land use practices. Prerequisites: SOILS 210; and ENCS 203 or REN R 250. [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 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. Graduate students may not register for credit (see AFNS 506). Credit will only be given for one of

AFNS 506 and ENCS 406. Prerequisite: one of ENCS 356, REN R 120 or BOT 210; ENCS 356 strongly recommended. [Agricultural, Food and Nutritional Science]

**O 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]

**L 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. Prerequisites: At least ★75 university credit with emphasis on biophysical courses, and SOILS 430 recommended. Requires payment of additional miscellaneous fees (see §22.2.3). [Renewable Resources]

**L 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]

**L ENCS 462 Protected Areas Planning and Management**

★3 (fi 6) (first term, 3-0-0). Principles and practices of planning and management of protected areas, including national and provincial parks and forest recreational systems; wilderness management; the integration of biological and sociological criteria in protected areas planning and management. Prerequisites: ENCS 260 and 364. [Renewable Resources]

**L 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]

**L 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. Requires payment of additional miscellaneous fees (see §22.2.3). [Renewable Resources]

**L ENCS 467 Methods of Environmental Interpretation and Communication**

★3 (fi 6) (second term, 3-0-0). Methods of communicating environmentally relevant subject matter to a broad audience. Includes discussion of guided walks, in-person presentations, brochures, visitor centers, exhibits, signs, magazine articles, books, video production, media relations skills, websites and ecotourism. [Renewable Resources]

**O 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. Graduate students may not register for credit (see AFNS 572). Credit will only be given for one of AFNS 572 and ENCS 471. Prerequisite: ENCS 356. ENCS 406 strongly recommended. [Agricultural, Food and Nutritional Science]

**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 or AREC 365, ECON 365 or INT D 369. [Rural Economy]

**L ENCS 474 Utilization of Wildlife Resources**

★3 (fi 6) (first term, 3-0-1). 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]

**L 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]

**L 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.

**L 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 673 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 or AREC 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]

## 221.122 Environmental Engineering, ENV E

Department of Civil and Environmental Engineering  
Faculty of Engineering

The following courses were renumbered effective 2001-02:

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 and Physical Processes**

★3.8 (fi 6) (either term, 3-0-3/2). Theory of chemical and physical processes in environmental engineering. Chemical kinetics and equilibrium, reactor design, sedimentation, filtration, adsorption, precipitation and gas transfer. Prerequisite: ENV E 220.

**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. Prerequisites: ENV E 222 or MIN E 310.

**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 220.

**ENV E 323 Principles of Air Quality Management and Control**

★3 (fi 6) (first term, 3-0-0). A first course on air quality and air pollution, dealing with: types of gaseous and particulate pollutants and their sources, effects of air pollution on man, vegetation, and materials, indoor air pollution, sampling and analysis of air pollutants, air pollution meteorology and dispersion, control techniques for gaseous and particulate pollutants, and air quality management aspects. Prerequisite: ENV E 222.

**ENV E 324 Biological Processes**

★3.8 (fi 6) (second term, 3-0-3/2). The application of biological processes in the treatment of water, wastewater and solid wastes. Includes development of microorganism growth and substrate use models, treatment process theory, pre-design of unit processes and operations. Lectures cover aerobic, facultative and anaerobic processes in suspended and attached growth system. Prerequisite: ENV E 222.

**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 and CIV E 270. Corequisite: CIV E 290.

**ENV E 400 Advanced Environmental Engineering I**

★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 401 Advanced Environmental Engineering II**

★3 (fi 6) (either term, 3-0-0). Application of advanced treatment processes in air, water and solid systems. Will include development of membrane biological reactor designs, advanced oxidation processes, soil/sediment and hazardous waste remediation techniques, odour reduction and leachate treatment processes. Prerequisite: ENV E 324.

**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 324 or CIV E 321, CIV E 331; Co-requisite ENV E 320 or CIV E 433.

**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 324 and 351.

**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: CIV E 381 and ENV E 351.

**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 324, 421 and either 400 or 401.

**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.

## 221.123 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 F or A+ 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 or 423.

## 221.124 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.

## 221.125 Etudes canadiennes, ETCAN

Faculté Saint-Jean

### Cours de 1er cycle

**O 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.

**O 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. Préalable(s): ★6 à sigle ETCAN ou à contenu canadien dans les disciplines suivantes: économie, histoire, science politique, sociologie; ou l'approbation du Vice-doyen aux affaires académiques.

**O 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. Préalable(s): SC PO 220 ou l'approbation 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. Préalable(s): ★6 à contenu canadien de niveau 300 ou 400, dont au moins ★3 à sigle ETCAN.

### Cours de 2e cycle

**ETCAN 500 Méthodologies interdisciplinaire et multidisciplinaire**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction à l'interdisciplinarité et à la multidisciplinarité comme méthodologies de recherche. Possibilités et limites de telles approches méthodologiques. Critiques des méthodologies de recherche du point de vue de l'interdisciplinarité et de la multidisciplinarité et application à des exemples canadiens.

**ETCAN 501 Méthodologies de recherche**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Préparation à la définition de la problématique de recherche choisie. Les étudiants seront invités à définir dans ce séminaire leur problème de recherche et à illustrer leur choix par des exemples tirés de la société canadienne en fonction d'une approche interdisciplinaire ou multidisciplinaire.

**ETCAN 504 Enjeux canadiens**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse critique des enjeux portant sur le Canada. Culture et institutions en relation avec les contextes historiques et sociaux. Relations et conflits socio-politiques. Relations de sexe/genre, race, langue et classes. Nationalisme, régionalisme et mondialisation. Relations économie, société et Etat.

**ETCAN 508 Séminaire d'Etudes canadiennes I**

★3 (fi 6) (l'un ou l'autre semestre, 0-3s-0). Le contenu varie d'une année à l'autre. Les sujets sont annoncés avant la période d'inscription.

**ETCAN 510 Séminaire d'Etudes canadiennes II**

★3 (fi 6) (l'un ou l'autre semestre, 0-3s-0). Le contenu varie d'une année à l'autre. Les sujets sont annoncés avant la période d'inscription.

**ETCAN 512 Les grandes oeuvres en Etudes canadiennes**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude de textes fondateurs dans les différentes disciplines des Etudes canadiennes. Contexte historique et impact sur les études sur le Canada.

**ETCAN 513 Thèmes choisis en études canadiennes I**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0).

**ETCAN 515 Thèmes choisis en études canadiennes II**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0).

**221.126 Etudes classiques, ECLSS**

Faculté Saint-Jean

**Cours de 1er cycle****O 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.

**O 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.

**O 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.

**221.127 Etudes de la religion, ET RE**

Faculté Saint-Jean

**Cours de 1er cycle****O 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 judaïque, chrétienne et islamique.

**O 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

**O 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.

**221.128 Etudes interdisciplinaires, ETIN**

Faculté Saint-Jean

**Cours de 1er cycle****O 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.

**221.129 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 24) (Spring/Summer, unassigned).

**EXCH 811 Exchange Program**

★0 (fi 12) (either term or 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).

**221.130 Extension, EXT**

Faculty of Extension

**Graduate Courses**

For more information, email [mact@ualberta.ca](mailto:mact@ualberta.ca) or visit our website at [www.extension.ualberta.ca/mact](http://www.extension.ualberta.ca/mact) or phone (780) 492-1501.

**EXT 501 Applied Research in Communications and Technology**

★3 (fi 6) (Spring/Summer, 3-0-0). Introduction to quantitative and qualitative approaches for conducting research into technology-mediated communications. Guides students in their topic selection and development for their culminating project. Restricted to MACT students, normally in the second year. Offered during the Spring Institute.

**EXT 502 Human Communication**

★3 (fi 6) (Spring/Summer, 3-0-0). Survey of classic theories and emerging perspectives in communication studies. Emphasizes the development of skills for analyzing and understanding communication in context. Restricted to MACT students, normally in the first year. Offered during the Spring Institute.

**EXT 503 Group Transactions**

★3 (fi 6) (Spring/Summer, 3-0-0). Examination of communication and interaction in small groups, with particular focus on workplace teams. Topics include the dynamics of group formation, phases of group development, emergent group structures, the nature and impacts of conflict, and leadership in groups. Restricted to MACT students, normally in the first year. Offered during the Spring Institute.

**EXT 504 Organizational Communications**

★3 (fi 6) (either 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) (first term, 3-0-0). Covers historical issues associated with the rise of selected communications technologies and considers the management issues of competitive strategy, organizational structure, and software/hardware selection as these may be applied to communications technologies in the organization. Restricted to MACT students, normally in the first year. Offered by asynchronous Internet communication.

**EXT 506 Using and Managing Communications Networks**

★3 (fi 6) (Spring/Summer, 3-0-0). Examines the concept of a network as both an organizational form and an organizational resource. Explores the decision-making options that are created by the establishment of organizational networks. Restricted to MACT students, normally in the second year. Offered during the Spring Institute.

**EXT 507 Knowledge Management and Communications Technologies**

★3 (fi 6) (first term, 3-0-0). Explores managing knowledge from an organizational perspective. Covers knowledge-management technologies and tools, as well as emerging issues and trends. Restricted to MACT students, normally in the second year. Offered 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 Electronic Commerce**

★3 (fi 6) (either term, unassigned). An introduction to the concepts, technologies, and functions of electronic commerce. Considers the organizational implications of electronic commerce as a broad shift in how transactions are completed in the marketplace. Offered 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.

**L EXT 597 Topics in Communications and Technology**

★3 (fi 6) (either term, unassigned). An elective course on selected topics in communications and technology. Offered by asynchronous Internet communication.

**EXT 598 Directed Study in Communications and Technology**

★3 (fi 6) (either term, unassigned). An elective course to be completed under the direction of a faculty member. Requires the approval of the Director. Offered by asynchronous Internet communication.

## 221.131 Famille, FA MI

Faculté Saint-Jean

### Cours de 1er cycle

**L 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).

## 221.132 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 and DMED 511.
- (2) The Department of Family Medicine is responsible for the Human Sexuality component of MED 526 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.

**F MED 556 Urban Family Medicine Student Internship**

★3 (fi 6) (either term, 3 weeks). Student Internship in Urban Family Medicine for students registered in the MD Program.

## 221.133 Film Studies, FS

Department of English and Film Studies  
Faculty of Arts

### Undergraduate Courses

**O FS 200 Introduction to Global Film History**

★6 (fi 12) (two term, 3-0-3). A survey of major developments in the history of global film aesthetics and production. 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 FS 200 and 205 are available for Fine Arts credit. Formerly FMS 200.

**O FS 205 Introduction to Film Analysis**

★3 (fi 6) (either term, 3-0-3). Introduction to basic formal concepts in and theoretical approaches to film analysis. 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 FS 200 and FS 205 are available for Fine Arts credit. Formerly FMS 205.

**L FS 297 Special Topics in Film Studies**

★3 (fi 6) (either term, 0-3s-0). Formerly FMS 297.

**L FS 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: FS 200 or 205 or consent of Department. Formerly FMS 301.

**L FS 309 Québécois Cinema**

★3 (fi 6) (either term, 3-0-3). History and aesthetic developments from the 1960s to present. Pre- or corequisite FS 200 or 205 or consent of Department. Formerly FMS 309.

**L FS 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: FS 200 or 205 or consent of Department. Formerly FMS 310.

**L FS 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: FS 200 or 205 or consent of Department. Formerly FMS 311.

**L FS 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: FS 200 or 205 or consent of Department. Formerly FMS 312.

**L FS 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: FS 200 or 205 or consent of Department. Formerly FMS 314.

**L FS 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: FS 200 or 205 or consent of Department. Formerly FMS 330.

**L FS 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: FS 200 or 205 or consent of Department. Formerly INT D 401. Formerly FMS 333.

**L FS 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: FS 200 or 205 or 210 or SOC 344 or consent of Department. Formerly FMS 353.

**L FS 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: FS 200 or 205 or consent of Department. Formerly FMS 361.

**L FS 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 cinema, 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: FS 200 or 205 or consent of Department. Formerly FMS 362.

**L FS 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: FS 200 or 205 or consent of Department. Formerly FMS 364.

**L FS 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: FS 200 or 205 or consent of Program. Formerly FMS 371.

**L FS 397 Special Topics in Film Studies**

★3 (fi 6) (either term, 0-3s-0).

**L FS 399 Special Topics in Film Studies**

★3 (fi 6) (either term, 3-0-3). Pre- or corequisite: FS 200 or 205 or consent of Department. Formerly FMS 399.

**L FS 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, Mitty, and Cavell. Prerequisites: FS 200 or 205 and one FS 300-level course, or consent of Department. Formerly INT D 401. Formerly FMS 401.

**L FS 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: FS 200 or 205 and one FS 300-level course, or consent of Department. Formerly FMS 402.

#### **FS 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: FS 200 or 205 and ★3 in FS or consent of Department. Formerly FMS 403.

#### **FS 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: FS 200 or 205 or FS 210 or SOC 344 and one FS 300-level course or consent of Department. Formerly FMS 406.

#### **FS 409 Special Topics in Film Theory**

★3 (*fi 6*) (either term, 3-0-3). Prerequisites: FS 200 or 205, or FS 210 or SOC 344 and one FS 300-level course or consent of Department. Formerly FMS 409.

#### **FS 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: FS 200 or 205 and one FS 300-level course or consent of Department. Formerly FMS 410.

#### **FS 412 Topics in Film Studies**

★3 (*fi 6*) (either term, variable). A seminar-based examination of specialized topics in film. Prerequisites: FS 200 or 205 and one FS 300-level course or consent of Department. Formerly FMS 412.

#### **FS 414 Topics in Film and Gender**

★3 (*fi 6*) (either term, 3-0-3). Seminar-based examination of specialized topics in film and gender. Note: Variable content course which may be repeated. Formerly FMS 414.

#### **FS 480 Directed Reading in Film**

★3-6 (*variable*) (variable, 3-0-0). Prerequisite: consent of Department. Formerly FMS 480.

#### **FS 497 Special Topics in Film Studies**

★3 (*fi 6*) (either term, 0-3s-0). Formerly FMS 497.

## Graduate Courses

#### **FS 510 Selected Topics in Film**

★3 (*fi 6*) (either term, 3-0-0).

#### **FS 521 Directed Reading Course I**

★3 (*fi 6*) (either term, 3-0-0).

#### **FS 522 Directed Reading Course II**

★3 (*fi 6*) (either term, 3-0-0).

## 221.134 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 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. Students may not receive credit for both FIN 414 and ECON 341.

#### **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 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 480 Honours Essay in Finance**

★3 (*fi 6*) (second term, 3-0-0). Preparation of the honours essay required for students in the Finance Honours program. Prerequisite: consent of the Department.

#### **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.

#### 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-a-vis a negotiated market, and the economics of money management will be studied. Prerequisite: FIN 502.

#### 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 635 Venture Capital

★3 (*fi 6*) (either term, 3-0-0). Covers the theory and practice of venture capital financing of entrepreneurial firms. Topics to be discussed include, but are not limited to, the following areas: venture capital fundraising (labour-sponsored venture capital corporations, limited partnerships and corporate venture capital) characteristics of entrepreneurial ventures (including agency problems, firm valuation) at different stages of development (seed, start-up, expansion, mezzanine, buyout, turnaround), the structure of venture capital financial contracts (staging, syndication, forms of finance), restrictive covenants, investment duration, and venture capital exits (IPOs, acquisitions, secondary sales, buybacks, write-offs). Prerequisite: FIN 501.

#### 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 701 Advanced Seminar in Finance I

★3 (*fi 6*) (either term, 3-0-0). Provides an introduction to theoretical and empirical work in asset pricing and market microstructure. Topics covered include market efficiency, time varying expected returns and volatility, tests of asset pricing models, and models and analysis of price formation. Prerequisite: Open to doctoral students in the School of Business, the Department of Economics and the Program of Mathematical Finance. For all other students, written permission of instructor required. Approval of the Business PhD Program Director is also required for non-PhD students.

#### FIN 702 Advanced Seminar in Finance II

★3 (*fi 6*) (either term, 3-0-0). Introduces students to theoretical and empirical research in corporate finance. Potential topics include contracting theory, the theory of the firm, corporate governance, capital structure, and dividend policy. Prerequisite: Open to doctoral students in the School of Business, the Department

of Economics and the Program of Mathematical Finance. For all other students, written permission of instructor required. Approval of the Business PhD Program Director is also required for non-PhD students.

#### FIN 703 Advanced Seminar in Finance III

★3 (*fi 6*) (either term, 3-0-0). Provides advanced mathematical coverage of important topics in finance. Potential topics include continuous-time models of asset pricing and portfolio choice, pricing and hedging of derivative securities, and the applications of contingent claim pricing models to the valuation of real assets and corporate liabilities. Prerequisite: Open to doctoral students in the School of Business, the Department of Economics and the Program of Mathematical Finance. For all other students, written permission of instructor required. Approval of the Business PhD Program Director is also required for non-PhD students.

#### 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). This seminar is a single-term course offered over two terms. Members of the faculty and visiting speakers will often present their research. Advanced students are expected to present original work related to their doctoral theses. Other students will discuss and critique papers on the frontiers of current research. Pre- or corequisites: FIN 701, 702, and 703. Open to doctoral students in the School of Business, the Department of Economics and the Program of Mathematical Finance. For all other students, written permission of instructor required. Approval of the Business PhD Program Director is also required for non-PhD students.

#### 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.

## 221.135 Fondements de l'éducation, FO ED

Faculté Saint-Jean

#### Notes:

- (1) FR ED courses are restricted to Open Studies students; these courses are not to be taken by students registered in a degree program.  
Les cours FR ED sont réservés aux étudiants libres; ces cours ne sont pas accessibles aux étudiants inscrits pour crédit dans un programme.
- (2) Laboratory components require access to a computer and the Internet.  
Les laboratoires nécessitent l'accès à un ordinateur et à l'Internet.
- (3) These courses may include a section offered at a distance; see §220 Alternative Delivery Courses.  
Ces cours peuvent comprendre une section à distance; voir §220 Alternative Delivery Courses.

### 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. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FO ED 205 ou 206.

#### 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. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FO ED 452, 455 ou 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 milieu 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. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour CU ME 357, FO ED 350 ou 401.

## 221.136 Forest Economics, FOREC

Department of Rural Economy  
Faculty of Agriculture, Forestry, and Home Economics

**Note:** See also Agricultural and Resource Economics (AREC), Environmental and Conservation Sciences (ENCS), Interdisciplinary Undergraduate Courses (INT D), and Rural Sociology (R SOC) listings for related courses.

### Undergraduate Courses

**Note:** See also INT D 369 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.

#### **O** FOREC 345 Economics of Forestry

★3 (*fi 6*) (first 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.

#### **O** FOREC 473 Forest Policy

★3 (*fi 6*) (first 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 AREC 365 or INT D 369. (Offered jointly by the Departments of Renewable Resources and Rural Economy.) [Rural Economy]

### Graduate Courses

**Note:** Undergraduate course may be taken for credit by Graduate Students in Rural Economy: FOREC 473.

#### **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. Prerequisite: consent of Department Chair.

#### **O** 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 AREC 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]

## 221.137 Forest Engineering, FOREN

Department of Renewable Resources  
Faculty of Agriculture, Forestry, and Home Economics

### Undergraduate Courses

#### **L** 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.

#### **L** 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.

### 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.

## 221.138 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.

### Undergraduate Courses

#### **L** 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.

#### **L** 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).

#### **L** 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 or 114, and ★3 of statistics. Corequisite: REN R 110. Requires payment of additional miscellaneous fees (see §22.2.3).

#### **FOR 302 Forest Measurements Field Camp**

★1 (*fi 2*) (Spring/Summer, variable). Up to 10 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 and must be taken before their fourth year. Prerequisites: FOR 101, (FOR 120 or REN R 120), FOR 210, (FOREN 201 or REN R 201), and second- or third-year standing. Requires payment of additional miscellaneous fees (see §22.2.3)

#### **FOR 303 Forest Engineering Field Camp**

★1 (*fi 2*) (Spring/Summer, variable). Up to 10 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 302 in the same year as FOR 303 and FOR 304 and must be taken before their fourth year. Prerequisites: FOR 101, (FOR 120 or REN R 120), FOR 210, (FOREN 201 or REN R 201), and second- or third-year standing. Requires payment of additional miscellaneous fees (see §22.2.3)

#### **FOR 304 Forest Ecology Field Camp**

★1 (*fi 2*) (Spring/Summer, variable). Up to 10 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 303, and must be taken before their fourth year. Prerequisites: FOR 101, REN R 120, FOR 210, (FOREN 201 or REN R 201), SOILS 210, and second- or third-year standing. Requires payment of additional miscellaneous fees (see §22.2.3).

#### **L** 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. [Renewable Resources]

#### **L** 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.

**L 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.

**L FOR 340 Forest Fire Management**

★3 (fi 6) (second term, 3-0-0). Fire thermodynamics, 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 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.

**L 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.

**L 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.

**L 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.

**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)).

**L FOR 501 Special Topics in Forestry**

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

**L 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.

**L FOR 503 Problems in Silviculture**

★3 (fi 6) (either term, 0-3s-0). Individual study. Directed study in silviculture. Prerequisite: consent of Instructor.

**L 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.

**L 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.

**L 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.

**L 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.

**L FOR 555 Problems in Forest Hydrology**

★3 (fi 6) (second 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.

**L 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.

**221.139 Français, FRANC**

Faculté Saint-Jean

**Cours de 1er cycle****O FRANC 101 Communication orale et écrite**

★6 (fi 12) (Printemps/Été, 3-0-3). Étude 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. Note: 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.

**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.

**O FRANC 140 Communication orale et écrite**

★6 (fi 12) (Printemps/Été, 3-0-3). Étude 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. Préalable(s): French 30 ou l'équivalent, ou FRANC 101 ou FREN 100 ou 111/112. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 150 ou 211/212.

**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.

**O 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. Préalable(s): FRANC 221 ou l'approbation 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.

**L 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. Préalable(s): FRANC 221 ou l'approbation 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 110 et 111 ou FREN 150 ou 211/212.

**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 210 et 211 ou en FREN 252 ou 298.

**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. Préalable(s): FRANC 221 ou l'approbation du Vice-doyen aux affaires académiques.

**FRANC 325 Littérature française du XVIIe siècle**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude d'oeuvres représentatives du XVIIe siècle. Préalable(s): FRANC 235.

**FRANC 326 Littérature française du XVIIIe siècle**

★3 (fi 6) (deuxième semestre, 3-0-0). Evolution des genres littéraires illustrée par des textes du XVIIIe siècle. Préalable(s): FRANC 235. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 360.

**FRANC 327 Littérature française du XIXe 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 XIXe siècle. Préalable(s): FRANC 235. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 380.

**FRANC 328 Littérature française du XXe siècle**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude d'oeuvres représentatives de la littérature moderne. Introduction à la littérature contemporaine. Préalable(s): 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.

**FRANC 331 Etude avancée du français et de l'anglais I**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude comparative des systèmes français et anglais sur les plans syntaxique, morphologique, lexical et sémantique. Introduction à la traduction. Préalable(s): FRANC 221 ou l'équivalent. Note: 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). Etude comparative des systèmes français et anglais sur les plans syntaxique, morphologique, lexical et sémantique. Introduction à la traduction, suite. Préalable(s): FRANC 331 ou l'équivalent. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 351 ou 352.

**FRANC 400 Initiation à la traduction anglais-français**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des fondements de la traduction appliquée à des textes généraux. Travaux pratiques, méthode et théorie. Préalable(s) : ★6 parmi FRANC 322, 331, 332, 475, LINGQ 300. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour FREN 454. Note: Ce cours exige une bonne connaissance du français et de l'anglais.

**FRANC 410 Traduction du théâtre et de la littérature au Canada**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Initiation à la traduction littéraire et théâtrale. Étude des répertoires traduits d'une langue officielle à l'autre au Canada. Préalable(s) : ★6 de niveau 300 ou 400 parmi CA FR, FRANC, LINGQ. Note: Ce cours exige une bonne connaissance du français et de l'anglais.

**FRANC 450 Choix de sujet**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude d'un sujet au choix en langue française. Préalable(s): FRANC 322 et ★3 de niveau 300 en langue française ou l'approbation du Vice-doyen aux affaires académiques.

**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. Préalable(s): 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. Préalable(s): FRANC 322 ou l'équivalent.

**FRANC 480 Choix de sujet**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Préalable(s): FRANC 322 et ★3 en littérature ou en langue 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. Préalable(s): FRANC 225, 235 et ★3 en littérature de niveau 300. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour 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. Préalable(s): FRANC 235 et ★6 en 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.

## 221.140 French for Educators / Français pour éducateurs, FR ED

Faculté Saint-Jean

**Notes:**

- FR ED courses are restricted to teachers holding a teaching certificate and are not to be taken by students pursuing an undergraduate degree. Les cours FR ED sont réservés aux personnes possédant déjà un certificat d'enseignement et ne sont pas accessibles aux personnes voulant obtenir un diplôme de premier cycle.
- FR ED courses are not prerequisites for FRANC or FREN courses. Les cours FR ED ne sont pas des préalables pour les cours FRANC ou FREN.
- FR ED courses are not substitutes for FRANC or FREN courses which are structured to assure language proficiency development in a sequential manner. Les cours FR ED ne remplacent pas les cours FRANC ou FREN qui sont structurés de manière à assurer un développement linguistique séquentiel.
- Laboratory components require access to a computer and the Internet. Les laboratoires nécessitent l'accès à un ordinateur et à l'Internet.
- These courses may include a section offered at distance; see 22.2.4 Alternative Delivery Courses. Ces cours peuvent comprendre une section distance; voir 22.2.4 Alternative Delivery Courses.

### Cours de 1er cycle

**FR ED 101 French for French as a Second Language (FSL) Teachers I**

★3 (fi 6) (either term, 0-4L-0). Specifically designed for elementary, junior and senior high French as a second language teachers who have a basic knowledge of French. Teachers will have numerous opportunities to use the vocabulary and idiomatic expressions related to the themes outlined in the general and specific learner expectations of Alberta Learning's Program of Study for the beginner levels of French as a second language. Vocabulary development and conversational practice will be centered on these themes and those found in the learning resources approved by Alberta Learning. Language laboratory sessions will concentrate on improving one's diction and pronunciation. Little English will be spoken in this course and will be limited to brief explanations. May contain alternate delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section.

**FR ED 102 French for French as a Second Language (FSL) Teachers II**

★3 (fi 6) (either term, 0-4L-0). Specifically designed for junior and senior high French as a second language teachers who have reached the intermediate proficiency level. Teachers will have numerous opportunities to use the vocabulary and idiomatic expressions related to the themes outlined in the general and specific learner expectations of Alberta Learning's Program of Study for French as a second language intermediate levels. Vocabulary development and conversational practice will be centered on these themes and those found in the learning resources approved by Alberta Learning. Language laboratory sessions will concentrate on improving one's diction and pronunciation. Little English will be spoken in this course and will be limited to brief explanations. May contain alternate delivery sections; Refer to the Fees Payment Guide in the University Regulations and Information for Students section.

**FR ED 103 French for French as a Second Language (FSL) Teachers III**

★3 (fi 6) (either term, 0-4L-0). Specifically designed for senior high French as a second language teachers who have reached a high intermediate or advanced proficiency level. Teachers will have numerous opportunities to use the vocabulary and idiomatic expressions related to the themes outlined in the

general and specific learner expectations of Alberta Learning's French as a Second language Program of Study at the senior high level. Vocabulary development and conversational practice will be centered on these themes and those found in the learning resources approved by Alberta Learning. Language laboratory sessions will concentrate on improving one's diction and pronunciation. Little English will be spoken in this course and will be limited to brief explanations. May contain alternate delivery sections; Refer to the Fees Payment Guide in the University Regulations and Information for Students section.

#### FR ED 201 Le français de la salle de classe

★3 (fi 6) (l'un ou l'autre semestre, 0-4L-0). Ce cours est destiné aux enseignants et enseignantes de français langue seconde qui maîtrisent suffisamment bien le français mais qui veulent acquérir une plus grande spontanéité. L'accent sera mis sur l'acquisition des termes et tournures propres à l'enseignement au quotidien. Par des mises en situation et des jeux de rôles, on pratiquera le vocabulaire spécialisé de la gestion de classe et de l'animation pédagogique. Les sessions de laboratoire de langue permettront aux étudiants et aux étudiantes d'améliorer leur diction et leur prononciation. Ce cours peut comprendre une section à distance; veuillez consulter le Fees Payment Guide dans la section University Regulations and Information for Students de l'annuaire.

#### FR ED 210 Apprentissage du français par l'exploration du monde virtuel

★3 (fi 6) (l'un ou l'autre semestre, 0-4L-0). Fondé sur la prémisse que les besoins de formation en français varient grandement d'un apprenant à l'autre, ce cours vise à permettre à l'apprenant de se familiariser avec les ressources pédagogiques disponibles à l'Internet par le biais de visites guidées. Le cours couvrira la grammaire, le vocabulaire, la rédaction et la révision de textes, la compréhension auditive et la culture. De plus, le format du cours permettra aux apprenants de se développer une banque de liens qui leur sera utile au-delà du cours, que ce soit pour leur propre apprentissage ou pour l'enseignement. Le cours est approprié aux apprenants de niveau intermédiaire ou avancé. Ce cours peut comprendre une section à distance; veuillez consulter le Fees Payment Guide dans la section University Regulations and Information for Students.

#### FR ED 301 Rédaction professionnelle avancée

★3 (fi 6) (l'un ou l'autre semestre, 0-4L-0). Ce cours est destiné aux personnes qui maîtrisent déjà la grammaire française. L'accent sera mis sur la rédaction de textes professionnels répondant à des buts spécifiques de communication (rapport annuel, lettre aux parents, chapitre de manuel, etc.). La pratique intense de l'écriture permettra à l'apprenant et l'apprenante d'approfondir ses connaissances du français écrit. Le clavardage ponctuel et continu entre l'apprenant / l'apprenante et l'animateur / l'animatrice permettra d'individualiser l'enseignement / apprentissage de la langue. Ce cours peut comprendre une section à distance; veuillez consulter le Fees Payment Guide dans la section University Regulations and Information for Students.

## 221.141 French Language and Literature, FREN

Department of Modern Languages and Cultural 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 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. Students seeking to fulfill their Language Other than English requirement may begin at any one appropriate level, but must take the full ★6 in one language.
- (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) FREN 311, 312, 313, 314, 315, 316 pursue mastery of the language and introduce students to the study of texts (e.g., literary, journalistic, cinematographic). The double focus allows for applied language development while providing an in-depth introduction to the study of major cultural texts.

### Undergraduate Courses

#### L FREN 111 Beginners' French I

★3 (fi 6) (either term, 5-0-0). Designed for students with little or no previous background in French. Covers material in matriculation-level French and allows students to proceed into the study of French at the University level. Note: not to be taken by students with credit in FREN 100, or with native or near native proficiency, or with French 30 or its equivalents in Canada and other countries.

#### L FREN 112 Beginners' French II

★3 (fi 6) (either term, 5-0-0). Prerequisite: FREN 111 or consent of Department. Note: not to be taken by students with credit in FREN 100, or with native or near native proficiency, or with French 30 or its equivalents in Canada and other countries.

#### L FREN 155 French Reading Comprehension I

★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 to be taken by students with credit in FREN 150, 211 or 212. Note: Will not meet the requirements in a principal area of concentration.

#### L FREN 156 French Reading Comprehension II

★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 to be taken by students with credit in FREN 150, 211 or 212. Note: Will not meet the requirements in a principal area of concentration.

#### O FREN 211 Intermediate French I

★3 (fi 6) (either term, 5-0-0). Spoken and written French, including grammar, composition, and literature. Prerequisite: French 30 (or equivalent) or FREN 112 or consent of Department. Note: not to be taken by students with credit in FREN 150.

#### O FREN 212 Intermediate French II

★3 (fi 6) (either term, 5-0-0). Prerequisite: FREN 211 or consent of Department. Note: not to be taken by students with credit in FREN 150.

#### O FREN 221 The Internet in French

★3 (fi 6) (either term, 3-0-0). Electronic resources for learning French: vocabulary and conventions needed to construct websites in French. Taught in English. Does not fulfill any Faculty of Arts Language Other than English requirement. Prerequisite: FREN 212.

#### O FREN 233 French Cultural Moments

★3 (fi 6) (either term, 3-0-0). Uses the study of various intellectual, cultural, and historical events, to provide students with a window onto the French world. Prerequisite: FREN 212 or consent of Department. Offered in La Rochelle, France only.

#### L FREN 254 Introduction to Translation Theory and Practice: French-English-French

★3 (fi 6) (either term, 3-0-0). Prerequisite: FREN 212. Note: not to be taken by students with credit in FREN 253. This course can also be applied to the MLCS Certificate in Translation Studies.

#### O FREN 297 Advanced French I

★3 (fi 6) (either term, 3-0-2). Designed to improve the student's command of French through intensive oral practice and advanced written exercises. Prerequisite: FREN 212 or consent of Department. Note: not to be taken by students with credit in FREN 251, 252 or FRANC 165, 210.

#### O FREN 298 Advanced French II

★3 (fi 6) (either term, 3-0-2). Emphasis on the improvement of writing and speaking skills by means of numerous compositions based on texts read and discussed in class. Prerequisite: FREN 297 or consent of Department. Note: not to be taken by students with credit in either FREN 252 or FRANC 166, 211.

#### O FREN 301 Introduction to French Literary Studies

★3 (fi 6) (either term, 3-0-0). Tools necessary to conduct literary analyses and essay writing. Prerequisite: FREN 298.

#### O FREN 310 Composition, Style and Expression

★3 (fi 6) (either term, 3-0-0). Prerequisite: FREN 298 or consent of Department. Not to be taken by students with credit in FREN 352.

#### O FREN 311 Mystery, Myth, Miracle

★3 (fi 6) (either term, 3-0-0). Mythology, the supernatural, superstition as cultural and literary phenomena in the French-speaking world. Prerequisite: FREN 298.

#### O FREN 312 Colonialism and Postcolonialism

★3 (fi 6) (either term, 3-0-0). Francophone cultural texts from a post/colonial perspective, the socio-historical contexts of their production and their importance for definitions of cultural identity. Prerequisite: FREN 298.

#### O FREN 313 Passions/Obsessions

★3 (fi 6) (either term, 3-0-0). Two loosely connected themes that go back to the very origins of French as a language and continue to shape cultural expression in it. Prerequisite: FREN 298.

#### FREN 314 Beauty/Aesthetics

★3 (fi 6) (either term, 3-0-0). Addresses either a given period or a particular facet of aesthetics. Prerequisite: FREN 298.

#### O FREN 315 Cultural Representations of Food

★3 (fi 6) (either term, 3-0-0). Functions and manifestations of the food paradigm in Francophone cinematographic and narrative texts. Prerequisite: FREN 298.

#### O FREN 316 Belonging (Migration and Identity)

★3 (fi 6) (either term, 3-0-0). Place and community; identity, belonging, exile. Prerequisite: FREN 298.

**O FREN 354 Translation: French into English**

★3 (fi 6) (either term, 3-0-0). Prerequisite: FREN 254 or consent of Department. Note: not to be taken by students with credit in FREN 353. This course can also be applied to the MLCS Certificate in Translation Studies.

**FREN 355 Composition, Style and Expression in Context**

★3 (fi 6) (either term, 3-0-0). Prerequisite: FREN 298 or 299. Note: not to be taken by students with credit in FREN 352.

**O FREN 371 Language and Francophone Societies**

★3 (fi 6) (either term, 3-0-0). Overview of the French language as it has evolved chronologically and geographically. Prerequisite: FREN 298.

**O FREN 372 French Phonetics**

★3 (fi 6) (either term, 3-0-0). Overview of the pronunciation of Standard French. Prerequisite: FREN 297 or consent of Department.

**FREN 445 Contemporary Cinema in French**

★3 (fi 6) (either term, 3-0-0). Emphasis on the representation and evolution of society in French cinema of the last 20 years. Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**FREN 454 Translation: English into French**

★3 (fi 6) (either term, 3-0-0). Prerequisite: FREN 354 or consent of Department. Note: This course can also be applied to the MLCS Certificate in Translation Studies.

**FREN 462 Topics in Medieval and Early Modern Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**FREN 463 Topics in Nineteenth-Century Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**FREN 464 Topics in Twentieth-Century Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**FREN 465 Caribbean Culture**

★3 (fi 6) (either term, 3-0-0). Colonialism, identity, diaspora and cultural diversity in French Caribbean literature, films, and music. Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**FREN 466 The Maghreb**

★3 (fi 6) (either term, 3-0-0). Colonialism, identity, diaspora and cultural diversity in contemporary French Maghrebi literature. Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**FREN 467 Women Writing in French**

★3 (fi 6) (either term, 3-0-0). Texts written in various Francophone parts of the world from different periods. Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**FREN 468 Topics in Quebec/French Canadian Literature**

★3 (fi 6) (either term, 3-0-0). Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**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 consent of Department.

**FREN 476 Linguistics Applied to French**

★3 (fi 6) (either term, 3-0-0). Selected topics in French linguistics that enhance the acquisition of French as a Second Language. Prerequisite: FREN 371 or 372 or consent of Department.

**FREN 480 Children's Literature in French**

★3 (fi 6) (either term, 3-0-0). Prerequisites: FREN 301 and one of FREN 311, 312, 313, 314, 315, 316.

**FREN 495 Honors Thesis**

★3 (fi 6) (either term, 0-3s-0).

**FREN 499 Special Topics**

★3 (fi 6) (either term, 3-0-0).

**Graduate Courses****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 545 Contemporary Cinema in French**

★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 563 Topics in Nineteenth-Century Literature**

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

**FREN 564 Topics in Twentieth-Century Literature**

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

**FREN 565 Caribbean Culture**

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

**FREN 566 The Maghreb**

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

**FREN 567 Women Writing in French**

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

**FREN 568 Topics in Québec/French Canadian Literature**

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

**FREN 573 Canadian French**

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

**FREN 576 Linguistics Applied to French**

★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 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 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).

**221.142 Genetics (Biological Sciences), GENET**

Department of Biological Sciences  
Faculty of Science

**Notes**

- See the following sections for listings of other Biological Sciences courses: Bioinformatics (BIOIN); Biology (BIOL); Botany (BOT); Entomology (ENT); Microbiology (MICRB); Zoology (ZOOZ).
- See the following sections for listings of other relevant courses: Interdisciplinary Studies (INT D); Immunology and Infection (IMIN); Marine Science (MA SC); Paleontology (PALEO).

**Undergraduate Courses****O 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.

**O 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.

**O 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.

**O 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.

**O 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.

**O GENET 364 Plant Genetics**

★3 (*fi 6*) (second term, 3-0-0). 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.

**O 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.

**O 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 acid sequences. cDNA and genomic DNA cloning and screening. In vitro mutagenesis. Prerequisite: BIOL 207; BIOCH 200 or 205 or BIOCH 220; GENET 270 recommended.

**O 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.

**O 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.

**O 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.

**O GENET 420 Research Techniques in Molecular Genetics**

★6 (*fi 12*) (either term, 0-0-12). A laboratory course teaching modern techniques in molecular biology with emphasis on the analysis of gene expression in eukaryotic systems. Prerequisites: GENET 301 and 390. GENET 375 and/or BIOL 391 recommended. Enrolment is limited and registration is by permission of the Department. Designed for undergraduate and graduate students in programs with molecular biological orientation. May not be taken concurrently with BIOL 391.

**O GENET 422 Current Topics in Development Genetics**

★3 (*fi 6*) (second term, 1-2s-0). Discussion of selected topics in developmental biology with an emphasis on the genetic mechanisms utilized to uncover developmental pathways. Critical reading of the primary literature, research proposal-based writing, and classroom presentation skills will be used as methods of evaluation. Prerequisites: BOT 303 or ENT 302 or GENET 412, or ZOOL 303 and consent of the Department. Offered in alternate years.

## 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, 541, 550, 555, 560; CHEM 361, 363, 461; CELL 300, 301; IMIN 371, 372, 452; INT D 421; MA SC 400, 401, 402, 410, 412, 420, 425, 430, 437, 440, 445, 470, 480; MMI 405, 415, 520; NEURO 472; 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, 0-2s-0).

## 221.143 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. See the Miscellaneous Fees section in the calendar.

### Undergraduate Courses

**O GEOPH 110 Introduction to Geophysics**

★3 (*fi 6*) (either 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; plate tectonics, continental drift, geomagnetism and sea-floor spreading; atmospheric and space physics, and Sun-Earth interactions; discussion of geophysics as a career. Prerequisites: Physics 20 and Mathematics 30.

**O GEOPH 210 Physics of the Earth**

★3 (*fi 6*) (either term, 3-0-0). Evolution of the Earth; evolution of life and mass extinctions; paleoclimatic reconstruction and climatic variations, variations in the Earth's orbital parameters and sea-level changes; magnetic fields and rock magnetism; global geodynamics, mantle convection and the geodynamo; geohazards, volcanism, earthquakes and magnetic storms. Prerequisites: one of MATH 101, 115, 118; one of PHYS 126, 146, EN PH 131.

**O 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 126, 146 or EN PH 131. Note: Not available to students in Honors or Specialization Physics or Geophysics.

**O 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 126, 146 or EN PH 131. Note: Not available to students in Honors or Specialization Physics or Geophysics.

**O 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.

**O 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.

**O 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.

**O 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.

**O 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.

**O 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.

**O 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.

**O 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. Miscellaneous fees will apply for this course. See Miscellaneous Fees section in the Calendar.

**O 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. Miscellaneous fees will apply for this course. See Miscellaneous Fees section in the Calendar.

**O GEOPH 440 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. Pre- or corequisite: MATH 337. Prerequisites: PHYS 281, GEOPH 110.

## Graduate Courses

The following undergraduate courses may be taken for credit by graduate students: GEOPH 421, 424, 426, 431, 437, 438.

**O 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.

**O GEOPH 612 Paleomagnetism**

★3 (fi 6) (either term, 3-0-0).

**O GEOPH 620 Rock Physics**

★3 (fi 6) (either term, 3-0-0).

**GEOPH 623 Inverse Problems in Geophysics**

★3 (fi 6) (either term, 3-0-0).

**GEOPH 624 Theoretical Seismology**

★3 (fi 6) (either term, 3-0-0).

**GEOPH 625 Physics of Macroscopic Mixtures**

★3 (fi 6) (either term, 3-0-0).

## 221.144 German, GERM

Department of Modern Languages and Cultural 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 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. Students seeking to fulfill their Language Other than English requirement may begin at any one appropriate level, but must take the full ★6 in one language.
- (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

**O GERM 111 Beginners' German I**

★3 (fi 6) (either term, 5-0-0). Designed to lead to mastery of spoken and written German. Note: not to be taken by students with credit in GERM 100, or with native or near native proficiency, or with German 30 or its equivalents in Canada and other countries.

**O GERM 112 Beginners' German II**

★3 (fi 6) (either term, 5-0-0). Prerequisite: GERM 111 or consent of Department. Note: not to be taken by students with credit in GERM 100, or with native or near native proficiency, or with German 30 or its equivalents in Canada and other countries.

**O 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 to be taken by students with credit in German 30, or GERM 100, 101, 111 or 112. Will not meet the requirements in a principal area of concentration.

**O GERM 211 Intermediate German I**

★3 (fi 6) (either term, 5-0-0). Designed to develop ability in speaking, reading and writing German, using modern short stories, cultural readers and audiovisual aids. Prerequisite: German 30 (or equivalent) or GERM 112 or consent of Department. Note: not to be taken by students with credit in GERM 150.

**O GERM 212 Intermediate German II**

★3 (fi 6) (either term, 5-0-0). Prerequisite: GERM 211 or consent of Department. Note: not to be taken by students with credit in GERM 150.

**O 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. Prerequisite: German 30, GERM 100, 101, 112, 165 or their equivalents. Will not meet the requirements in a principal area of concentration.

**O 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.

**O GERM 303 Advanced German I**

★3 (fi 6) (either term, 3-0-0). Conversation and writing through films, news items, short stories and plays. Prerequisite: GERM 212 or consent of Department. Note: not to be taken by students with credit in GERM 301.

**O GERM 304 Advanced German II**

★3 (fi 6) (either term, 3-0-0). Prerequisite: GERM 303 or consent of Department. Note: not to be taken by students with credit in GERM 301.

**GERM 306 Introduction to German Linguistics: Phonetics and 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 212 or consent of Department. Note: This course will not fulfil the Language other than English requirement.

**GERM 309 Introduction to German Linguistics: Morphology, Syntax, and Semantics**

★3 (fi 6) (either term, 3-0-0). Prerequisite: GERM 212 or consent of Department.

Not to be taken by students with credit in GERM 307 or 308. Note: this course will not fulfill the Language other than English requirement of the BA.

### **GERM 316 Introduction to German Applied Linguistics**

★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 212 or consent of Department.

### **GERM 317 Practical Aspects of German Applied Linguistics**

★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 212 or consent of Department.

### **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 212 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 212 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). 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 212 or consent of the Department.

### **GERM 352 Introduction to German Literary and Cultural Studies II**

★3 (fi 6) (either term, 3-0-0). Deals with highlights of German literary and cultural development on the basis of textual examples from German Classical Weimar to the present. Prerequisites: GERM 212 or consent of Department.

### **GERM 402 Advanced German Composition, Conversation, and Translation**

★3 (fi 6) (either term, 3-0-0). Prerequisite: GERM 304 or consent of Department. Not to be taken by students with credit in GERM 442. Note: This course can also be applied to the MLCS Certificate in Translation Studies.

### **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 303 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 304 or consent of Department. Note: not to be taken by students with credit in GERM 311 or 312.

### **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 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 Second Language Acquisition: German**

★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 Sociolinguistics**

★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 441 Introduction to 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 304 or consent of Department. Note: This course can also be applied to the MLCS Certificate in Translation Studies.

### **GERM 443 Advanced Translation: German into English**

★3 (fi 6) (either term, 3-0-0). Theories, methods, and strategies of advanced translation. Prerequisite: GERM 441 or consent of Department. Note: This course can also be applied to the MLCS Certificate in Translation Studies.

### **GERM 444 Exercises in Translation: English into German**

★3 (fi 6) (either term, 3-0-0). Theory and practice of translation of texts in a variety of genres. Prerequisite: GERM 304. Note: not to be taken by students with credit in GERM 442. This course can also be applied to the MLCS Certificate in Translation Studies.

### **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.

### **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.

### **GERM 480 Studies in German Prose**

★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.

### **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 491 Teaching German in the Post-Secondary Classroom**

★3 (fi 6) (either term, 3-0-0). A German applied linguistics course for senior undergraduate and graduate-level students in German who are considering a career in post-secondary German studies. It focuses on the theories, strategies, and different aspects of teaching German as a foreign language at the post-secondary level. The course differs from other language-teaching courses by focusing specifically on German and by addressing the needs and practices of post-secondary specialists. Prerequisite: GERM 304 or consent of Department.

### **GERM 492 German Discourse Analysis**

★3 (fi 6) (either term, 3-0-0). Theories and methodologies of analyzing German texts from a linguistic perspective. Prerequisite: GERM 304 or consent of Department.

### **GERM 495 Honors Thesis**

★3 (fi 6) (either term, 0-3s-0).

### **GERM 499 Special Topics**

★3 (fi 6) (either term, 3-0-0).

## Graduate Courses

### **GERM 514 German Dialects**

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

### **GERM 518 Second Language Acquisition: German**

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

### **GERM 519 German Sociolinguistics**

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

### **GERM 591 Teaching German in the Post-Secondary Classroom**

★3 (fi 6) (either term, 3-0-0). A German applied linguistics course for senior undergraduate and graduate-level students in German who are considering a career in post-secondary German studies. Focuses on the theories, strategies, and different aspects of teaching German as a foreign language at the post-secondary level. The course differs from other language-teaching courses by focusing specifically on German and by addressing the needs and practices of post-secondary specialists. Prerequisite: consent of Department.

### **GERM 592 German Discourse Analysis**

★3 (fi 6) (either term, 3-0-0). Theories and methodologies of analyzing German texts from a linguistic perspective. Prerequisite: consent of Department.

### **GERM 599 Directed Reading**

★3 (fi 6) (either term, 3-0-0).

### **GERM 660 Studies in a Genre**

★3 (fi 6) (either term, 3-0-0).

### **GERM 670 Women in German Literature**

★3 (fi 6) (either term, 3-0-0).

### **GERM 675 Studies in German Drama I**

★3 (fi 6) (either term, 3-0-0).

### **GERM 676 Studies in German Drama II**

★3 (fi 6) (either term, 3-0-0).

**GERM 680 Studies in German Prose**

★3 (fi 6) (either term, 3-0-0).

**GERM 685 Studies in German Literature I**

★3 (fi 6) (either term, 3-0-0).

**GERM 686 Studies in German Literature II**

★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).

**221.145 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****O GREEK 101 Beginners' Greek I**

★3 (fi 6) (either term, 3-0-1). Elements of Classical Greek grammar and the reading of simple texts. Not open to students with credit in matriculation-level Greek.

**O 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.

**O 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 102 or consent of Department.

**O 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.

**L GREEK 470 Greek Historians**

★3 (fi 6) (either term, 3-0-0).

**L GREEK 475 Greek Drama**

★3 (fi 6) (either term, 3-0-0).

**L GREEK 477 Greek Prose Authors**

★3 (fi 6) (either term, 3-0-0).

**L 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.

**L GREEK 481 Greek Epic**

★3 (fi 6) (either term, 3-0-0).

**L 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 599 Supervised Reading**

★3 (fi 6) (either term, 3-0-0).

**GREEK 699 Conference Course**

★3 (fi 6) (either term, 3-0-0).

**221.146 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****O 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.

**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.

**HE ED 221 Behavioural Medicine**

★3 (fi 6) (either term, 3-0-0). Focuses on the role of physical activity in the secondary and tertiary prevention of disease, as well as in recovery and rehabilitation following disease treatments, and in the on-going management of chronic disease and illness. Specific psychological and health outcomes of physical activity that are associated with particular disease states and along various illness/wellness trajectories will be examined. Prerequisites: HE ED 110, PEDS 101 and 103 (formerly PEDS 102).

**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. Prerequisites: PEDS 200 and 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 well-being. 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.

**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.

**221.147 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. May contain

alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

#### 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. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

#### HPS 507 Public Policy and Health Promotion

★3 (*fi 6*) (either term, 0-3s-0). Examines the formation, implementation, and impact of health policy, with a specific emphasis on health promotion. Designed to ground the student in the structures and processes associated with public policy, and to facilitate the critical multi-disciplinary evaluation of selected health-related incidents and issues. While emphasis is placed on the Canadian context, case examples and general readings come from a variety of international jurisdictions. Prerequisite: HPS 501 or consent of instructor.

#### 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 focus on people taking collective action to influence change. Comprehensive strategies for promoting health are examined and analyzed by example, framed by "empowerment" education, creating supportive environments, strengthening community action and advocating for healthy policies. Learners explore questions and challenges in applying health promotion principles, concepts and theories to practice at the community level. The value of democratic approaches to decision-making is an underlying premise for this course. Note: Pre-or corequisite: HPS 501. 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. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

#### HPS 603 Qualitative and Community-Based Approaches in Health Research

★3 (*fi 9*) (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. Pre or corequisite: HPS 503 or consent of instructor. Note: Credit may not be obtained for both HECOL 603 and HPS 603.

#### HPS 606 Current Topics in Health Promotion

★3 (*fi 6*) (either term, variable). Discussion and presentations based on current topics to provide senior master's candidates and doctoral students with advanced preparation in the social, cultural, and behavioural influences on the health of populations and individuals. Prerequisite: consent of Department.

#### HPS 618 Diversity and Health in Families and Communities

★3 (*fi 9*) (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, health promotion, and ethical issues will be examined within a framework of cultural diversity. Pre and corequisite: HPS 501 or consent of instructor. Note: Credit may not be obtained for both HECOL 618 and HPS 618.

#### 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. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

## 221.148 Histoire, HISTE

Faculté Saint-Jean

### Cours de 1er cycle

#### **O** HISTE 120 Histoire du monde depuis le XVIIIe siècle

★6 (*fi 12*) (aux deux semestres, 3-0-0). Cours de base du BA de 4 ans.

#### **O** HISTE 260 Introduction à l'étude de l'histoire du Canada de 1713 à 1867

★3 (*fi 6*) (premier semestre, 3-0-0). Ce cours est conçu pour servir de base aux cours de niveau supérieur en histoire canadienne, l'accent étant mis sur le Canada d'expression anglaise, ses relations aux autres groupes (Français, Autochtones et les groupes de la diaspora multiculturelle), la situation des femmes au Canada, l'émigration et l'immigration.

#### **O** HISTE 261 Introduction à l'étude de l'histoire du Canada de 1867 à nos jours

★3 (*fi 6*) (deuxième semestre, 3-0-0). Ce cours est conçu pour servir de base aux cours de niveau supérieur en histoire canadienne et constitue la suite de HISTE 260. Préalable: HISTE 260.

#### **O** 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.

#### **O** HISTE 475 Thèmes d'histoire du Canada français au XXe siècle

★3 (*fi 6*) (l'un ou l'autre semestre, 0-3s-0). Plus particulièrement l'histoire de la francophonie hors-Québec. Préalable(s): ★6 en histoire du Canada.

## 221.149 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 475, and 498, STS 200, 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 enroll in 400-level courses are expected to have at least ★12 in History, including ★6 at the 200 or 300 level (HIST 190 may be substituted for ★3), with an average of at least 2.3. If they do not, they must obtain written permission from the instructor prior to their registration.
- (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.

### 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.

#### HIST 113 War and Peace in World History

★3 (*fi 6*) (either term, 3-0-0). How and why people have fought each other in the past and the consequences of those wars; efforts to prevent or contain wars from Lysistrata to the UN Security Council; international prosecution of war criminals.

**HIST 114 The History of the World in the Last 10 Years**

★3 (fi 6) (either term, 3-0-0). Global historical developments over the last 10 years with emphasis on the interaction of states and peoples.

**HIST 115 Technology and History**

★3 (fi 6) (either term, 3-0-0). The role of technology in historical developments around the world.

**HIST 116 The Emergence of the Atlantic World**

★3 (fi 6) (either term, 3-0-0). The history and legacies of the transatlantic slave trade that linked Europe, Africa, and the Americas, emphasizing economic, political, social and cultural ramifications.

**HIST 117 Islam and Globalization, c.800-1800**

★3 (fi 6) (either term, 3-0-0). Islam as a force shaping cultural, economic and political systems during early phases of globalization.

**HIST 118 Sexualities and Gender in History**

★3 (fi 6) (either term, 3-0-0). The shifting configurations and understandings of sexuality and gender. Emphasizes the links between these personal realms and wider political and social dynamics.

**HIST 120 World History Since the 18th Century**

★6 (fi 12) (two term, 3-0-0). Core course for the four-year BA.

**HIST 190 Research Skills and Tools**

★3 (fi 6) (either term, 3-0-0). Designed for prospective history students. 30% of the class will be devoted to developing reading and writing skills. Includes an introduction to the basic concepts of historical inquiry.

**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.

**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.

**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.

**HIST 209 Early Modern Europe**

★3 (fi 6) (either term, 3-0-0). The Renaissance to the Enlightenment.

**HIST 210 Europe in the 19th and 20th Centuries**

★3 (fi 6) (either term, 3-0-0).

**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.

**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.

**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.

**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.

**HIST 241 Colonial Latin America**

★3 (fi 6) (either term, 3-0-0). Survey of Latin American history to 1810.

**HIST 242 Modern Latin America**

★3 (fi 6) (either term, 3-0-0). Survey of Latin American history since 1810.

**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.

**HIST 245 Islamic Belief Systems in Africa**

★3 (fi 6) (either term, 3-0-0). Traces the historical evolution of Islam throughout the continent.

**HIST 246 Africa from Medieval to Modern Times**

★3 (fi 6) (either term, 3-0-0). African history to the 19th century.

**HIST 247 Africa: From Colonialism to Self-Rule**

★3 (fi 6) (either term, 3-0-0). African history since the 19th century.

**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.

**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.

**HIST 260 Pre-Confederation Canada**

★3 (fi 6) (either term, 3-0-0).

**HIST 261 Post-Confederation Canada**

★3 (fi 6) (either term, 3-0-0).

**HIST 270 The History of Science, Technology and Medicine: Sources in the History of Science**

★3 (fi 6) (either term, 0-3s-0). The history of science through an analysis of various primary sources. Registration priority will be given to students in Honors, Majors or Minors in History.

**HIST 271 Social and Economic History**

★3 (fi 6) (either term, 0-3s-0). Investigates the perspectives and methodologies developed for studying societies and economies of the past. Registration priority will be given to students in Honors, Majors or Minors in History.

**HIST 272 Religion in History**

★3 (fi 6) (either term, 0-3s-0). A study of a religious tradition(s), its teachings and rituals, along with its function in a specific historical setting, including its role in conditioning and reflecting a particular society and culture. Registration priority will be given to students in Honors, Majors or Minors in History.

**HIST 273 Cultural Studies in History**

★3 (fi 6) (either term, 0-3s-0). Introduction to the study of culture as a concept and as a historical factor, and to cultural studies as a discipline with particular historical and theoretical roots. Registration priority will be given to students in Honors, Majors or Minors in History.

**HIST 274 Gender in History**

★3 (fi 6) (either term, 0-3s-0). Examination of gender as a useful tool for historical analysis. Registration priority will be given to students in Honors, Majors or Minors in History.

**HIST 275 Political History**

★3 (fi 6) (either term, 0-3s-0). An introduction to the traditions, techniques, sources, methods and reasons for studying political history. Registration priority will be given to students in Honors, Majors or Minors in History.

**HIST 276 International Affairs and History**

★3 (fi 6) (either term, 0-3s-0). An introduction to the traditions, techniques, sources, methods and reasons for studying International Affairs. Registration priority will be given to students in Honors, Majors or Minors in History.

**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.

**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.

**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.

**HIST 287 The Chinese in Canada and Canadians in China**

★3 (fi 6) (either term, 3-0-0). The history of the Chinese in Canada since the 1850s, and Canada's cultural and social relations with China, Hong Kong and Taiwan, through historical and literary sources, media and film.

**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.

**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.

**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.

**HIST 296 World War Two**

★3 (fi 6) (either term, 3-0-0). Emphasis on social and political aspects.

**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.

**HIST 300 Topics in European History**

★3 (fi 6) (either term, 3-0-0).

**HIST 301 Early Medieval Europe 338-1050**

★3 (fi 6) (either term, 3-0-0).

**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.

**O HIST 312 Foundations of East European History**

★3 (fi 6) (either term, 3-0-0). The ethnic, religious, social, and political factors which shaped the development of the peoples of Eastern Europe from the Middle Ages through the Age of Enlightenment. Intended as background to the later histories of the Balkans, 'Central Europe', and Ukraine.

**O HIST 316 The Ukrainian National Idea**

★3 (fi 6) (either term, 3-0-0). The Ukrainian national revival in the Russian empire and Habsburg monarchy; collapse of the empires and struggles to establish Ukrainian statehood.

**O HIST 317 Ukraine Since 1920**

★3 (fi 6) (either term, 3-0-0). The Soviet Ukrainian Republic, Ukrainian lands in Central Europe during the interwar period, independent Ukraine.

**O 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.

**O HIST 319 Modern 'Central Europe'**

★3 (fi 6) (either term, 3-0-0). What is now Poland, Hungary, the Czech Republic, and Slovakia from the Napoleonic Wars to the present. Note: Not open to students with credit in HIST 313.

**O HIST 321 Modern Balkans**

★3 (fi 6) (either term, 3-0-0). Southeastern Europe (extending from Romania to Greece), from Serbian and Greek revolutions to the present. Note: Not open to students with credit in HIST 314.

**O 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.

**O 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.

**O 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 Chronistic History (the books of 1-2 Chronicles in the Hebrew Bible) in their ancient near eastern context.

**O HIST 325 History of Domestic Technology**

★3 (fi 6) (either term, 3-0-0).

**O 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).

**O HIST 327 History of Modern Ireland**

★3 (fi 6) (either term, 3-0-0). Encompasses events in Ireland from the Act of Union in 1800 to the present day. As a history with an abundant mixture of tragedy and triumph, the course will investigate the unfolding of Ireland's story over the modern period in its political, social, economic and cultural dimensions.

**O 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.

**L 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.

**O 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).

**O 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).

**O 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.

**O 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.

**O 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.

**O HIST 339 The Second British Empire and the Commonwealth Experience in the 19th and 20th Century**

★3 (fi 6) (either term, 3-0-0).

**O HIST 340 Topics in British History**

★3 (fi 6) (either term, 3-0-0).

**O HIST 341 Land and Labor in Latin America**

★3 (fi 6) (either term, 3-0-0). Prerequisite: HIST 241/242 or consent of Department.

**O 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.

**O 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.

**O 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.

**O 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.

**O HIST 347 Topics in African History**

★3 (fi 6) (either term, 3-0-0).

**O 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.

**O 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.

**O 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 358 History of the Canadian and Circumpolar Arctic**

★3 (fi 6) (either term, 3-0-0). The Canadian Arctic in Circumpolar (including Scandinavian and Russian/Soviet) perspective over the course of the period of contact by Europeans with Native peoples (sixteenth century to present).

**O HIST 360 Topics in Canadian History**

★3 (fi 6) (either term, 3-0-0).

**L 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.

**O 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.

**O HIST 363 History of Canadian External Relations**

★3 (fi 6) (either term, 3-0-0).

**O HIST 364 History of Social Welfare in Canada**

★3 (fi 6) (either term, 3-0-0).

**O 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.

**O 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.

**O 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.

**O 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.

**O 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.

**O 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.

**O 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 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.

**HIST 389 Topics in Historical Methodology and Theory**

★3 (fi 6) (either term, 0-3s-0). Selected key issues regarding historical method and theory. Fulfills ★3 of the History prerequisite for admission to 400-level seminars. Prerequisite: HIST 190 or 290. Cannot be taken concurrently with HIST 500 or by students with credit in HIST 500. Registration priority will be given to students in Honors, Majors or Minors in History.

**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.

**L 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.

**L 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 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 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 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).

**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).

**L HIST 460 Topics in Canadian History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 461 Topics in History of Immigrant and Ethnic Women in Canada**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 464 Topics in the History of the Canadian West**

★6 (fi 12) (two term, 0-3s-0).

**L HIST 467 Topics in Alberta History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 468 Topics in the History of Ethnic Settlement**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 469 Topics in the Political and Constitutional History of Canada**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 470 Topics in Canadian Social History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 474 Topics in the History of French Canada**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 478 Topics in the History of the Canadian North**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 480 Topics in Japanese History**

★3 (fi 6) (either term, 0-3s-0). Prerequisite: A course in Asian history or consent of Department.

**L HIST 481 Topics in Chinese History**

★3 (fi 6) (either term, 0-3s-0). Prerequisite: A course in Asian history or consent of Department.

**L 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 486 Topics in the History of Technology**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 490 Topics in British Empire and Commonwealth History**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 492 Topics in History and Theory**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 493 War and Society in the Modern World**

★3 (fi 6) (either term, 0-3s-0).

**L HIST 494 Topics in Comparative History**

★3 (fi 6) (either term, 0-3s-0).

**L 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 497 History of Women and Health**

★3 (fi 6) (either term, 0-3s-0). This seminar examines the multi-cultural history of women as health practitioners, patients, and health activists in North America. Not open to students who have successfully completed WST 497.

**HIST 498 Directed Study**

★3 (fi 6) (either term, 0-3s-0).

**HIST 500 Methodology and 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 614 Topics in the History of Later Medieval and Early Modern Europe**

★3 (fi 6) (either term, 0-3s-0). A reading knowledge of at least one of the following languages is required: Latin, German, French, Dutch or Italian.

**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 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 653 Topics in U.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 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 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 680 Topics in East Asian History**

★3 (fi 6) (either term, 3-0-0).

**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 697 Topics in the History of Technology**

★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).

**221.150 Human Ecology, HECOL**

Department of Human Ecology  
Faculty of Agriculture, Forestry, and Home Economics

**Undergraduate Courses****O HECOL 100 Introduction to Principles and Practice in Human Ecology**

★3 (*fi 6*) (either term, 3-0-0). An introductory course that provides a foundation in the body of knowledge that constitutes the field of human ecology. The history, philosophy, theoretical approaches and scope of the field are explored and skills that foster effective professional practice are discussed.

**HECOL 150 The World of 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 and community well-being. The development of visual literacy and creative thinking skills are emphasized and explored in both lecture and studio.

**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.

**O HECOL 200 Introduction to Community Studies**

★3 (*fi 6*) (either term, 3-0-0). Interdisciplinary introduction to community diversity from a human ecological perspective. Addresses various definitions, theories and models of community, as well as factors contributing to healthy, inclusive communities. Community development and community organizing are key themes, including communities as settings for situating programs, capacity-building initiatives, coalition building, strategies and policies for just and sustainable communities. Examples from both northern and southern regions.

**O 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.

**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.

**O 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.

**O 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.

**O HECOL 213 Introduction to Social Welfare**

★3 (*fi 6*) (either term, 3-0-0). Taught by the Faculty of Social Work, University of Calgary where it is also available as SOWK 201. Designed to create an environment in which students can begin to understand social welfare in its broadest terms. The purpose is to enable students to critically examine their beliefs, values and feelings in relation to the society in which they are members and to explore their present and potential responsibilities and roles. Readings and content lectures will provide a knowledge basis which students can use to examine the various influences that affect decision-making and communication in society. Provides an opportunity for students to relate and integrate these ideas with the philosophies and values of social welfare.

**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.

**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 to professional practice and to current social and economic issues.

**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 practicing skills and processes appropriate to professional practice and the student's career interests. Corequisite: AFHE 304.

**HECOL 310 Parent-Child Relationships**

★3 (*fi 6*) (either term, 3-0-0). An exploration of parent-child relationships from infancy through adolescence. An introduction to educational, preventive, and treatment approaches to enhancing capacity and fostering healthy parent-child relationships. Prerequisite: (PSYCO 104 and 105) or (EDPY 200 and 402).

**HECOL 313 Family Dynamics**

★3 (*fi 6*) (either term, 3-0-0). An introduction to family dynamics with a focus on positive family functioning. Changes in family dynamics across the life cycle will be examined. Family adaptation to normative and non-normative challenges will be explored. Prerequisite: one of HECOL 210, 212, 310, 414 or SOC 271.

**O 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. Prerequisites: ECON 101 or 102; it is recommended that students have completed both ECON 101 and 102.

**O 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 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: ECON 101 or 102; it is recommended that students have completed both ECON 101 and 102.

**O HECOL 341 Fashion Industries**

★3 (*fi 6*) (either term, 3-0-0). An introduction to the soft goods industry including an overview of the apparel sector, apparel production, channels of distribution, fashion oriented products, global competitive influences, and entrepreneurial opportunities. Normally offered in Spring/Summer.

**HECOL 350 Applications of Computer-Assisted Design**

★3 (*fi 6*) (either term, 2-0-4). Problem solving in a studio setting based on student interests and career goals. Prerequisite: HECOL 150 or equivalent. Credit will be given for only one of HECOL 250 and 350.

**HECOL 353 Textile Design**

★3 (*fi 6*) (either term, 2-0-4). An introductory studio course in various methods of printing and dyeing textiles. Prerequisite: One of ART H 102, 209, HECOL 150, or consent of Instructor. Requires payment of additional miscellaneous fees (see §22.2.3).

**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.

**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.

**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.

**HECOL 408 Issues in Professional Practice**

★3 (*fi 6*) (first term, 3-0-1.5). Designed to prepare human ecology students for their practicum work. Effective workplace relationships and issues involved in professional practice are explored within the context of being both a practicum student and a human ecology professional. Self-awareness and self-understanding as a professional are key concepts of the course. Open to Human Ecology students who have completed ★90. Normally taken in the term preceding HECOL 409. Application to Practicum Coordinator required four months prior to start of the course. Prerequisite: HECOL 301.

**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. Application required (see description of HECOL 408). Credit will be given for only one of HECOL 409, 481 or 482. Requires payment of additional miscellaneous fees (see §22.2.3).

**HECOL 412 Family Challenges**

★3 (fi 6) (either term, 3-0-0). An in-depth exploration of several family challenges (e.g. divorce, addiction and childhood and adult abuse). An introduction to specific prevention and intervention approaches related to family challenges. Prerequisite: HECOL 313.

**HECOL 413 Working With Families**

★3 (fi 6) (either term, 3-0-3). An introduction to interviewing, assessment and counselling strategies for working with individuals and families using a strengths-based, family-centred approach. Prerequisite: HECOL 313.

**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.

**HECOL 440 Family Policy Issues**

★3 (fi 6) (either term, 3-0-0). Analysis of current policy issues faced by Canadian families and the examination of policies and programs affecting family well-being and relationships. Prerequisite: HECOL 300.

**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.

**HECOL 443 Family Law**

★3 (fi 6) (either term, 3-0-0). Family law regulates intimate and domestic relationships. 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 300. Normally offered in Spring/Summer.

**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. Prerequisite: HECOL 353 or consent of instructor. Offered in alternate years. Requires payment of additional miscellaneous fees (see \$22.2.3).

**HECOL 454 Apparel Design and Product Development II**

★3 (fi 6) (either term, 3-0-3). Advanced problems in apparel design and product development. Prerequisite: HECOL 354. Offered in alternate years.

**HECOL 460 Nineteenth and Twentieth Century Dress**

★3 (fi 6) (either term, 3-0-3). 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 consent of Instructor. Normally 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. Focuses on initiatives for and by economically marginalized populations to achieve well-being. Includes field visits to local projects. Offered in alternate years.

**HECOL 462 Material Culture in Home and Community**

★3 (fi 6) (either term, 2-0-3). Using a Human Ecological framework, students will investigate material culture ranging from individual objects to entire communities, both locally and globally. Through an understanding of the role material culture plays in our individual, familial and community lives, consideration will be given to how the material environment can affect well-being. Resources will include community organizations, community planners, housing industry, retail industry, designers, cultural groups, historic sites, museums and the department collection. Prerequisite: HECOL 201.

**HECOL 472 Textile Fibres and Finishes**

★3 (fi 6) (either term, 3-0-3). Major classes of fibres, their production, structure, properties; aesthetic and functional finishes. Prerequisite: CHEM 161 or consent of Instructor. Normally offered in alternate years.

**HECOL 477 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, 268, or consent of Instructor. Credit granted for only one of HECOL 477 or 577. Normally offered in alternate years or Spring/Summer.

**HECOL 478 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 477, or consent of Instructor. Credit will be granted for only one of HECOL 478 or 578. Normally offered in alternate years or Spring/Summer.

**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 Ecology**

★3 (fi 6) (Spring/Summer, variable). Normally offered in Spring or Summer. Can be taken for credit more than once.

**HECOL 493 Selected Topics in Textiles and Clothing**

★3 (fi 6) (Spring/Summer, variable). Normally offered in Spring or Summer. Can be taken for credit more than once.

**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 601 Ways of Knowing in Human Ecology**

★3 (fi 6) (first term, 0-3s-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 604 Fundamentals of Aging**

★3 (fi 6) (either term, 0-3s-0). A critical analysis of the issues and environments that influence the lives of older Canadians. Focus is on theories and knowledge about age-related normative and non-normative changes and their interaction with the physical, social, community and policy environments of older adults.

**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 Human Ecology**

★3 (fi 6) (either term, 0-0-6). Selected practicum placements to integrate theory and practice in a variety of agencies. Prerequisites: consent of Supervisor and Department. Credit will only be granted for one of FAM 613 or HECOL 613.

**HECOL 614 Family Challenges**

★3 (fi 6) (either term, 0-3s-0). An examination of family dynamics and the processes involved in families' responses to challenges and crises. Application of theory and research to selected current family challenges. 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 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 655 Design and Aesthetics**

★1-9 (*variable*) (either term, variable). Modules on creativity theory and practice, computer designing, product development and design communication.

**HECOL 666 Material Culture**

★1-9 (*variable*) (either term, variable). Modules on material culture theory and research, cross-cultural textiles and dress, fashion theory and research, museum collections theory and research, and the global market.

**HECOL 673 Textile and Apparel Science**

★1-9 (*variable*) (either term, variable). Modules on laboratory and field research, fibre theory, soiling and detergency, colour theory and measurement, comfort and protection theory and measurement.

**HECOL 677 Conservation and Curatorship**

★1-8 (*variable*) (either term, variable). Modules on preventive conservation, cleaning and consolidation, and curatorial research.

**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 601 or consent of Instructor.

**HECOL 682 Program Planning and Evaluation**

★3 (*fi 6*) (either term, 0-3s-0). Theories, approaches, and processes fundamental to the development, implementation, and evaluation of programs that effect change and build capacity in families, communities and organizations. 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.

## 221.151 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). Prerequisite: Registration in a PhD program at the University of Alberta or written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

## 221.152 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).

## 221.153 Humanities Computing, HUCO

Office of Interdisciplinary Studies  
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).

## 221.154 Hungarian, HUNG

Department of Modern Languages and Cultural 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 Hungarian 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. Students seeking to fulfill their Language Other than English requirement may begin at any one appropriate level, but must take the full ★6 in one language.
- (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

**HUNG 111 Beginners' Hungarian I**

★3 (*fi 6*) (either term, 5-0-0). Essentials of grammar, reading and writing with special emphasis on oral skills. Designed to give basic working knowledge of everyday spoken and written Hungarian. Note: not to be taken by students with native or near native proficiency, or Hungarian 35 or its equivalents in Canada and other countries.

**HUNG 112 Beginners' Hungarian II**

★3 (*fi 6*) (either term, 5-0-0). Prerequisite: HUNG 111 or consent of Department. Note: not to be taken by students with native or near native proficiency, or Hungarian 35 or its equivalents in Canada and other countries.

**O HUNG 211 Intermediate Hungarian I**

★3 (*fi 6*) (either term, 4-0-0). Advanced grammar and phonetics. Further development of both oral and writing skills as well as acquisition of understanding of certain sociocultural, historical and political spheres of Hungary. Prerequisite: HUNG 112 or Hungarian 35.

**O HUNG 212 Intermediate Hungarian II**

★3 (*fi 6*) (either term, 4-0-0). Prerequisite: HUNG 211 or Hungarian 35.

**221.155 Immunology and Infection, IMIN**

Department of Biological Sciences  
Faculty of Science

**Undergraduate Courses****O IMIN 200 Infection and Immunity**

★3 (*fi 6*) (second term, 3-0-0). Introduces the principles and mechanisms of immunity in eukaryotes. Provides an overview of the major groups of infectious agents (virus, bacteria, parasites) and examines selected microorganisms within the context of the host response to pathogens and pathogen evasion strategies. Pre- or corequisites: BIOCH 200 or BIOCH 203 or 220 and MICRB 265. May not be taken for credit if credit already obtained in MICRB 295.

**O IMIN 324 Basic Virology**

★3 (*fi 6*) (first term, 3-0-0). An introduction to the structure, replication, and taxonomy of bacteriophages, plant, insect, and animal viruses. Their role in disease and methods of control and detection is also discussed. Prerequisites: BIOL 207, IMIN 200 and BIOCH 200 or 205. May not be taken for credit if credit already obtained in INT D 224. (Offered jointly by the Departments of Biological Sciences and of Medical Microbiology and Immunology.) [Biological Sciences]

**O IMIN 371 Introduction to Immunology**

★3 (*fi 6*) (first term, 3-0-0). Survey course introducing the student to immunological concepts. Topics include the clonal selection theory, antibody structure and specificity, genetic basis of immune diversity, antibody-antigen reactions, cell interactions in immune responses, the molecular basis of non-self recognition, MHC molecules and transplantation, tolerance, effector mechanism of immunity, hypersensitivity and immunodeficiency. Prerequisites: BIOCH 200 or 205, BIOL 207, and IMIN 200. May not be taken for credit if credit already obtained in INT D 371. (Offered jointly by the Department of Biological Sciences and the Department of Medical Microbiology and Immunology.) [Biological Sciences]

**O IMIN 372 Research Techniques in Immunology**

★3 (*fi 6*) (second term, 1-0-3). A lecture and laboratory course covering theory and practice behind selected immunological techniques. Techniques covered may include: lymphocyte isolation, flow cytometry, mixed lymphocyte reactions, immunocytochemistry, immunoprecipitation, ELISA, western blotting, expression cloning and monoclonal antibody technology. Labs will sometimes require students to return the next day to check on plates or cultures. Prerequisite: IMIN 371. May not be taken for credit if credit already obtained in INT D 372. (Offered jointly by the Departments of Biological Sciences and Medical Microbiology and Immunology.) (Biological Sciences)

**O IMIN 401 Comparative Immunology**

★3 (*fi 6*) (second term, 3-0-0). The phylogeny and evolution of immune systems. Examines the various strategies for disease resistance used by all organisms from plants to humans. The use and evolution of specific components of innate and adaptive immunity will be considered within the context of the biology of the organisms. Prerequisite: IMIN 371 and permission of Instructor. May not be taken for credit if credit already obtained in BIOL 401.

**O IMIN 452 Advanced Immunology**

★3 (*fi 6*) (second term, 3-1s-0). A lecture course on the detailed mechanisms of the immune system, describing recent discoveries in cellular and molecular immunology. Topics include mechanisms of T-cell receptor selection, antigen processing, activation of B and T lymphocytes, cellular collaboration, negative and positive regulatory mechanisms in immunity, transplantation, cytokine actions and interactions, autoimmunity. Interaction between immune systems and pathogens, and immunogenetics. Prerequisites: BIOCH 203 and 205 and IMIN 371. May not be taken for credit if credit already obtained in INT D 452. (Offered jointly by the Department of Biological Sciences, the Department of Medical Microbiology and Immunology and the Department of Oncology.) [Biological Sciences].

**221.156 Industrial Relations, IND R**

Department of Strategic Management and Organization  
Faculty of Business

**Note:** Refer to Organizational Analysis (ORG A) listings.

**Graduate Courses****IND R 701 Seminar in Industrial Relations Foundations**

★3 (*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, and collective bargaining theory. Prerequisite: Registration in a PhD program at the University of Alberta or written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

**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. Prerequisite: Registration in a PhD program at the University of Alberta or written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

**IND R 704 Individual Research**

★3 (*fi 6*) (either term, 3-0-0).

**221.157 Informatique, INFOR**

Faculté Saint-Jean

**Cours de 1er cycle****INFOR 101 Introduction à l'informatique**

★3 (*fi 6*) (l'un ou l'autre semestre, 3-0-3). Une introduction générale aux concepts informatiques provenant des sciences et du génie, incluant la représentation des nombres, l'architecture machine et les systèmes d'opération, y compris les algorithmes et leurs propriétés, de même que les techniques de contrôle de séquence, de sélection et de répétition. Y seront également abordés les types de données et les opérations sur ceux-ci en langages de programmation de bas et de haut niveau.

**INFOR 114 Introduction à la programmation**

★3 (*fi 6*) (l'un ou l'autre semestre, 3-0-3). Une introduction à la résolution de problèmes informatiques à l'aide de programmes écrits dans un langage de haut niveau appelé Java. Initiation aux objets et valeurs, messages et méthodes, structures de contrôle, et conteneurs simples. Discussion des algorithmes de base et des techniques de génie logiciel pour la construction de solutions élégantes et robustes à divers problèmes. Préalable(s): INFOR 101.

**221.158 Interdisciplinary Undergraduate and Graduate Courses, INT D****Undergraduate Courses****221.158.1 Faculty of Agriculture, Forestry, and Home Economics Courses**

**Note:** Courses listed below are the concern of more than one discipline. Instruction will be offered by members of one or more of the departments or faculties listed beneath the course description. For the following interdisciplinary courses, where the department responsible for registration has been assigned, the department so designated will appear in square brackets following the course description.

**O INT D 303 Economics of World Food and Agriculture**

★3 (*fi 6*) (second term, 3-0-0). Economic issues in international agriculture including the world food problem; the role of agriculture in development; agricultural and food trade; biotechnology and associated environmental and globalization issues. Prerequisite: ECON 101 or 102 or consent of Department. Credit will only be given for one of INT D 303, AREC 475 and AG EC 475. (Offered jointly by the Departments of Economics and Rural Economy.) [Rural Economy]

**INT D 410 Interdisciplinary Health Team Development**

★3 (*fi 6*) (either term, 0-6.5s-0 in 5 weeks). A process learning course intended to provide experience in building a team of health care professionals from different disciplines. Emphasis is placed on team building, recognizing the unique contributions of different professions, patients and families. (Offered jointly by the following faculties: Agriculture, Forestry, and Home Economics; Medicine and Dentistry; Nursing; Pharmacy and Pharmaceutical Sciences; Physical Education and Recreation; and Rehabilitation Medicine.) (Priority will be given to students in all undergraduate health professions where this is a required course.) [Health Sciences Council].

**INT D 411 Interprofessional Health Team Placements**

★0.05-6 (*variable*) (either term, 5 weeks). Clinical practicum designed to provide an orientation to interprofessional teamwork. May be taken in addition to or in conjunction with discipline-specific courses. Students from various health sciences