

Course Listings **H** 221.116 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).

221.117 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.

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.

HUNG 212 Intermediate Hungarian II

★3 (fi 6) (either term, 4-0-0). Prerequisite: HUNG 211 or Hungarian 35.

221.118 Immunology and Infection, IMIN

Department of Biological Sciences
Faculty of Science

Undergraduate Courses

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.

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]

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]

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)

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.

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].

221.119 Industrial Relations, IND R

Department of Strategic Management and Organization
Faculty of Business

Undergraduate Courses

Note: Refer to Organizational Analysis (ORG A) listings.

Graduate Courses

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).

221.120 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.

221.121 Interdisciplinary Undergraduate and Graduate Courses, INT D

Undergraduate Courses

221.121.1 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.

□ INT D 303 Economics of World Food and Agriculture

★3 (fi 6) (either 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. (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 disciplines are simultaneously placed within a health care organization with an established health team. The student team is responsible to develop either a community-driven project or provide intervention for patients. (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 professional entry-level programs in health science disciplines. Prerequisite: INT D 410. [Health Sciences Council].

INT D 415 International Health Care Systems and Delivery

★3 (fi 6) (either term, 0-3s-0). Canadian and international health and social policies are explored using interdisciplinary and participatory learning experiences. Issues affecting health services, education, research, delivery models, workforce, finance, service recipients and complementary therapies will be discussed from an international perspective. (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 professional entry-level health science programs. [Rehabilitation Medicine]

221.121.2 Faculty of Arts Courses

Notes

- (1) Courses listed below are the joint concern of the departments stated in the course descriptions. Instructions will be offered by members of one or more of the departments or Faculties listed. Responsibility for registration is with the department shown in square brackets at the end of the description.
- (2) Unless otherwise indicated in the course description, an INT D course may be applied toward either the major or the minor or as an option if it appears under the department's course listings.

□ INT D 100 Employability, Citizenship, and the Liberal Arts

★3 (fi 6) (either term, 3-0-0). Introduces students to the variety of intellectual skills inherent in a liberal arts education, which equips students for employment and citizenship in a changing world. Explores the implicit intellectual skills, modes of thinking, and disciplinary diversity within the Faculty of Arts.

□ INT D 201 The Slavic World I

★3 (fi 6) (either term, 3-0-0). Cultural developments in Slavic lands from the early Middle Ages through Romanticism, with emphasis on literature and the fine arts. Note: Not to be taken by students with credit in INT D 101.

□ INT D 202 The Slavic World II

★3 (fi 6) (either term, 3-0-0). Cultural developments in the Slavic lands from the mid-19th century to the present, with emphasis on literature and the fine arts. Note: Not to be taken by students with credit in INT D 102.

INT D 211 Interdisciplinary Approaches to the Arts in Society

★3 (fi 6) (either term, 3-0-0). How the arts, including the literary arts, performing arts and the visual arts, reflect and influence society; creative works and different scholarly and artistic perspectives on selected topics will be explored, compared, and contrasted.

INT D 212 International Studies

★3 (fi 6) (either term, 3-0-0). Selected topics in the relationship between nations from economic, political, cultural, and historical perspectives.

INT D 222 Interdisciplinarity

★3 (fi 6) (either term, 3-0-0). Introduction to the history and theories of disciplinarity and interdisciplinarity; how to perform interdisciplinary research and learning.

INT D 225 Topics in Interdisciplinary Studies

★3-6 (variable) (variable, variable). Offered by various departments depending upon the content of the course in a given year. [Faculty of Arts]

INT D 257 Health Care Economics

★3 (fi 6) (either term, 3-0-0). Resource allocation in the health care industry; production and cost relationships within various types of institutional settings (hospital, medical firm) the role of the price mechanism in allocating resources. Manpower planning; the role of the Government and professional groups in allocating resources in the non-price sector of the health industry. (Offered jointly by the Departments of Economics and Public Health Sciences.) [Economics]

□ INT D 303 Economics of World Food and Agriculture

★3 (fi 6) (either 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. (Offered jointly by the Departments of Economics and Rural Economy). [Rural Economy]

INT D 333 Mapping Interdisciplinary Studies

★3 (fi 6) (either term, 3-0-0). Provides an overview and comparison of the subject matter, types of theory, disciplinary perspectives, and methods utilized in the Faculty of Arts and beyond, to aid students in drawing connections across courses in diverse disciplines.

INT D 352 Modern India: An Interdisciplinary Survey

★3 (fi 6) (either term, 3-0-0). Political, cultural, literary and historical perspectives on the processes of modernization in Indian society of the 19th and 20th centuries, with special attention to Indian nationalism.

INT D 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.) [Economics]

INT D 393 Political Sociology

★3 (fi 6) (either term, 3-0-0). A study of how society affects politics and politics affects society. Discussion of the political consequences of economic developments, ideological debates, class conflicts, social movements, elites, gender, nationalisms and state structures. Focus on Canada from a comparative perspective. Prerequisite: POL S 100 or one of SOC 100, 202 or 300. (Offered jointly by the Departments of Political Science and Sociology.) [Political Science]

INT D 394 Introduction to Criminal Law

★3 (fi 6) (either term, 3-0-0). Prerequisite: SOC 225. Note: Primarily for BA (Criminology) students. [Sociology]

INT D 439 Ukrainian Dance

★3 (fi 6) (either term, 3-0-0). A theoretical and experiential investigation of the forms and history of Ukrainian dance. Course content is focused on the relationships of this dance to Ukrainian as well as Canadian culture, with consideration to its artistic and educational aspects. Offered jointly by the Faculty of Physical Education and Recreation and the Department of Modern Languages and Cultural Studies. [Faculty of Physical Education and Recreation] May be taken as a Faculty of Arts course.

INT D 448 Russia

★3 (fi 6) (either term, 3-0-0). Major political, social, economic, and cultural developments in Russia since 1945. Prerequisite: a course in the history, geography or political science of Russia, or consent of Department. [Modern Languages and Cultural Studies]. The course will not fulfil the language other than English requirement of the BA degree.

INT D 451 Geography of Recreation and Leisure

★3 (fi 6) (either term, 3-0-0). Geographic research on outdoor recreation; behavioral-spatial approaches to participation and conflict in resource use, social and ecological carrying capacity, recreation space management. Prerequisite: consent of Instructor. Students will not receive Science credit for this course in their programs. (Offered jointly by the Department of Earth and Atmospheric Sciences and the Faculty of Physical Education and Recreation.) [Earth and Atmospheric Sciences]

INT D 520 Combined Honors Essay

★3-6 (variable) (variable, unassigned). For students in Combined Honors programs. Permission of both Departments is required.

221.121.3 Faculty of Medicine and Dentistry Courses

INT D 257 Health Care Economics

★3 (fi 6) (either term, 3-0-0). Resource allocation in the health care industry; production and cost relationships within various types of institutional settings (hospital, medical firm) the role of the price mechanism in allocating resources. Manpower planning; the role of the Government and professional groups in allocating resources in the non-price sector of the health industry. (Offered jointly by the Departments of Economics and Public Health Sciences.) [Economics]

INT D 370 Survey on International Health

★3 (fi 6) (second term, 3-0-0). Overview of health issues and organization in a cross-cultural context with emphasis on developing and newly industrialized countries. Prerequisite: Completion of 10 full courses in any program or consent of Instructor. (Nursing, Dentistry, Medicine, Pharmacy and Pharmaceutical Sciences, Rehabilitation Medicine, and Social Sciences.) [Nursing]

INT D 409 Research Project

★3 (fi 6) (second term, 0-0-6). Directed research in a medical laboratory science. Supervisor and research project to be chosen by student. Requires writing a project proposal, keeping an accurate laboratory notebook, conducting adequate experimental research, writing a research paper and presenting a short seminar based on the research. Restricted to fourth-year Medical Laboratory Science students. (Offered jointly by the Department of Medical Microbiology and Immunology, and the Division of Medical Laboratory Science.)

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 disciplines are simultaneously placed within a health care organization with an established health team. The student team is responsible to develop either a community-driven project or provide intervention for patients. (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 professional entry-level programs in health science disciplines. Prerequisite: INT D 410. [Health Sciences Council].

INT D 415 International Health Care Systems and Delivery

★3 (fi 6) (either term, 0-3s-0). Canadian and international health and social policies are explored using interdisciplinary and participatory learning experiences. Issues affecting health services, education, research, delivery models, workforce, finance, service recipients and complementary therapies will be discussed from an international perspective. (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 professional entry-level health science programs. [Rehabilitation Medicine]

INT D 491 Research Project

★6 (fi 12) (two term, 0-0-6). Directed research in a medical laboratory science. Supervisor and research project to be chosen by student. Requires writing a project proposal, keeping an accurate laboratory notebook, conducting adequate experimental research, writing a research paper and presenting a short seminar based on the research. Restricted to fourth-year Medical Laboratory Science students. (Offered jointly by the Department of Medical Microbiology and Immunology, and the Division of Medical Laboratory Science.)

221.121.4 Faculty of Nursing Courses

INT D 370 Survey on International Health

★3 (fi 6) (second term, 3-0-0). Overview of health issues and organization in a cross-cultural context with emphasis on developing and newly industrialized countries. Prerequisite: Completion of 10 full courses in any program or consent of Instructor. (Nursing, Dentistry, Medicine, Pharmacy and Pharmaceutical Sciences, Rehabilitation Medicine, and Social Sciences.) [Nursing]

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 disciplines are simultaneously placed within a health care organization with an established health team. The student team is responsible to develop either a community-driven project or provide intervention for patients. (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 professional entry-level programs in health science disciplines. Prerequisite: INT D 410. [Health Sciences Council].

INT D 415 International Health Care Systems and Delivery

★3 (fi 6) (either term, 0-3s-0). Canadian and international health and social policies are explored using interdisciplinary and participatory learning experiences. Issues affecting health services, education, research, delivery models, workforce, finance, service recipients and complementary therapies will be discussed from an international perspective. (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 professional entry-level health science programs. [Rehabilitation Medicine]

221.121.5 Faculty of Pharmacy and Pharmaceutical Sciences Courses

INT D 370 Survey on International Health

★3 (fi 6) (second term, 3-0-0). Overview of health issues and organization in a cross-cultural context with emphasis on developing and newly industrialized countries. Prerequisite: Completion of 10 full courses in any program or consent of Instructor. (Nursing, Dentistry, Medicine, Pharmacy and Pharmaceutical Sciences, Rehabilitation Medicine, and Social Sciences.) [Nursing]

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 disciplines are simultaneously placed within a health care organization with an established health team. The student team is responsible to develop either a community-driven project or provide intervention for patients. (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 professional entry-level programs in health science disciplines. Prerequisite: INT D 410. [Health Sciences Council].

INT D 415 International Health Care Systems and Delivery

★3 (fi 6) (either term, 0-3s-0). Canadian and international health and social policies are explored using interdisciplinary and participatory learning experiences. Issues affecting health services, education, research, delivery models, workforce, finance, service recipients and complementary therapies will be discussed from an international perspective. (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 professional entry-level health science programs. [Rehabilitation Medicine]

221.121.6 Faculty of Physical Education and Recreation Courses**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 disciplines are simultaneously placed within a health care organization with an established health team. The student team is responsible to develop either a community-driven project or provide intervention for patients. (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 professional entry-level programs in health science disciplines. Prerequisite: INT D 410. [Health Sciences Council].

INT D 415 International Health Care Systems and Delivery

★3 (fi 6) (either term, 0-3s-0). Canadian and international health and social policies are explored using interdisciplinary and participatory learning experiences. Issues affecting health services, education, research, delivery models, workforce, finance, service recipients and complementary therapies will be discussed from an international perspective. (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 professional entry-level health science programs. [Rehabilitation Medicine]

0 INT D 439 Ukrainian Dance

★3 (fi 6) (either term, 3-0-0). A theoretical and experiential investigation of the forms and history of Ukrainian dance. Course content is focused on the relationships of this dance to Ukrainian as well as Canadian culture, with consideration to its artistic and educational aspects. Offered jointly by the Faculty of Physical Education and Recreation and the Department of Modern Languages and Cultural Studies. [Faculty of Physical Education and Recreation] May be taken as a Faculty of Arts course.

0 INT D 451 Geography of Recreation and Leisure

★3 (fi 6) (either term, 3-0-0). Geographic research on outdoor recreation; behavioral-spatial approaches to participation and conflict in resource use, social

and ecological carrying capacity, recreation space management. Prerequisite: consent of Instructor. Students will not receive Science credit for this course in their programs. (Offered jointly by the Department of Earth and Atmospheric Sciences and the Faculty of Physical Education and Recreation.) [Earth and Atmospheric Sciences]

221.121.7 Faculty of Rehabilitation Medicine Courses**INT D 370 Survey on International Health**

★3 (fi 6) (second term, 3-0-0). Overview of health issues and organization in a cross-cultural context with emphasis on developing and newly industrialized countries. Prerequisite: Completion of 10 full courses in any program or consent of Instructor. (Nursing, Dentistry, Medicine, Pharmacy and Pharmaceutical Sciences, Rehabilitation Medicine, and Social Sciences.) [Nursing]

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 disciplines are simultaneously placed within a health care organization with an established health team. The student team is responsible to develop either a community-driven project or provide intervention for patients. (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 professional entry-level programs in health science disciplines. Prerequisite: INT D 410. [Health Sciences Council].

INT D 412 Critical Reflection: Interprofessional Health Topics

★6 (fi 12) (either term, variable). An opportunity to critically reflect on the relationship of published literature in interprofessional health and the interprofessional health team experiences to date. A project related to interprofessional health or education is required. (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 professional entry-level health science programs. Prerequisite: INT D 410. (Rehabilitation Medicine)

INT D 415 International Health Care Systems and Delivery

★3 (fi 6) (either term, 0-3s-0). Canadian and international health and social policies are explored using interdisciplinary and participatory learning experiences. Issues affecting health services, education, research, delivery models, workforce, finance, service recipients and complementary therapies will be discussed from an international perspective. (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 professional entry-level health science programs. [Rehabilitation Medicine]

221.121.8 Faculty of Science Courses

Note: Any Interdisciplinary Studies courses below will be counted as a science course in a program of study in the Faculty of Science.

0 INT D 451 Geography of Recreation and Leisure

★3 (fi 6) (either term, 3-0-0). Geographic research on outdoor recreation; behavioral-spatial approaches to participation and conflict in resource use, social and ecological carrying capacity, recreation space management. Prerequisite: consent of Instructor. Students will not receive Science credit for this course in their programs. (Offered jointly by the Department of Earth and Atmospheric Sciences and the Faculty of Physical Education and Recreation.) [Earth and Atmospheric Sciences]

Graduate Courses**221.121.9 Faculty of Agriculture, Forestry, and Home Economics Courses****0 INT D 565 Natural Resource and Environmental Economics**

★3 (fi 6) (either term, 3-0-0). Economic analysis of renewable resource and environmental issues. Renewable resource theory with applications to the fishery, forestry, soils and wildlife. Economic analysis of environmental protection and

policy. Topics in applied benefit-cost analysis including the valuation of non-market goods and services. Prerequisite: consent of Instructor; (AREC 313 or AG EC 416) and (AREC 502 or AG EC 502) recommended. (Offered jointly by the Departments of Rural Economy and Economics.) [Rural Economy]

INT D 665 Natural Resource Utilization

★3 (fi 6) (either term, 3-0-0). Economics of utilizing and conserving land, water and energy resources in Agriculture and Forestry. Prerequisite: INT D 365 or AREC 365. Not available for students with credit in INT D 465 or AREC 465. Available only to students in MBA/MAG, MBA/MF, MBA in Natural Resource and Energy Programs, or by consent of Department. [Rural Economy]

221.121.10 Faculty of Arts Courses

INT D 505 East European Soviet and Post-Soviet Studies I

★3 (fi 6) (either term, 3-0-0). [Modern Languages and Cultural Studies]. Not to be taken for credit by students with credit in INT D 546. Prerequisite: consent of Department.

INT D 506 East European Soviet and Post-Soviet Studies II

★3 (fi 6) (either term, 3-0-0). [Modern Languages and Cultural Studies]. Not to be taken by students with credit in INT D 546. Prerequisite: consent of Department.

INT D 554 Research in Cognitive Science

★3 (fi 6) (either term, 3-0-0). A multidisciplinary survey of theoretical issues and research practices in Cognitive Science to be taught by various members of such Departments as Psychology, Computing Science, Linguistics, and Philosophy. Prerequisites: consent of course coordinator and consent of student's home department. [Psychology] May be taken as a Faculty of Science course.

INT D 593 Seminar in Political Sociology

★3 (fi 6) (either term, 0-3s-0).

INT D 594 Quaternary Environments

★6 (fi 12) (two term, 3-0-0). A comprehensive survey of the Quaternary period; dating methods, paleoclimates, vertebrates, case studies in stratigraphy and paleoecology. Prerequisite: a related 400-level course in Anthropology, Biological Sciences, Earth and Atmospheric Sciences, Renewable Resources, or consent of Department. (Offered jointly by the Departments of Anthropology and Earth and Atmospheric Sciences.) May be taken as a Faculty of Arts course.

221.121.11 Faculty of Medicine and Dentistry Courses

INT D 570 Healthcare Ethics

★3 (fi 6) (either term, 0-3s-0). An interdisciplinary course exploring selected topics in bioethics. Includes examination of ethical theories and principles within the context of clinical practice (nursing, medicine, rehabilitation medicine, dentistry, pharmacy) and learning experiences to improve moral reasoning and ethical decision making. Prerequisite: consent of Instructors. [Faculty of Nursing, Faculty of Medicine and Dentistry, John Dossetor Health Ethics Centre]

INT D 600 Building Foundations

★3 (fi 6) (first term, 3-0-0). Transdisciplinary/interdisciplinary lecture series on maternal-fetal-newborn health are presented; Defining and navigating the challenges of conducting Interdisciplinary research, defining conceptual frameworks, research resources, research approaches to MFN health, research grant funding structures and grant review, communicating outside of academia, and a variety of maternal-fetal-newborn transdisciplinary health topics; genetics, neuroscience, pharmacology, physiology, nursing, health population outcomes. Four projects involving transdisciplinary/interdisciplinary composition related to the lecture series will be required.

INT D 670 Research Ethics

★3 (fi 6) (either term, 0-3s-0). Examines the ethical issues which arise in research involving human subjects. Research methods studied may include clinical trials, surveys, secondary analysis of stored data, and the observation of public behavior. Problems encountered in studying particular populations, such as children or persons with dementia, will also be studied. Prerequisite: consent of Instructor. [Faculty of Nursing, Faculty of Medicine and Dentistry, John Dossetor Health Ethics Centre].

221.121.12 Faculty of Nursing Courses

INT D 560 Principles of Qualitative Inquiry

★3 (fi 6) (either term, 0-3s-0). An introduction to the assumptions, principles, and techniques of qualitative inquiry. This course also provides a theoretical and practical introduction to the major methods of qualitative inquiry.

INT D 570 Healthcare Ethics

★3 (fi 6) (either term, 0-3s-0). An interdisciplinary course exploring selected topics in bioethics. Includes examination of ethical theories and principles within the context of clinical practice (nursing, medicine, rehabilitation medicine, dentistry, pharmacy) and learning experiences to improve moral reasoning and ethical decision making. Prerequisite: consent of Instructors. [Faculty of Nursing, Faculty of Medicine and Dentistry, John Dossetor Health Ethics Centre]

INT D 577 Spiritual Assessment in the Promotion of Health

★3 (fi 6) (either term, 0-3s-0). As an element of whole person health assessment, "spiritual assessment" is of interest to a broad spectrum of health as well as ministry professionals. Emphasis is placed on consideration of theories and skills needed for the practice of spiritual assessment. The course provides a context for interdisciplinary reflection on understandings of the human person, health, health promotion, spirituality, spiritual needs, and spiritual care. Students are invited to explore their own spirituality and various approaches to assessing the spiritual based on a variety of definitions and understandings of spirituality. Specific models and tools for spiritual assessment will be considered, two will be looked at in depth, and students will have opportunities to bring theory as well as experience together in both group and individual exercises of spiritual assessment rooted in their ministry/health practice.

INT D 670 Research Ethics

★3 (fi 6) (either term, 0-3s-0). Examines the ethical issues which arise in research involving human subjects. Research methods studied may include clinical trials, surveys, secondary analysis of stored data, and the observation of public behavior. Problems encountered in studying particular populations, such as children or persons with dementia, will also be studied. Prerequisite: consent of Instructor. [Faculty of Nursing, Faculty of Medicine and Dentistry, John Dossetor Health Ethics Centre].

INT D 690 Topics in Knowledge Utilization

★3 (fi 6) (either term, 0-3s-0). Examines the scientific, theoretical, and historical underpinnings of the field of knowledge utilization. Covers contemporary manifestations of knowledge utilization in Canadian society such as evidence based decision-making, and in health care such as evidence-based practice and evidence-based medicine. It addresses the challenges of knowledge use in health care organizations and will focus on the central conceptual and methodological challenges facing investigators undertaking knowledge utilization research. Prerequisite: consent of Instructor.

221.121.13 Faculty of Rehabilitation Medicine Courses

INT D 601 Seminar in Bone and Joint Health Research

★3 (fi 6) (two term, 0-1.5s-0). Credit. This seminar is designed to expose students to the scope of transdisciplinary research in bone and joint health. Students attend monthly seminars presented by faculty members and graduate students from a variety of health sciences and engineering faculties. Open to graduate students in the Alberta Provincial CIHR Training Program in Bone and Joint Health, and to others with consent of the instructor.

INT D 602 Transdisciplinary Bone and Joint Health Research

★3 (fi 6) (either term, 2-2s-0). Designed to allow students to explore select issues in interdisciplinary bone and joint health research from basic science to population health. Open to graduate students in the Alberta Provincial CIHR Training Program in Bone and Joint Health, and to others with consent of Instructor.

INT D 603 Directed Study in Bone and Joint Health Research

★3 (fi 6) (either term, 0-3s-0). Work on a special transdisciplinary project to meet individualized objectives under the supervision of a faculty member. Open to graduate students in the Alberta Provincial CIHR Training Program in Bone and Joint Health, and to others with consent of Instructor.

221.121.14 Faculty of Science Courses

INT D 554 Research in Cognitive Science

★3 (fi 6) (either term, 3-0-0). A multidisciplinary survey of theoretical issues and research practices in Cognitive Science to be taught by various members of such Departments as Psychology, Computing Science, Linguistics, and Philosophy. Prerequisites: consent of course coordinator and consent of student's home department. [Psychology] May be taken as a Faculty of Science course.

INT D 594 Quaternary Environments

★6 (fi 12) (two term, 3-0-0). A comprehensive survey of the Quaternary period; dating methods, paleoclimates, vertebrates, case studies in stratigraphy and paleoecology. Prerequisite: a related 400-level course in Anthropology, Biological Sciences, Earth and Atmospheric Sciences, Renewable Resources, or consent of Department. (Offered jointly by the Departments of Anthropology and Earth and Atmospheric Sciences.) May be taken as a Faculty of Arts course.

221.122 Italian, ITAL

Department of Modern Languages and Cultural Studies
Faculty of Arts

Undergraduate Courses

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 an Italian 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.

L ITAL 111 Beginners' Italian I

★3 (fi 6) (either term, 5-0-0). Italian grammar and pronunciation. Readings of easy texts dealing with different aspects of Italian culture. Note: not to be taken by students with credit in ITAL 100, or with native or near native proficiency, or with Italian 30 or its equivalents in Canada and other countries.

L ITAL 112 Beginners' Italian II

★3 (fi 6) (either term, 5-0-0). Prerequisite: ITAL 111 or consent of Department. Note: not to be taken by students with credit in ITAL 100, or with native or near native proficiency, or with Italian 30 or its equivalents in Canada and other countries.

O ITAL 205 Topics in Italian Studies

★3 (fi 6) (either term, 3-0-0). Modern Italy studied through its cultural context and forms of expression. The course will be taught in English.

O ITAL 211 Second-Year Italian I

★3 (fi 6) (either term, 3-0-0). Selected contemporary prose and poetry. Advanced grammar and phonetics. Prerequisite: Italian 30 (or equivalent) or ITAL 112 or consent of Department. Note: not to be taken by students with credit in ITAL 250.

O ITAL 212 Second-Year Italian II

★3 (fi 6) (either term, 3-0-0). Prerequisite: ITAL 211 or consent of Department. Note: not to be taken by students with credit in ITAL 250.

O ITAL 333 Topics in Italian Short Stories

★3 (fi 6) (either term, 3-0-0). Prerequisite: ITAL 212 or consent of Department. Note: Not open to students with credit in ITAL 331 or 332.

ITAL 340 Topics in Italian Culture

★3 (fi 6) (either term, 3-0-0). Prerequisite: ITAL 212 or consent of Department.

O ITAL 363 Studies in Italian Literary Genres

★3 (fi 6) (either term, 3-0-0). Prerequisite: ITAL 212 or consent of Department.

O ITAL 375 Studies in Modern Italian Literature

★3 (fi 6) (either term, 3-0-0). Prerequisite: ITAL 212 or consent of Department.

ITAL 390 Business Italian

★3 (fi 6) (either term, 3-0-0). Readings, discussions and exercises dealing with the specialized language of business in Italian. Prerequisite: ITAL 212 or consent of Department.

O ITAL 393 Grammar, Composition and Translation

★3 (fi 6) (either term, 3-0-0). Prerequisite: ITAL 212 or consent of Department. Note: Not to be taken by students with credit in ITAL 394 or 395.

ITAL 415 Studies in Italian Literature

★3 (fi 6) (either term, 3-0-0). Prerequisite: A 300-level course in Italian literature or consent of Department.

ITAL 419 Topics in Italian Studies I

★3 (fi 6) (either term, 3-0-0). Prerequisite: A 300-level course in Italian literature or consent of Department.

ITAL 420 Topics in Italian Studies II

★3 (fi 6) (either term, 3-0-0). Prerequisite: A 300-level course in Italian literature or consent of Department.

ITAL 425 Translation

★3 (fi 6) (either term, 3-0-0). Literary and technical translation from English to Italian. Prerequisite: ITAL 393 or consent of Department.

ITAL 495 Honors Thesis

★3 (fi 6) (either term, 0-3s-0).

ITAL 499 Special Topics

★3 (fi 6) (either term, 3-0-0).

Graduate Courses

ITAL 515 Studies in Italian Literature

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

ITAL 519 Topics in Italian Studies I

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

ITAL 521 Topics in Italian Studies II

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

ITAL 545 Topics in Italian Literature of the 17th and 18th Centuries

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

ITAL 565 Topics in 19th-Century Italian Literature

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

ITAL 599 Directed Reading

★3 (fi 6) (either term, 3-0-0).

ITAL 698 Topics in Italian Linguistics

★3 (fi 6) (either term, 3-0-0).

ITAL 699 Topics in Italian Literature

★3 (fi 6) (either term, 3-0-0).

ITAL 900 Directed Research Project

★6 (fi 12) (variable, unassigned).

221.123 Japanese, JAPAN

Department of East Asian 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 an Asian (Chinese, Japanese, Korean) language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course suitable to their level of ability or they may be encouraged to seek "Credit by Special Assessment" (see §44.5) when appropriate.
- (3) The Department will withhold credit from students completing courses for which prior background is deemed to make them ineligible. For example, 100-level courses are normally restricted to students with little or no prior knowledge in that language. Should a student with matriculation standing, or those possessing prior background (such as native speakers or those for whom it is their first language) register in the 100-level courses, credit may be withheld.

Undergraduate Courses

L JAPAN 101 Basic Japanese I

★3 (fi 6) (either term, 5-0-0). A non-intensive written course designed to develop basic skills in spoken and written Japanese. Note: Not open to students with credit in Japanese 30, 35, JAPAN 150 or equivalent.

O JAPAN 102 Basic Japanese II

★3 (fi 6) (either term, 5-0-0). A continuation of JAPAN 101. Prerequisite: JAPAN 101 or equivalent. Note: Not open to students with credit in Japanese 30, 35, JAPAN 150 or equivalent.

L JAPAN 150 First-Year University Japanese

★3 (fi 6) (either term, 5-0-0). A non-intensive course designed for students who have some previous knowledge of spoken and written Japanese but need further training in grammar. Prerequisite: Japanese 30, 35 or equivalent.

O JAPAN 201 Basic Japanese III

★3 (fi 6) (either term, 5-0-0). A non-intensive course designed to develop further basic skills in spoken and written Japanese. Prerequisite: JAPAN 102, 150 or equivalent.

O JAPAN 202 Basic Japanese IV

★3 (fi 6) (either term, 5-0-0). A continuation of JAPAN 201. Prerequisite: JAPAN 201.

O JAPAN 240 Japanese Literature and the Arts

★3 (fi 6) (either term, 3-0-0). The relationship between modern and pre-modern literature and visual arts: painting, prints, calligraphy, tea ceremony. Taught in English. No prerequisite. Note: Not open to students with credit in JAPAN 340. This course will not fulfill the language other than English Requirement of the BA.

JAPAN 250 The Japanese Language in Its Cultural Setting I

★6 (fi 12) (Spring/Summer, 15-0-0). A language/culture immersion course to be studied in Japan. Designed for improvement of oral/aural skills and for increased understanding of Japanese people and culture. Note: Offered in alternate years. Prerequisite: JAPAN 202 or consent of Department. Note: JAPAN 250 and 350 may not both be taken for credit.

O JAPAN 301 Intermediate Japanese I

★3 (fi 6) (either term, 4-0-0). Designed to develop basic reading skills in modern Japanese prose with special emphasis on grammar and usage. Prerequisite: JAPAN 202 or equivalent.

O JAPAN 302 Intermediate Japanese II

★3 (fi 6) (either term, 4-0-0). A continuation of JAPAN 301. Prerequisite: JAPAN 301 or equivalent.

JAPAN 305 Intermediate Conversation and Composition I

★3 (fi 6) (either term, 3-0-0). Designed to develop speaking and writing skills in Japanese. Prerequisite: JAPAN 202 or consent of Department.

JAPAN 306 Intermediate Conversation and Composition II

★3 (fi 6) (either term, 3-0-0). A continuation of JAPAN 305. Designed to be taken in conjunction with JAPAN 302. Prerequisite: JAPAN 305.

JAPAN 318 Business Japanese I

★3 (fi 6) (either term, 3-0-0). Modern standard Japanese with emphasis on vocabulary and communication style of the Japanese business world. Prerequisite: JAPAN 202 or equivalent.

JAPAN 319 Business Japanese II

★3 (fi 6) (either term, 3-0-0). Prerequisite: JAPAN 318 or equivalent.

JAPAN 321 Pre-Modern Japanese Literature in Translation

★3 (fi 6) (either term, 3-0-0). Exploration of traditional Japanese culture through lived experience of Japanese people preserved in literary texts spanning more than a millennium. Note: This course will not fulfill the Language other than English requirement of the BA degree.

JAPAN 322 Modern Japanese Literature in Translation

★3 (fi 6) (either term, 3-0-0). Selected works by prominent writers from 1868 to the present. Note: This course will not fulfill the Language other than English requirement of the BA degree.

JAPAN 325 Introduction to Japanese Linguistics

★3 (fi 6) (either term, 3-0-0). Sound system, parts of speech, basic sentence structure, writing system, and language change and variation. Not open to students with credit in JAPAN 225. Prerequisite: JAPAN 202 or equivalent.

JAPAN 330 Japanese Literature and Film

★3 (fi 6) (either term, 3-0-0). Sub-titled film and animation adaptations of literary works from the modern and pre-modern eras. Note: Not open to students with credit in JAPAN 430. This course will not fulfill the language other than English requirement of the BA.

JAPAN 341 Classical Japanese I

★3 (fi 6) (either term, 3-0-0). Prerequisite: JAPAN 202 or equivalent.

JAPAN 342 Classical Japanese II

★3 (fi 6) (either term, 3-0-0). Prerequisite: JAPAN 341 or equivalent.

JAPAN 350 The Japanese Language in Its Cultural Setting II

★6 (fi 12) (Spring/Summer, 0-15L-0). A language/culture immersion course to be studied in Japan. Designed to improve oral/aural skills and increase understanding of Japanese people and culture. Note: Offered in alternate years. Prerequisite: JAPAN 302, or 306, or consent of Department. Note: JAPAN 250 and 350 may not both be taken for credit.

JAPAN 360 Japanese Religion Through Literature

★3 (fi 6) (either term, 3-0-0). Japanese religion through pre-modern literary texts. Emphasis on mythology, poetry, Shintō-Buddhist synthesis, angry ghosts and karmic retribution. Note: does not fulfill any Faculty of Arts Language Other than English requirement.

JAPAN 401 Advanced Japanese I

★3 (fi 6) (either term, 3-0-0). An advanced course designed to develop skills in spoken and written Japanese with special emphasis on the acquisition of an extensive vocabulary. Prerequisite: JAPAN 302.

JAPAN 402 Advanced Japanese II

★3 (fi 6) (either term, 3-0-0). A continuation of JAPAN 401. Prerequisite: JAPAN 401 or equivalent.

JAPAN 415 Haiku and the Japanese Poetic Tradition

★3 (fi 6) (either term, 3-0-0). The course will discuss in English the evolution of haiku, the work of the great masters of the 17th and 18th centuries and modern haiku. Prerequisite: JAPAN 321 or any 300-level literature course. Note: This course will not fulfil the Language other than English requirement of the BA degree.

JAPAN 416 Japanese Theatre from the Noh to the Avant-garde

★3 (fi 6) (either term, 3-0-0). The course will discuss, in English, forms of Japanese drama from the Noh to modern theatre. Prerequisite: JAPAN 321 or any 300-level literature or drama course. Note: This course will not fulfil the Language other than English requirement of the BA degree.

JAPAN 418 Women in Pre-Modern Japanese Literary Culture

★3 (fi 6) (either term, 3-0-0). Taught in English translation. The role of women, gender construction, female subjectivity, the meaning of romance within the context of traditional society. Prerequisite: JAPAN 321 or any other 300-level literature course. This course will not fulfill the language other than English requirement of the BA. Note: Not open to students with credit in JAPAN 417.

JAPAN 419 Women in Modern Japanese Literary Culture

★3 (fi 6) (either term, 3-0-0). Major works in English translation. The role of the female writer, formation of the modern Japanese literary canon, female subjectivity, gender and gender relations, the meaning of family and motherhood. Prerequisite: JAPAN 322 or any 300-level literature course. Note: This course will not fulfill

the language other than English requirement of the BA. Not open to students with credit in JAPAN 417.

JAPAN 420 Japanese Fiction

★3 (fi 6) (either term, 3-0-0). Works in English translation of important Japanese writers in their cultural, social and historical contexts. Prerequisite: JAPAN 322 or any 300-level literature course. Note: Does not fulfill any Faculty of Arts Language Other than English requirement.

JAPAN 425 Japanese Linguistics

★3 (fi 6) (either term, 3-0-0). Discussion of the major linguistic features of the Japanese language. Lectures in English. Prerequisite: JAPAN 302 and 325 or consent of Department.

JAPAN 427 Practical Japanese Linguistics

★3 (fi 6) (either term, 3-0-0). Practical linguistic knowledge for effective learning of Japanese as a second language. Prerequisite: JAPAN 225 or 325, and 302 or consent of Department.

JAPAN 429 Japanese-English Translation

★3 (fi 6) (either term, 3-0-0). Theory and practice in translation as applied to Japanese and English literary and non-literary texts. Prerequisite: JAPAN 401 or consent of Department.

JAPAN 439 Practical Translation

★3 (fi 6) (either term, 3-0-0). The practice of translation in media, government, and business. Prerequisite: JAPAN 302 or consent of Department.

JAPAN 451 Advanced Readings in Japanese

★3 (fi 6) (either term, 3-0-0). Advanced readings from newspapers, magazines, social commentary and literary prose. Prerequisite: JAPAN 402 or consent of Department.

JAPAN 460 Topics in Japanese Studies

★3 (fi 6) (either term, 3-0-0). Prerequisite: ★6 of senior courses in Japanese or consent of Department. May be repeated for credit when course content differs. Not open to web registration.

JAPAN 481 Supervised Reading in Japanese

★3 (fi 6) (either term, 3-0-0). Accelerated reading course primarily for senior and graduate students in special areas of need or interest. Prerequisite: consent of Department.

JAPAN 490 Honors Thesis

★3 (fi 6) (either term, 3-0-0).

Graduate Courses

JAPAN 500 Topics in Japanese Language

★3 (fi 6) (either term, 3-0-0). A reading knowledge of Japanese is required. May be repeated for credit when course content differs.

JAPAN 502 Methods of Research

★3 (fi 6) (either term, 3-0-0). Theory and practice of historical and critical approaches to premodern and modern Japanese literature. A reading knowledge of Japanese is required.

JAPAN 503 Colloquia in Japanese Language Research

★1 (fi 2) (either term, 0-1s-0). Seminars on research in Japanese language. Prerequisites: advanced knowledge of Japanese is required and consent of the Department. May be repeated when course content differs. Not open to web registration.

JAPAN 510 Japanese for Business I

★3 (fi 6) (either term, 3-0-0). An introduction to the Japanese language through Japanese business culture. Primarily for graduate students in the MBA program. Prerequisite: Consent of Department.

JAPAN 511 Japanese for Business II

★3 (fi 6) (either term, 3-0-0). A continuation of JAPAN 510. Prerequisite: JAPAN 510.

JAPAN 515 Topics in Japanese Poetry

★3 (fi 6) (either term, 3-0-0). A reading knowledge of Japanese is required. Note: Not open to students with credit in JAPAN 554.

JAPAN 516 Topics in Japanese Pre-modern and Modern Theatre

★3 (fi 6) (either term, 3-0-0). A reading knowledge of Japanese is required. Note: Not open to students with credit in JAPAN 551.

JAPAN 518 Topics in Japanese Women's Literature (Pre-Modern)

★3 (fi 6) (either term, 3-0-0). A reading knowledge of Japanese is required. Note: Not open to students with credit in JAPAN 552

JAPAN 519 Topics in Japanese Women's Literature (Modern)

★3 (fi 6) (either term, 3-0-0). A reading knowledge of Japanese is required. Note: Not open to students with credit in JAPAN 553.

JAPAN 525 Japanese Linguistics

★3 (fi 6) (either term, 3-0-0). Discussion of the major linguistics features of the Japanese language. Lectures in English. Prerequisite: advanced knowledge of Japanese language, a prior linguistics course required, and consent of Department.

JAPAN 527 Practical Japanese Linguistics

★3 (*fi 6*) (either term, 3-0-0). Students will develop advanced-level practical linguistics knowledge for effective learning of Japanese as a second language. Prerequisite: advanced knowledge of Japanese and consent of department.

JAPAN 557 Japanese Women Writers: Theory and Criticism

★3 (*fi 6*) (either term, 3-0-0). A reading knowledge of Japanese is required.

JAPAN 598 Topics in Pre-Modern Japanese Literature

★3 (*fi 6*) (either term, 3-0-0). Graduate students specializing in pre-modern Japanese literature must take JAPAN 598 at least once. May be repeated for credit when course content differs. A reading knowledge of Classical Japanese is required.

JAPAN 599 Topics in Japanese Literature, Premodern and Modern

★3 (*fi 6*) (either term, 3-0-0). JAPAN 599 must be taken at least once and may be repeated for credit when course content differs. A reading knowledge of Japanese is required.

221.124 Laboratory Medicine and Pathology, LABMP

Department of Laboratory Medicine and Pathology
Faculty of Medicine and Dentistry

Undergraduate Courses

LABMP 400 Introduction to Human Disease

★3 (*fi 6*) (either term, 3-0-0). Lecture sessions on the study of human disease are presented. The causes and general mechanisms of disease with selected specific examples from various organ systems are discussed. Disease related structural and functional changes at the molecular, cellular and tissue level are presented, and how these changes can be appreciated by various laboratory methods. The discipline bridges basic science and clinical medicine. Prerequisites: PHYSYL ★6, BIOCHEM ★3. Credit can be obtained in only 1 of LABMP 400 or LABMP 500

Graduate Courses

LABMP 500 Introduction to Human Disease

★3 (*fi 6*) (either term, 3-0-0). Lecture sessions on the study of human disease are presented (LABMP 400). The causes and general mechanisms of disease with selected specific examples from various organ systems are discussed. Disease related structural and functional changes at the molecular, cellular and tissue level are presented, and how these changes can be appreciated by various laboratory methods. A written review of scientific literature on a specific topic in Pathology will be required. Prerequisites: Credit may only be obtained in one of LABMP 400 or LABMP 500.

LABMP 510 Cryobiology I

★3 (*fi 6*) (first term, 2-1s-0). Physicochemical changes in aqueous solutions at low temperatures and responses of living cells and tissues to those changes. Current theories of damage and protection during freezing and thawing. This course may not be taken for credit if credit has already been received in PATH 510.

LABMP 511 Cryobiology II

★3 (*fi 6*) (second term, 2-1s-0). Freeze-thaw responses of enzyme systems, individual cells and organized tissues. Preservation of spermatozoa, blood and bone marrow cells, embryos and various tissues. Approaches to the cryopreservation of organs and whole organisms. Applications in medicine and agriculture. Prerequisite: consent of Department. This course may not be taken for credit if credit has already been received in PATH 511.

LABMP 520 Pathology Research Seminar

★2 (*fi 4*) (two term, 0-1s-0). Graduate seminars presented by graduate students, faculty and guests in the Department. Required of all pathology graduate students. This course may not be taken for credit if credit has already been received in PATH 520.

LABMP 540 Directed Reading in Laboratory Medicine and Pathology

★3 (*fi 6*) (either term, 0-3s-0). Reading and study of basic laboratory medicine and pathology topics relevant to the student's chosen field of study under the direction of one or more faculty members. Prerequisite: Consent of Graduate Co-ordinator, Laboratory Medicine and Pathology.

221.125 Latin, LATIN

Department of History and Classics
Faculty of Arts

Notes

(1) Prerequisite for all 400-level Latin courses: LATIN 300, or 302, or consent of Department.

(2) For additional related courses see Classics (CLASS) and Greek (GREEK) listings.

Undergraduate Courses

LATIN 101 Beginners' Latin I

★3 (*fi 6*) (either term, 3-0-1). Elements of Latin grammar and reading of simple texts. Note: Not to be taken by students with credit in Latin 30 or LATIN 100.

LATIN 102 Beginners' Latin II

★3 (*fi 6*) (either term, 3-0-1). A continuation of LATIN 101. Students who intend to proceed to LATIN 301 should register in LATIN 104. Prerequisite: LATIN 101 or consent of Department. Not open to students with credit in LATIN 104.

LATIN 104 Beginner's Latin II (For Further Study)

★3 (*fi 6*) (either term, 3-0-0). Continuation of LATIN 101 for those who intend to proceed to LATIN 301. Prerequisite: LATIN 101. Not open to students with credit in LATIN 102.

LATIN 301 Intermediate Latin I

★3 (*fi 6*) (either term, 3-0-1). Review of grammar; reading of Latin texts; translation of simple sentences from English into Latin. Prerequisite: LATIN 102 (prior to 2005-06), or 104 or consent of Department.

LATIN 302 Intermediate Latin II

★3 (*fi 6*) (either term, 3-0-0). Selections from Latin poetry and prose. Prerequisite: LATIN 301 or consent of Department.

LATIN 433 Medieval Latin

★3 (*fi 6*) (either term, 0-3s-0). Prerequisite: LATIN 302 or consent of Department.

LATIN 470 Roman Historians

★3 (*fi 6*) (either term, 3-0-0).

LATIN 475 Roman Elegiac and Lyric Poetry

★3 (*fi 6*) (either term, 3-0-0).

LATIN 477 Roman Oratory

★3 (*fi 6*) (either term, 3-0-0).

LATIN 481 Roman Epic and Didactic Poetry

★3 (*fi 6*) (either term, 3-0-0).

LATIN 488 Latin Authors I

★3 (*fi 6*) (either term, 3-0-0).

LATIN 489 Latin Authors II

★3 (*fi 6*) (either term, 3-0-0).

LATIN 499 Individual Study in Latin Authors

★3 (*fi 6*) (either term, 3-0-0).

LATIN 500 Fourth-Year Honors Tutorial

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

Graduate Courses

LATIN 502 Latin Epic and Didactic Poetry

★3 (*fi 6*) (either term, 3-0-0).

LATIN 506 Latin Poetry

★3 (*fi 6*) (either term, 3-0-0).

LATIN 508 Latin Historiography

★3 (*fi 6*) (either term, 3-0-0).

LATIN 510 Latin Prose Writers

★3 (*fi 6*) (either term, 3-0-0).

LATIN 699 Conference Course

★3 (*fi 6*) (either term, 3-0-0).

221.126 Latin American Studies, LA ST

Department of Modern Languages and Cultural Studies
Faculty of Arts

Note: All LA ST courses are taught in English.

Undergraduate Courses

LA ST 205 Mexico, Central America and the Caribbean

★3 (*fi 6*) (either term, 3-0-0). Regional similarities and national differences. An introduction to Mexico, Central America and the Caribbean today, including, Spanish, French, and Creole speaking countries through study of their cultural contexts and forms of expression.

LA ST 210 South America

★3 (*fi 6*) (either term, 3-0-0). Regional similarities and national differences. An

introduction to South America today, including Brazil and the Spanish speaking countries of the continent, through study of their cultural contexts and forms of expression.

LA ST 310 Latin America at the Movies

★3 (*fi 6*) (either term, 3-0-3). The representation of Latin American people, places and events in the cinemas of Latin America, North America and Europe. Prerequisite: LA ST 205 or 210 or consent of Department.

LA ST 311 Latin America and the Cultures of Popular Music

★3 (*fi 6*) (either term, 3-0-0). Popular music and its role in the formation of regional and national identities, with a focus on concepts such as high and low cultures, mass culture and mass media, cultural hybridity, diaspora, and creativity. Prerequisite: LA ST 205 or 210 or consent of Department. Note: not to be taken by students with credit in MUSIC 311.

LA ST 313 Women in Latin America

★3 (*fi 6*) (either term, 3-0-0). Women as creators, consumers, transformers, and guardians of culture. Forms of female representation through stereotypes, clichés, archetypes, and mythologies. Prerequisite: LA ST 205 or 210 or consent of Department.

LA ST 314 Urban Space and Visual Culture

★3 (*fi 6*) (either term, 3-0-0). The representation of urban space in art, architecture, film and other media. Prerequisite: LA ST 205 or 210 or consent of the Department.

LA ST 330 The Latino Experience Abroad

★3 (*fi 6*) (either term, 3-0-0). Exile, immigration, identity, language, and other questions in texts from Latin American and Caribbean communities in North America. Note: not to be taken by students with credit in SPAN 330.

LA ST 360 Latin America in its Literature (in English Translation)

★3 (*fi 6*) (either term, 3-0-0). Relations among the literature, culture, history, and politics of Latin America, primarily in Spanish-speaking areas. Themes vary from year to year. Note: not to be taken by students with credit in SPAN 360 or C LIT 363.

LA ST 410 Consuming Popular Culture in Latin America

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★3 in LA ST courses at the 300-level or consent of Department.

LA ST 411 Culture, Race and Ethnicity in Latin America

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: ★3 in LA ST courses at the 300-level or consent of Department.

LA ST 412 Latin America in Focus

★3 (*fi 6*) (either term, 3-0-0). Study of a particular region, country, or city. Prerequisite: ★3 in LA ST courses at the 300-level or consent of Department.

LA ST 413 Gendering Latin America

★3 (*fi 6*) (either term, 3-0-0). Through gender and queer theory, a discussion of sex and sexualities in literature, film and visual arts. Prerequisite: ★3 in LA ST at the 300-level or consent of Department.

LA ST 499 Special Topics

★3 (*fi 6*) (either term, 3-0-0).

221.127 Law, LAW

Faculty of Law

Undergraduate Courses

LAW 399 Introduction to Environmental Law

★3 (*fi 6*) (second term, 3-0-0). Introduces students to the basic structure and function of the legal system. It will then focus on the way in which law is used to control environmental problems, focussing on major federal and provincial pollution licensing legislation, and the legal duties of persons working within industry. Regimes for environmental impact assessment and the use of criminal and civil enforcement mechanisms will also be included. The relationship between legal rules and non-legal industry standards and voluntary initiatives may also be explored. Note: Open to students in the Civil Engineering (Environmental Option) degree program only. This course may not be taken for credit if credit has already been obtained for LAW 459.

LAW 401 Foundations to Law

★3 (*fi 6*) (first term, 3-0-0). An introduction to the institutions and processes of the Canadian legal system, and its underlying values and systems of thought. Also introduced are the history, structure and function of the modern system, and the role of law and the legal profession in society.

LAW 405 Legal Research and Writing

★4 (*fi 8*) (two term, 2-0-0). Instruction in the fundamentals of legal research tools and techniques, including the impact of modern technology. Through a variety of written assignments, students will develop their analytical, research, communication and drafting skills, as well as becoming familiar with proper citation methods. Exercises in oral communications, advocacy skills and/or a moot court presentation may also be included.

LAW 410 Contracts

★5 (*fi 10*) (two term, 2-0-0; 3-0-0). A discussion of the prerequisites to the creation of contractual obligation: offer and acceptance, intention and certainty, consideration, the requirements of writing and capacity. The effect of misrepresentations and terms of the contract, together with the problems of exclusion clauses and of standard form contracts. Questions of discharge from contractual obligation on the grounds of mistake, undue influence, duress, unconscionable transactions and frustration. Remedies for breach of contract.

LAW 420 Criminal Law and Procedure

★5 (*fi 10*) (two term, 2-0-0; 3-0-0). A general introduction to the criminal law including pretrial procedures and practices; general substantive principles; criminal law and morality; trial procedure; double jeopardy; and sentencing.

LAW 430 Torts

★5 (*fi 10*) (two term, 2-0-0; 3-0-0). The law of negligence, damages, intentional interferences with persons, property and chattels, the law of strict liability, occupiers' liability, nuisance, defamation, the economic torts, the future of tort law.

LAW 435 Constitutional Law and History

★5 (*fi 10*) (two term, 2-0-0; 3-0-0). An introduction to the legal and constitutional framework of the legislative, executive, and judicial branches of Canadian government and their interrelationships. The development of Canada's constitution from early colonial days to the present is examined as are the basic principles of Constitutional interpretation, the division of legislative jurisdiction between Parliament and provincial legislatures, and the Charter of Rights and Freedoms. Some emphasis is placed upon the court structure in Canada and the role of the judiciary.

LAW 440 Property Law

★5 (*fi 10*) (two term, 2-0-0; 3-0-0). This course involves the study of basic principles which govern the institution of real and personal property. Included in this analysis will be the history of property law and issues of social and political context. Other topics include right incident to the ownership and possession of land, tenures and estates, concurrent ownership, dower, leases and tenancies, easements, restrictive covenants, finders law, bailment, and gifts. Other special issues may be explored.

LAW 450 Administrative Law

★3 (*fi 6*) (either term, 3-0-0). Designed to provide an understanding of the legal constraints courts have placed on the behavior of administrative tribunals and government departments. Topics to be discussed: What is Administrative Law? How the courts supervise the acts and decisions of administrative bodies. Pitfalls to be avoided by administrative officers: errors of fact and law; excesses of discretion; breach of natural justice. How administrative acts and decisions may be attacked by an aggrieved citizen: remedies. Appeal and review, time limits, locus standi, choice of remedy, procedure. How to avoid attacks by aggrieved citizens. The practical outcome; strength of review. Recent trends in Administrative Law in Canada.

LAW 451 Corporations Law

★3 (*fi 6*) (either term, 3-0-0). The laws governing corporations including: pre-incorporation matters; the corporation as a legal person; the tortious, criminal, regulatory, and contractual liability of the corporation; corporate social responsibility; corporate management; shareholder rights; and shareholder remedies. May not be taken for credit if credit has already been obtained for LAW 510.

LAW 452 Civil Procedure

★3 (*fi 6*) (either term, 3-0-0). The fundamentals of the traditional litigation process (under the Rules of Court and applicable statutes) and current issues including access and reform. May not be taken for credit if credit has already been obtained for LAW 570.

LAW 453 Evidence

★3 (*fi 6*) (either term, 3-0-0). The adversary system in trial and appellate courts; relevance and admissibility; character evidence including similar facts; opinion evidence; the hearsay rule and its exceptions; illegally obtained evidence; judicial notice; burdens of proof and presumptions; quantum of proof; corroboration; competence; compellability and privilege; parole evidence of rule; oaths and affirmation. May not be taken for credit if credit has already been obtained for LAW 575.

LAW 454 Conflict of Laws

★3 (*fi 6*) (either term, 3-0-0). Theoretical basis of conflict of laws. Preliminary topics: characterization, renvoi, time element domicile. Choice of Law: domestic relations, contract, torts. Jurisdiction and the recognition of foreign judgments. May not be taken for credit if credit has already been obtained for Law 600.

LAW 456 Professional Responsibility

★3 (*fi 6*) (either term, 3-0-0). A consideration of the responsibilities of the lawyer to the profession and the profession to the public. Ethics and organization of the profession. This course may not be taken for credit if credit has already been obtained for LAW 670.

LAW 486 Jurisprudence

★3 (*fi 6*) (either term, 3-0-0). An enquiry into the nature of law and legal obligation. The first part of the course is a survey of the major schools of jurisprudence with particular emphasis upon positivism, natural law and legal realism. The second

part consists of an examination of the modern applications of these theories, especially in relation to the process of judicial decision making and the question of whether there is an obligation to obey the law. May not be taken for credit if credit has already been obtained for LAW 500.

LAW 496 Legal History

★3 (*fi 6*) (either term, 3-0-0). An introduction to the historical development of law, from early times to the present day. May not be taken for credit if credit has already been obtained for LAW 505.

LAW 504 Taxation

★3 (*fi 6*) (either term, 3-0-0). The scope and purpose of taxation. The taxing power; tax appeal procedures; constitutional problem. Personal jurisdiction. Property jurisdiction. Income from a business; capital gains and losses; statutory interpretation, deductions, expenses. Gift tax. May not be taken for credit if credit has already been obtained for LAW 460.

LAW 506 International Law

★3 (*fi 6*) (either term, 3-0-0). A survey of the core areas of public international law. Topics to be covered include definition, nature and sources of international law; international personality; the UN system; the application of international law in domestic law; international dispute settlement; and may also include international human rights; and/or international trade law. May not be taken for credit if credit has already been obtained for LAW 465.

LAW 512 Techniques in Negotiation

★3 (*fi 6*) (either term, 3-0-0). An in-depth analysis of the nature, purpose, and methodology of negotiation. Mock negotiations will be undertaken by the class. Mediation and arbitration will be discussed. May not be taken for credit if credit has already been obtained for LAW 472.

LAW 514 Judgment Enforcement Law

★3 (*fi 6*) (either term, 3-0-0). The law governing the enforcement of judgments by unsecured creditors. Will provide an in-depth analysis of the Civil Enforcement Act of Alberta. Topics include prejudgment remedies, registration and priority of writs, enforcement against personal property, enforcement against land, garnishment and distribution. Will also cover fraudulent conveyances and preferences.

LAW 515 Sale of Goods

★3 (*fi 6*) (either term, 3-0-0). The law of the sale of goods; nature of contract of sale, conditions and warranties implied by the Sale of Goods Act, passing of property and risk, documentary sales transactions, remedies of the buyer and the seller, circumstances under which a seller can pass a better title than he/she has. A portion of the course will be devoted to a discussion of consumer protection legislation.

LAW 516 Alternative Dispute Resolution

★3 (*fi 6*) (either term, 3-0-0). This course will provide students with an understanding of the breadth and scope of dispute resolution alternatives with a focus on how those alternative processes are being utilized in Alberta. The students will learn various forms of dispute resolution including client interviewing, negotiation, mediation, arbitration, med-arb, the mini-trial and litigation risk analysis. The course will look at how alternative dispute resolution fits within the adversarial system, the benefits and drawbacks of each process and how to choose the most appropriate form. This course may not be taken for credit if credit has already been obtained for LAW 474.

LAW 518 Intellectual Property

★3 (*fi 6*) (either term, 3-0-0). A study of the law with respect to patents, trade marks, trade secrets, copyrights and intangible property generally.

LAW 519 Insurance Law

★3 (*fi 6*) (either term, 3-0-0). General principles affecting insurance contracts including good faith, indemnity, subrogation, and insurable interest; particular problems arising out of the Alberta Insurance Act in relation to automobile, life and fire insurance.

LAW 520 Criminal Procedure

★3 (*fi 6*) (either term, 3-0-0). Will provide students with an overview of the entire Canadian criminal process, from the investigatory stage to the laying of charges through to appeals. In particular, attention will be paid to the authority of the police to detain, search/seize, question and arrest individuals.

LAW 522 Sentencing

★3 (*fi 6*) (either term, 3-0-0). An introduction to and survey of the law of sentencing in the Canadian context. Topics include the history of punishment, the philosophical underpinnings of sentencing law, the evidentiary rules governing sentencing hearings, the substantive principles of adult and young offender sentencing, and preventive detention.

LAW 524 Family Law

★3 (*fi 6*) (either term, 3-0-0). The formation and annulment of marriage; various matrimonial remedies; judicial separation; alimony; loss of consortium; divorce; ground and procedure; custody of children; financial obligations and property rights between spouses. May not be taken for credit if credit has already been obtained for LAW 485.

LAW 526 Research Paper

★3 (*fi 6*) (either term, 3-0-0). Will give selected students an opportunity to engage

in original research. The research topic is subject to prior approval of a Faculty member, who shall direct the students, and of the Associate Dean.

LAW 531 Law and Medicine

★3 (*fi 6*) (either term, 3-0-0). Selected topics pertinent to law and medicine with an emphasis on the practical implications of the law for the medical profession and the effect of changes in medical practice and institutions on the law. Problems will be examined with assistance from professionals working in the relevant areas and recommendations for law reform will be sought.

LAW 532 Constitutional Litigation

★3 (*fi 6*) (either term, 3-0-0). Will address current issues in constitutional litigation particularly those involving the Charter. The emphasis will be on both substantive knowledge of constitutional litigation issues and development of skills within that framework. Issues such as pleadings, interventions and class actions, examination of lay and expert witnesses, the use of extrinsic aids, statistical and other forms of ordinary and expert evidence, forms of remedies, form and role of written briefs, and other related matters will be addressed. May not be taken for credit if credit has already been obtained for LAW 639.

LAW 533 Advanced Problems in Constitutional Law

★3 (*fi 6*) (either term, 3-0-0). Entails an examination of various current problems in constitutional law. Topics covered in past years include Criminal Justice and the Charter, Comparative Constitutional Law, and Federal/Provincial Law. May not be taken for credit if credit has already been obtained for LAW 637.

LAW 536 Civil Liberties

★3 (*fi 6*) (either term, 3-0-0). An in-depth analysis and discussion of the Charter of Rights and Freedoms and the cases decided thereunder; the role of the judiciary and the legitimacy and scope of judicial review under the Charter; the protection afforded under the Constitution Act, 1867 (e.g. implied Bill of Rights, provisions regarding denominational guarantees), Canadian Bill of Rights, 1960, anti-discrimination laws (e.g. Canadian Human Rights Act, Individual Rights Protection Act), the Office of the Ombudsman, Freedom of Information legislation. All or some of the above will be discussed. Comparative materials will be studied where appropriate.

LAW 538 Alberta Law Review

★3 (*fi 6*) (either term, 3-0-0). Students enrolled in this course will be involved in all facets of the production of the Alberta Law Review, including the assessment, selection and substantive and stylistic editing of manuscripts submitted for publication. Students enrolled in this course must normally participate as a member of the Law Review for two academic years to be eligible for credit. Students may be admitted only on application. May not be taken for credit if credit has already been obtained for Law 650.

LAW 540 Land Titles

★3 (*fi 6*) (either term, 3-0-0). A detailed study of the Alberta Land Titles Act consisting of an analysis of the Common Law and Registry Systems of Conveyancing; Introduction to the Torrens System of Land Titles; The Principles of Indefeasibility; Exceptions to Indefeasibility; Boundary Problems; Caveats; Registerable Instruments; Miscellaneous Title Problems; The Assurance Fund; Limitations of Actions.

LAW 542 Alberta Law Review Research Paper

★3 (*fi 6*) (either term, 3-0-0). This course provides members of the Alberta Law Review with an opportunity to engage in original research and to prepare a paper of publishable quality. The research topic is subject to the prior approval of the Faculty Advisor and the Assistant or Associate Dean. The paper must be presented at a seminar of Law Review members. May not be taken for credit if credit has already been obtained for Law 655.

LAW 543 Basic Oil and Gas Law

★3 (*fi 6*) (either term, 3-0-0). The origin, occurrence, and production of oil and gas; the nature of interests in oil and gas; the acquisition and disposition of interests in oil and gas; the rights and duties of parties under oil and gas leases; pooling of oil and gas interests; acquisition of surface leases and pipeline easements.

LAW 552 Natural Resources Law

★3 (*fi 6*) (either term, 3-0-0). The judicial, legislative, administrative and policy problems related to the regulation and management of natural resources, including problems of allocation, development, use, pollution control, and conservation. Particular emphasis is placed on water resources.

LAW 555 Labor Law

★3 (*fi 6*) (either term, 3-0-0). Legal problems concerning the establishment of collective bargaining; negotiation and enforcement of the collective agreement; the activities of unions and employers in industrial disputes; and the internal affairs of labor organizations.

LAW 556 Labor Arbitration

★3 (*fi 6*) (either term, 3-0-0). The law and practice relating to interest and rights arbitrations in Alberta. The course will be taught partly as a seminar and partly through a series of mock arbitrations in which students will act as counsel.

LAW 558 Poverty Law

★3 (*fi 6*) (either term, 3-0-0). The culture of poverty and its implications for anti-poverty planning will be examined with emphasis on psychological, sociological

and economic theory. Organizational models for the delivery of legal services will be considered together with a treatment of the theory of equality, the problem of accessibility to the claims process and alternative methods of dispute settlement. The character of the law concerning the poor will be analyzed as reflected in selected case studies in welfare law, public housing policy, workmen's compensation and unemployment insurance.

LAW 559 Environmental Law and Policy

★3 (*fi 6*) (either term, 3-0-0). The focus of this course will be the Canadian laws and policies designed to control air, land, and water pollution. The course will introduce basic environmental concepts and examine Canadian regulatory legislation; including licensing systems, the use of quasi-criminal sanctions, and environmental impact assessment processes. The course will also review relevant constitutional issues and evaluate the usefulness of the common law as a means to achieve and maintain environmental quality. Other topics may include alternative legal approaches to the resolution of environmental problems, such as the economic incentives, wildlife protection, an environmental Bill of Rights, wilderness preservation, the public trust doctrine of environmental mediation.

LAW 565 International Business Transactions

★3 (*fi 6*) (either term, 3-0-0). This is a survey course on the international and domestic law involved in international trade/investment activities of Canadian and foreign business entities. In the international law sphere, the law of the World Trade Organization (WTO) and regional economic integration agreements such as the North American Free Trade Agreement (NAFTA) will be studied. In the area of private law, the legal aspects of international business transactions will be considered, including contract types and drafting, financing of transactions, and dispute settlement by international commercial arbitration.

LAW 567 Pacific Rim Law

★3 (*fi 6*) (either term, 3-0-0). This course will give students the opportunity to understand the Japanese, their society and their law in the context of international society. The exact contents of the course will depend on the speciality area of the visiting professor.

LAW 578 Family at Risk

★3 (*fi 6*) (either term, 3-0-0). Focuses on the human dimension behind family law. A panorama of subjects will be discussed which may include new family structures, adoption, troubled children, young offenders, and the causes and effects of marriage breakdown. This course may not be taken for credit if credit has already been obtained for LAW 687.

LAW 580 Trusts

★3 (*fi 6*) (either term, 3-0-0). A brief survey of the historical development of the trust. Definition and classification of trusts. Creation of express trust; the three certainties. Completely and incompletely constituted trusts. Secret, protective, discretionary and illusory trusts. Charitable trust and the rule against perpetuities. Cy-pres doctrine. Non-charitable purpose trusts. Implied or resulting trusts. Constructive trusts. Revocation, termination and variation of trusts. The appointment, retirement and removal of trustees. Duties, discretion and powers of trustees. Breach of trust.

LAW 582 Wills and Administration

★3 (*fi 6*) (either term, 3-0-0). Principles of the Wills Act, including formalities of execution, revocation, revival, republication, types of legacies, and principles of construction. Testamentary capacity, fraud, and undue influence. Drafting of wills. Appointment of executors and administrators, their powers and duties; probate practice.

LAW 587 Personal Property Security Law

★3 (*fi 6*) (either term, 3-0-0). The course will provide an in-depth analysis of the law of secured transactions in personal property. The salient features of the Alberta Personal Property Security Act will be examined, including topics on the scope of the Act, security agreements, the concepts of attachment and perfection, the priority of security interests in relation to other interests, proceeds and enforcement of security interests. This course may not be taken for credit if credit has already been obtained for LAW 614.

LAW 588 Immigration Law

★3 (*fi 6*) (either term, 3-0-0). An in-depth analysis of Immigration Law in Canada. Will review the Immigration Act and Regulations and look at various tribunals involved in the immigration process including the Immigration and Refugee Board and the Federal Court. Will provide a brief historical review and discuss new developments in the law and important policy areas.

LAW 590 Aboriginal Peoples and the Law

★3 (*fi 6*) (either term, 3-0-0). This is a survey course on Aboriginal Peoples in Canadian Law. Subjects covered include issues of race and legal reasoning, legal and historical foundations of claims to Aboriginal rights, treaty rights, Metis rights, Aboriginal peoples and the Constitution, Aboriginal claims negotiation and litigation, the Indian Act, and contemporary legal and political developments including an introduction to Aboriginal government. The course is organized as a seminar in which a great deal of learning arises from discussion and class participation.

LAW 592 Advanced Criminal Law

★3 (*fi 6*) (either term, 3-0-0). The course comprises an examination of substantive criminal law particularly: offences against the person and rights of property; the

jury system; juvenile justice and quasi-criminal proceedings; and, the extraordinary remedies. May not be taken for credit if credit has already been obtained for LAW 620.

LAW 593 International Environmental Law

★3 (*fi 6*) (either term, 3-0-0). Examines the development of international law principles in the environment area. Topics to be covered include: customary principles of state responsibility; transboundary pollution of international waterways; marine pollution control (oil pollution, dumping, and land-based sources); international air pollution control (ozone, climate change, acid rain); transboundary movement of hazardous materials; disarmament and environment; endangered species conservation; and sustainable resource development. The various models for environment regulation in internationally shared areas will also be discussed. It is recommended, but not required, that students enrolled in this course take International Law. May not be taken for credit if credit has already been obtained for LAW 659.

LAW 596 Advanced Torts

★3 (*fi 6*) (either term, 3-0-0). An analysis of, and problems in, the Law of Torts.

LAW 598 Moot Court Competition

★3 (*fi 6*) (either term, 3-0-0). Selection to the Gale Cup, Jessup Moot, Laskin Moot, Kawaskimhon Aboriginal Moot, Western Canada/Sopinka Trial Cup Trial Moot, Canadian Corporate/Securities Moot, Labour Arbitration Moot, Alberta Court of Appeal Moot, Client Counselling Competition, Clinton J. Ford Moot, or other designated moot competition team through a preliminary round competition, preparation of a memorandum, factum or memorial, training in oral advocacy or criminal trial practice through practice rounds, and participation as a representative of the law school at the moot court competition.

LAW 599 Seminars on Specialized Legal Topics

★3 (*fi 6*) (either term, 0-3s-0). These seminars will cover specialized topics of emerging importance in the law at a senior level. The particular topic covered would vary dependent on the availability of Faculty with necessary teaching competence, student interest, and the needs of the legal profession.

LAW 608 Advocacy

★3 (*fi 6*) (either term, 3-0-0). The conduct of civil litigation including: interviewing and counselling, drafting pleadings, examinations for discovery, settlement attempts, preparation for court and participation in a mock trial. Emphasis on ethics and techniques of persuasion. Prerequisites: Completion of LAW 452 and 453. However, LAW 452 may be a corequisite in both the Fall and Winter Terms. This course may not be taken for credit if credit has already been obtained for LAW 470.

LAW 613 Corporate Securities and Finance

★3 (*fi 6*) (either term, 3-0-0). The course will cover methods of small business financing including equity, borrowing, government assistance; special structures such as partnerships, joint ventures, farmouts and leases. A second major part of the course will deal with sale of securities to the public, the various parties in public financing, preparation of a prospectus, continuous disclosure and stock exchange requirements; evaluation of and issues involved in takeovers. Prerequisite: LAW 451, or consent of the Faculty.

LAW 640 Real Estate Transactions

★3 (*fi 6*) (either term, 3-0-0). The law governing agreements for sale of land; the open contract of sale, implied terms, special covenants in agreements for sale. Remedies of vendors and purchasers; election of remedies; cancellation and determination clauses. Deposits and instalments. Mortgages: legal, equitable and statutory. Foreclosure; sales; redemption; possession and attornment. Prerequisite: LAW 540, or consent of the Faculty.

LAW 651 Municipal and Planning Law

★3 (*fi 6*) (either term, 3-0-0). The first part of the course will consist of an examination of the theory, structure, organization and operation of local government units in Alberta. The powers and duties of local governments to make laws, to tax, to expropriate, to enter into contracts and to provide and maintain municipal servicing infrastructure will be explored as will the role of the courts, both procedurally and substantively, in respect of supervising the judicial review proceedings and actions in contract and tort. The second part of the course will focus on municipal duties and powers relative to land use planning and regulation as well as the nature and role of non-municipal planning authorities. The objective is to leave the student with an appreciation of how a subdivision or development project is processed through the maze of regulations and agencies that are typically confronted and the role of the lawyer in that process. Prerequisite: LAW 450, or consent of the Faculty. This course may not be taken for credit if credit has already been obtained for LAW 551.

LAW 660 Estate Planning

★3 (*fi 6*) (either term, 3-0-0). A review of the objectives of estate planning; study of various estate planning techniques with the use of hypothetical problems; an examination of provisions found in the Income Tax Act which affect estate planning, estate tax, and gift tax. Prerequisite: LAW 504, or consent of the Faculty.

LAW 665 Corporate Taxation

★3 (*fi 6*) (either term, 3-0-0). The tax consequences of corporation financing; amalgamations, mergers, international business transactions; tax planning from a

corporation and personal standpoint; and trends in taxation. Prerequisite: LAW 504, or consent of the Faculty. This course may not be taken for credit if credit has already been obtained for Law 560.

LAW 675 Advanced Evidence

★3 (fi 6) (either term, 3-0-0). This course is designed to offer an in-depth analysis of several areas of current practical value for lawyers. The course will discuss recent developments and future possibilities relating to hearsay evidence, technology and opinion evidence, children as witnesses, and privileges. The course will track developments as to Charter-connected matters of the law of evidence, relating to burden of proof, discovery and disclosure, and principles of law touching on exclusion of evidence such as the 'discoverability' rule. The course may also examine special evidentiary rules applicable to special tribunals and boards. Prerequisite: LAW 453, or consent of the Faculty.

LAW 680 Restitution

★3 (fi 6) (either term, 3-0-0). A study of restitution of unjust enrichment and restitution of the profits of wrong doing. This includes the nature and forms of unjust enrichment and its place in private law, methods of restitution, and defences to claims for restitution. Prerequisite or co-requisite: LAW 580, or consent of the faculty.

Graduate Courses

LAW 695 Research Paper

★2 (fi 4) (either term, 2-0-0). This program will give selected graduate students an opportunity to engage in original research. The research topic is subject to prior approval of the Faculty supervisor and the Chair of the Graduate Studies Committee. The research topic shall be different from the thesis topic.

LAW 698 Legal Research Methodology and Education

★3 (fi 6) (either term, 3-0-0). This seminar covers key research techniques and methodological approaches to assist thesis research and writing. Legal education is addressed on a theoretical and practical level. Students are introduced to contemporary and historical debates concerning legal education and practical topics such as curricula design. Students may be provided with opportunities to practise teaching skills.

LAW 699 Seminars on Specialized Legal Topics

★3 (fi 6) (either term, 3-0-0). Graduate Level. These seminars will cover a specialized topic of emerging importance in the law. The particular topic covered would vary depending on the availability of Faculty with necessary teaching competence, student interest, and the needs of the legal profession.

221.127.1 Non-LLB Spring/Summer

Note: LAW 300, normally offered in Spring/Summer, is available to students in other faculties. It will not be considered for credit in the LLB program.

LAW 300 Law for Non-LLB Students I

★3 (fi 6) (first term, 30 hours). The nature, functions, and sources of law; an outline and components of the Canadian legal system. Note: Not available for credit in the LLB Program.

221.128 Library and Information Studies, LIS

School of Library and Information Studies
Faculty of Education

Undergraduate Courses

LIS 210 Critical Strategies for the Information Universe

★3 (fi 6) (either term, 2-0-1). This course explores the challenges of acquiring, evaluating and communication information. Students will examine information theory and practical techniques relating to the Internet, databases, and other electronic sources, to develop a critical understanding of the information universe. Open to second, third and fourth year undergraduate students.

LIS 401 Survey of Children's Literature

★3 (fi 6) (either term, 3-0-0). Literature for children from infancy through the elementary school years. The emphasis is on books currently read by children. Principles of evaluation, children's reading needs and interests, and current issues and trends will be examined. This course is not open to MLIS students.

LIS 402 Storytelling

★3 (fi 6) (either term, 3-0-0). The past and present forms of storytelling, including the oral tradition, the function of the storyteller, the selection of material and the techniques of telling stories and listening to stories. This course is not open to MLIS students.

LIS 403 Survey of Young Adult Materials

★3 (fi 6) (either term, 3-0-0). A survey of fiction in all media forms for upper elementary and secondary school-aged readers. Adolescents' reading and media

needs and interests, and current issues and trends will be examined. Not open to MLIS students.

LIS 404 Comic Books and Graphic Novels in School and Public Libraries

★3 (fi 6) (either term, 3-0-0). Examines the history and contemporary reality of comic book publishing and readership in Canada, Great Britain, Japan and the United States, and issues related to perception of the format of educators, librarians, and readers. Focus on collection development, censorship concerns and challenges, gender issues in both readership and content, genres, and impact of the Internet. Not open to MLIS students.

LIS 405 Canadian Children's Literature for Young People in Schools and Libraries

★3 (fi 6) (second term, 3-0-0). A survey of Canadian children's materials from books for babies to those aimed at the young adult market. Focus on contemporary works, trends in both publishing and content, and issues such as censorship, multimedia forms and the Internet.

Graduate Courses

Note: All the following courses are restricted to MLIS students and may not be offered each year. Interested students should contact the School of Library and Information Studies for scheduling information. The following courses are required for both the thesis and course-based routes of the MLIS program and are normally prerequisites to the rest of the program: LIS 501, 502, 503, 504, 505, and 506.

The following courses are also available as part of the MLIS program: EDES 541, 542, 546, 547, and 548; EDIT 535, 537, and 568.

LIS 501 Foundations of Library and Information Studies

★3 (fi 6) (first term, 3-0-0). Introduction to the historical, current, and potential roles of libraries and of library and information professionals in western society. Required course.

LIS 502 Organization of Knowledge and Information

★3 (fi 6) (first term, 3-0-0). An introduction to the organization of knowledge and information focusing on theory and principles for application in a variety of settings. Required course.

LIS 503 Reference and Information Services

★3 (fi 6) (first term, 3-0-0). An introduction to reference and information services and resources. Includes history and varieties of reference services, user populations, instruction, ethics, access issues, the reference interview, search strategies, evaluation of services, and the organization, selection, evaluation, and use of major information resources. Required course.

LIS 504 Leadership and Management Principles for Library and Information Services

★3 (fi 6) (either term, 3-0-0). An introduction to principles and practices of leadership and management in the professional lives of librarians, archivists, and other information service practitioners. Required course.

LIS 505 Research Methods for Library and Information Studies

★3 (fi 6) (second term, 3-0-0). Introduction to qualitative, quantitative, and textual research approaches relevant to the field of library and information studies. Includes theoretical discussion of issues and the application of research design principles through the development of a research project proposal. Required course.

LIS 506 Information Technology

★3 (fi 6) (either term, 3-0-0). An introduction to information technology and its implications for libraries and information services. Required course.

LIS 510 Storytelling

★3 (fi 6) (either term, 3-0-0). The past and present forms of storytelling, including the oral tradition, the function of the storyteller, the selection of material and the techniques of telling stories and listening to stories.

LIS 515 Materials for Young Adults

★3 (fi 6) (either term, 3-0-0). Materials for young adults of junior and senior high school age, young adults' reading interests, and current trends and issues in young adults literature.

LIS 516 Canadian Children's Literature for Young People in Schools and Libraries

★3 (fi 6) (second term, 3-0-0). A survey of Canadian children's materials from books for babies to those aimed at the young adult market. Focus on contemporary works, trends in both publishing and content, and issues such as censorship, multimedia forms and the Internet.

LIS 517 Government Publications

★3 (fi 6) (either term, 3-0-0). The control and dissemination of government publications, using the Canadian system as a model applicable to other political jurisdictions.

LIS 518 Comic Books and Graphic Novels in Schools and Public Libraries

★3 (fi 6) (either term, 3-0-0). Examines the history and contemporary reality of

comic book publishing and readership in Canada, Great Britain, Japan and the United States, and issues related to perception of the format by educators, librarians, and readers. Focus on collection development, censorship concerns and challenges, gender issues in both readership and content, genres, and impact of the Internet. Open to MLIS students and other graduate students.

LIS 519 Introduction to Children's Literature

★3 (fi 6) (either term, 3-0-0). Literature for children from infancy through the elementary school years, principles of evaluation and selection, and current issues and trends.

LIS 520 Information Resources in Specialized Fields

★3 (fi 6) (either term, 3-0-0). Information resources and their administration in a specialized field and for a specialized clientele. The emphasis is on the nature of the field, problems of collection development, bibliographic access, retrieval and use by the clientele, and administrative issues in solving these problems. Specialized fields regularly examined are law, business, and health sciences.

LIS 526 Instructional Practices in Library and Information Services

★3 (fi 6) (either term, 3-0-0). Theory and practice related to the teaching roles of the librarian or information professional. Includes planning, implementation and evaluation of pedagogical approaches for the design of effective information literacy and professional development instructional sessions.

LIS 531 Collection Management

★3 (fi 6) (either term, 3-0-0). An analytical approach to collection management including the acquisition, review and evaluation of collections.

LIS 532 Cataloguing and Classification

★3 (fi 6) (either term, 3-0-0). Prepares students to develop cataloguing policy, to construct a catalogue and to create catalogue records for various forms of materials in diverse library situations.

LIS 534 Information Architecture: Web Design for Usability

★3 (fi 6) (either term, 3-0-0). An examination of the principles and practice of web usability, with a focus on information architecture, layout and design, metadata, and other topics related to effective web design and management. Includes an introduction to HTML and other web coding. Prerequisites: LIS 501, 502, 503, 506. Corequisite: LIS 505.

LIS 535 Advanced Topics in the Organization of Knowledge

★3 (fi 6) (either term, 3-0-0). An examination of the principles and practice of indexing, abstracting, thesaurus construction, metadata, or other topics relevant to the organization of knowledge.

LIS 536 Digital Reference and Information Retrieval

★3 (fi 6) (either term, 3-0-0). An examination of the integration of digital services into the array of reference services, with an emphasis on information retrieval systems and their effective use by professionals and end users.

LIS 537 Management of Information Technology

★3 (fi 6) (either term, 3-0-0). Areas of library and information operations suitable for computer applications with emphasis on management and evaluation.

LIS 538 Digital Librarianship

★3 (fi 6) (either term, 3-0-0). An examination of the theory and practice of managing access to digital collections, including advanced web architecture and tools for digitization and development.

LIS 540 Management of School Media Centres

★3 (fi 6) (either term, 3-0-0). Study of the concept and organization of school library media resource centres in elementary and secondary schools. Includes policies and policy development; program development and scheduling; processes for acquiring, cataloguing and circulating materials; facilities planning; budgeting and staffing.

LIS 545 Management of Resources in Library and Information Services

★3 (fi 6) (either term, 3-0-0). The field of resource management and its application in library and information services.

LIS 546 Marketing Library and Information Services

★3 (fi 6) (either term, 3-0-0). The principles of marketing and public relations for nonprofit organizations, with an emphasis on library and information services.

LIS 548 Library Services to Children and Young Adults

★3 (fi 6) (either term, 3-0-0). The principles and practices of library service to children and young adults. Prerequisite: LIS 515 or 519.

LIS 580 Contemporary Theories and Practices of Reading

★3 (fi 6) (either term, 3-0-0). A study of different theories of reading (e.g. social, psychological, literary) and of sites and practices of literacy in an era of rapid cultural and technological change.

LIS 582 Contemporary Issues in Library and Information Studies

★3 (fi 6) (either term, 0-3s-0). New and continuing topics of concern or debate in the library and information professions, and how they influence information attitudes and programs.

LIS 583 Globalization, Diversity and Information

★3 (fi 6) (either term, 3-0-0). Explores global and local interactions as they affect

information access within and outside of libraries, including cultural, ethical, political and institutional discourses.

LIS 585 Multimedia Texts for Young People

★3 (fi 6) (either term, 3-0-0). An introduction to the development of multimedia texts for children and adolescents: in print, video, audio, CD-ROM, DVD, computer program, hypermedia, Internet text, graphic form, and electronic book, also including text-based toys and commodities, and any new text format. An exploration of the cultural, social, commercial, and educational issues raised by the proliferation of such texts for young people.

LIS 586 History of the Book

★3 (fi 6) (either term, 3-0-0). The historical, aesthetic, and economic bases of the 'book' and its role in the recording and preservation of information and ideas.

LIS 587 Facilities Planning for Libraries and Information Centres

★3 (fi 6) (either term, 3-0-0). The examination of the building needs of various types of libraries and information centres, the involvement of information professionals and architects in the planning process, and various contemporary building styles.

LIS 589 Feminism and Library and Information Studies

★3 (fi 6) (either term, 3-0-0). Examines the nature of librarianship as a profession, issues related to information, and practices of information management from gendered perspectives using applicable feminist theoretical interpretations.

LIS 590 Practicum

★3 (fi 6) (either term, 100 hours). The application of LIS theories and principles through experiential learning in a library, archives, records management and other services settings.

LIS 591 Publishing

★3 (fi 6) (either term, 3-0-0). The organized business of writing, manufacturing and marketing of books and other media.

LIS 592 Intellectual Freedom and Social Responsibility in Librarianship

★3 (fi 6) (either term, 3-0-0). An examination of the central concepts of intellectual freedom and social responsibility and the range of related issues impacting librarians, library institutions, and library associations. Prerequisite: LIS 501.

LIS 593 Archives Administration

★3 (fi 6) (either term, 3-0-0). Theories, standards and methods used in management of modern archives, with an historical overview and an emphasis on contemporary theory and practice.

LIS 594 Records Management

★3 (fi 6) (either term, 3-0-0). The theory and techniques of records management.

LIS 597 Seminar in Advanced Research Methods

★3 (fi 6) (first term, 0-3s-0). In-depth examination of research approaches and issues relevant to the field of library and information studies, and to the research interests of students pursuing doctoral programs, thesis-route master's programs, and other advanced projects.

LIS 598 Special Topics

★3 (fi 6) (either term, 3-0-0). A current topic of significance to, or a special aspect of, library and information studies may be examined as demand and resources permit.

LIS 599 Directed Study

★3 (fi 6) (either term, 0-3s-0). Further study of special topics and issues, based on knowledge acquired in previous courses or on significant prior experience. Topic to be approved by the School.

LIS 600 Capping Exercise

★0 (fi 1) (either term, 12 hours). The required capping exercise will be a World Wide Web version of the students best work in the MLIS program, and a reflective paper on the significance of the work. The capping exercise paper is to be submitted during the final term of course work.

LIS 699 Directed Study

★3 (fi 6) (either term, 0-3s-0). Further study at the doctoral level of special topics and issues, based on knowledge acquired in previous courses or on significant prior experience. Topics must be approved by the School.

221.129 Linguistics, LING

Department of Linguistics
Faculty of Arts

Undergraduate Courses

LING 100 Introduction to Human Language

★3 (fi 6) (either term, 3-0-0). An introduction to how human language works: how it is structured, how it is learned, how it is used in different societies and how it changes over time. Note: Not to be taken by students with credit in LING 102.

LING 101 Introduction to Linguistic Analysis

★3 (fi 6) (either term, 3-0-0). Central concepts of linguistics: linguistic categories and structure (phonetics, phonology, morphology, syntax, semantics).

LING 204 English Syntax

★3 (fi 6) (either term, 3-0-0). Linguistic analysis of the syntax of modern English. Prerequisite: LING 101.

LING 205 Phonetics

★3 (fi 6) (either term, 3-0-0). Recognizing, transcribing, and producing speech sounds using the International Phonetic Alphabet; problems in phonetic analysis; elementary acoustic phonetics; techniques for describing the sound system of an unfamiliar language. Prerequisite: LING 101.

LING 308 Morphology and the Lexicon

★3 (fi 6) (either term, 3-0-0). Basic principles of word formation and structure across languages: the organization of the lexicon and representation of words. Prerequisites: LING 101, 204 and 205. Note: Not to be taken by students with credit in LING 208.

LING 309 Syntax and Semantics

★3 (fi 6) (either term, 3-0-0). Basic principles in syntax (constituent structure, sentence relatedness, grammatical relations) and semantics (word meaning, semantic roles, event structure). Prerequisites: LING 101 and LING 204. Note: Not to be taken by students with credit in LING 209.

LING 310 Introductory Phonology

★3 (fi 6) (either term, 3-0-0). Basic principles of phonological analysis across languages. Prerequisites: LING 101 and 205. Note: Not to be taken by students with credit in LING 210.

LING 314 Discourse Analysis

★3 (fi 6) (either term, 3-0-0). Analysis of selected approaches to the study of discourse including conversational analysis, narrative structure, text analysis. Prerequisite: LING 101. Not offered every year.

LING 316 Sociolinguistics

★3 (fi 6) (either term, 3-0-0). An examination of phonological, syntactic, lexical, and semantic variation in language systems in connection with extra-linguistic factors such as individual, social, or demographic differences. Prerequisite: LING 101. Not offered every year.

LING 319 Child Language Acquisition

★3 (fi 6) (either term, 3-0-0). Basic issues in first language acquisition: theories, research methods, and major findings. Prerequisite: LING 101. LING 204 and 205 recommended.

LING 320 Second Language Acquisition

★3 (fi 6) (either term, 3-0-0). Application of linguistics to theoretical issues in second-language acquisition: properties of language, problems of languages in contact, psycholinguistic aspects of bilingualism. Prerequisite: LING 101. Recommended: LING 204.

LING 321 Neurolinguistics

★3 (fi 6) (either term, 3-0-0). A neurolinguistic approach to the representation and processing of linguistic structures in the brain; patterns of language breakdown resulting from damage to the brain. Prerequisites: LING 101 and 204, or consent of Department. Not offered every year.

LING 322 Language and Gender

★3 (fi 6) (either term, 3-0-0). An examination of gender-related differences in the structure of language, discourse, communication, and how those differences relate to language processing, acquisition, and loss. Prerequisite: LING 101 or consent of Department. Not offered every year.

LING 323 Linguistics and the Mind

★3 (fi 6) (either term, 3-0-0). Language as an expression of the symbolic capacity of the mind. Attention will be given to the relation between meaning and language and other social-cultural practices in constituting mind and world. Prerequisite: None.

LING 324 Endangered Languages

★3 (fi 6) (either term, 3-0-0). An examination of languages facing extinction: how language endangerment arises, local and global factors affecting loss, how linguistic and cultural diversity suffers, and how linguists can respond. Prerequisite: LING 101.

LING 399 Special Topics in Linguistics

★3 (fi 6) (either term, 3-0-0). A study of recent developments in particular sub-areas of linguistics. Prerequisite: consent of Department. Normally offered only as a reading course through special arrangement.

LING 401 Semantics

★3 (fi 6) (either term, 3-0-0). An overview of natural language semantics across languages at both the lexical and clause levels. Topics covered include sense, reference, features, compositionality, semantic roles, logical form, categorization, and conceptualization. Prerequisite: LING 309. Not offered every year.

LING 405 Historical Linguistics

★3 (fi 6) (either term, 3-0-0). Principles and methods in the study of language change. Prerequisite: LING 310. Not offered every year.

LING 407 Linguistic Typology

★3 (fi 6) (either term, 3-0-0). A survey of similarities, differences, tendencies, and universals in the phonological, morphological, and syntactic patterns of different languages. Prerequisite: LING 309. Not offered every year.

LING 499 Special Topics in Linguistic Theory

★3 (fi 6) (either term, 3-0-0). A course designed to explore recent developments in particular areas of linguistic theory. Prerequisite: consent of Department. Normally offered only as a reading course through special arrangement.

LING 500 Psycholinguistics

★3 (fi 6) (either term, 3-0-0). Issues and methods involved in the experimental study of language production, comprehension, and acquisition. Prerequisites: Any two of LING 308, 309 or 310. Recommended: a course in elementary statistics.

LING 501 Research Project Seminar

★3 (fi 6) (first term, 3-0-0). Requires a literature review, devising research methodology, writing and defending a project proposal. Prerequisite: consent of Department. Note: Required for BA Honors students in Linguistics in their final year. Restricted to BA Honors and graduate students in Linguistics.

LING 502 Honors Project

★3 (fi 6) (second term, 3-0-0). Directed Honors thesis. Prerequisites: LING 501 and consent of Department. Note: Required for and Restricted to BA Honors students in Linguistics in their final year.

LING 509 Syntactic Theory

★3 (fi 6) (either term, 3-0-0). Advanced syntactic analysis and related theoretical issues. Prerequisite: LING 309 or consent of Department. Note: Required for BA Honors in Linguistics.

LING 510 Current Phonological Theory

★3 (fi 6) (either term, 3-0-0). Current approaches to phonological theory, focusing on constraint-based analysis. Prerequisite: LING 310 or consent of Department. Note: Required for BA Honors in Linguistics.

LING 512 Acoustic Phonetics

★3 (fi 6) (either term, 3-0-0). Analysis of the articulatory, perceptual, and acoustic aspects of speech signal; measuring the acoustic aspects of speech. Prerequisite: LING 310 or 312 (formerly LING 412).

LING 515 Field Methods

★3 (fi 6) (either term, 3-0-0). Practical experience in linguistic data collection and analysis of the sound and form systems of an unfamiliar language. Prerequisites: LING 205, 309 (formerly 209), and 310 (formerly 210) or consent of Department. Not offered every year.

LING 519 Corpus Linguistics

★3 (fi 6) (either term, 3-0-0). Theoretical and practical issues relating to using corpora in linguistic analysis: principles of corpus construction, application of corpus techniques to problems in linguistics, frequency counts, collocational searches, creating databases out of search results. Prerequisites: LING 309 and 310 or consent of department.

LING 599 Special Topics in Linguistic Research

★3 (fi 6) (either term, 3-0-0). A study of recent developments in particular areas of linguistic research. Prerequisite: consent of Department. Formerly LING 443.

Graduate Courses**LING 601 Phonology I**

★3 (fi 6) (either term, 0-3s-0). Current approaches to phonological theory, focusing on constraint-based analysis--advanced level. Prerequisite: consent of Department.

LING 602 Seminar in Syntax

★3 (fi 6) (either term, 0-3s-0). Critical examination of selected theoretical issues in morphosyntax. Prerequisite: consent of Department.

LING 604 Seminar in Psycholinguistics

★3 (fi 6) (either term, 3-0-0). A review of the current theories and research in psycholinguistics. Prerequisite: LING 500.

LING 605 Seminar in Experimental Phonetics

★3 (fi 6) (either term, 3-0-0). A survey of the present state of knowledge in speech production and perception. Prerequisite: LING 512 (LING 412 prior to 1997/98). Note: offered in alternate years.

LING 607 Linguistic Typology

★3 (fi 6) (either term, 0-3s-0). An examination of implications that the study of language universals and linguistic typology has for theories of grammar. Prerequisite: consent of Department. Note: offered in alternate years.

LING 608 Morphology

★3 (fi 6) (either term, 0-3s-0). Current approaches to morphological theory and analysis and their implications for grammatical theory and models of the lexicon. Prerequisite: consent of Department. Note: offered in alternate years.

LING 610 Formal Grammatical Theory

★3 (fi 6) (either term, 3-0-0). In-depth examination of a current grammatical theory. Prerequisite: LING 602 or consent of Department. Note: offered in alternate years.

LING 611 Phonology II

★3 (fi 6) (either term, 3-0-0). Current examination of selected theoretical topics in phonology, focusing on issues of representation. Prerequisite: LING 601 or consent of Department. Note: offered in alternate years.

LING 614 Methods in Experimental Phonetics

★3 (fi 6) (either term, 0-3s-0). Training in experimental phonetics research methods with emphasis on practical experience. Prerequisite: LING 512 and graduate level Statistics course.

LING 615 Methods in Experimental Psycholinguistics

★3 (fi 6) (either term, 0-3s-0). Training in experimental psycholinguistic research methods with emphasis on practical experience. Prerequisite: graduate level Statistics course.

LING 616 Methods in Laboratory Phonology

★3 (fi 6) (either term, 0-3s-0). Training in laboratory phonology research methods with emphasis on practical experience. Prerequisite: graduate level Statistics course.

LING 617 Methods in Language Acquisition

★3 (fi 6) (either term, 0-3s-0). Training in language acquisition research methods with emphasis on practical experience. Prerequisite: graduate level Statistics course.

LING 618 Methods in Field Linguistics

★3 (fi 6) (either term, 0-3s-0). Training in field linguistics research methods with emphasis on practical experience. Prerequisite: LING 515.

LING 619 Methods in Corpus Linguistics

★3 (fi 6) (either term, 0-3s-0). Technical and practical training in corpus linguistics. Prerequisite: LING 519.

LING 636 Analysis of Meaning

★3 (fi 6) (either term, 3-0-0). Relations between social historical practices and linguistic meaning in a contemporary philosophical discourse. Prerequisite: consent of Department.

LING 638 Topics in Language Acquisition

★3 (fi 6) (either term, 3-0-0). Analysis of recent theoretical and empirical research in language acquisition. Prerequisite: consent of Department.

LING 645 Linguistic Analysis of Aphasic Language

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

LING 670 Foreign Language Analysis

★3 (fi 6) (either term, 0-1s-3). Study and analysis of a language other than English resulting in demonstrated proficiency or analytic competency in the language's structural, psycholinguistic, or acquisitional properties. Prerequisite: consent of Department.

LING 683 Conference Course I

★3 (fi 6) (first term, 0-3s-0).

LING 684 Conference Course II

★3 (fi 6) (second term, 0-3s-0).

LING 693 Generals Paper I

★3 (fi 6) (variable, unassigned).

LING 694 Generals Paper II

★3 (fi 6) (variable, unassigned).

LING 900 Directed Research Project

★3 (fi 6) (variable, unassigned).

221.130 Linguistique, LINGQ

Faculté Saint-Jean

Cours de 1er cycle**LINGQ 200 Introduction à l'étude du langage**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude du langage comme phénomène social et individuel. La langue et son fonctionnement.

LINGQ 300 Lexicologie et terminologie

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des approches et des techniques en lexicologie et en terminologie. Analyse de ressources documentaires et mises en application.

LINGQ 320 Phonétique et phonologie du français canadien

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Phonétique et phonologie du français canadien. Préalable(s): LINGQ 200 ou l'équivalent.

221.131 Maintaining Registration, M REG

University of Alberta

Graduate Courses**M REG 800 Maintaining Registration**

★0 (fi 6) (either term, unassigned). Maintaining registration in a graduate program and status as a graduate student. Graduate students who do not plan to register either in courses or in Theses or a project course but who wish to maintain their position in a program and their status as graduate students can register in M REG.

221.132 Management Information Systems, MIS

Department of Accounting and Management Information Systems
Faculty of Business

Note: Enrolment in all MIS 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**MIS 311 Management Information Systems**

★3 (fi 6) (either term, 3-0-1). Introduction to all major areas of information systems. Technology and file systems, organizational and behavioral issues, datamodeling, databases, expert systems, systems analysis, systems development life cycle, etc. Development of analytical skills which can be brought to bear on MIS problems. Notes: Students are expected to have basic familiarity with microcomputer applications (word processing, spreadsheets, personal data base, presentation graphics, personal information manager, email, web browser). The lab component will be taught for up to 10 weeks.

MIS 412 Managerial Support Systems

★3 (fi 6) (either term, 3-0-0). Provides students with an understanding of the interaction between decision-making and technology within organizational contexts. Within the context of decision support systems (DSS), focus is on four key components: 1) the technology; 2) the broader context, including the decision-making styles which exist at the organizational, group and individual levels; 3) the design and development of DSS; 4) the effectiveness of DSS to support decision-making processes, including issues of implementation and evaluation. Prerequisite: MIS 311.

MIS 413 Systems Analysis and Design

★3 (fi 6) (either term, 3-0-0). Examination of the critical stages of the systems development process. These include the initiation, planning, analysis, design, implementation and maintenance of information systems needed to support business functions in organizations. The concepts of life cycle, requirements definition, analysis and design methods, and computer-assisted software engineering (CASE) tools are presented. Specific modeling techniques such as process models, data models and logic models are examined in detail. Hands-on experience with a high-end CASE tool are provided. Prerequisite: MIS 311.

MIS 415 Data Base Design and Administration

★3 (fi 6) (either term, 3-0-2). Application of database concepts in organizations. A comprehensive introduction to the design and development of relational databases from a logical data model. The relational database access language SQL is used along with a number of key-software development tools. Effective data administration techniques for enforcing integrity and security as well as enhancing performance are discussed. Topics of special current interest include data warehousing and the object-oriented data model. Prerequisite: MIS 311. Note: There will be a lab component for up to ten weeks during the term.

MIS 417 Telecommunications in Business

★3 (fi 6) (either term, 3-0-0). An introduction to fundamental concepts required to understand and apply telecommunication technologies within a business environment. Emphasizes the principles of those technologies to familiarize the students with the fundamental concepts and terminology of telecommunications. Telecommunications equipment, networks, protocols and architectures are introduced and discussed regarding their relevance and impact on business-oriented organizations. Also introduces managerial aspects such as planning, design and performance of telecommunication systems. Prerequisite: MIS 311.

MIS 418 Electronic Commerce

★3 (fi 6) (either term, 3-0-0). An examination of the development of electronic commerce in business across a number of different sectors. Using a process modelling approach, traditional vs. electronic business transactions are discussed in business-to-business and business-to-consumer modes; strategies for e-commerce are developed with a focus on the appropriate technical architecture

to support business in an electronic marketplace. In particular, requirements of payment systems, and issues of security and privacy are discussed as key considerations in implementation. The course uses software development tools in the implementation of these electronic commerce strategies. Prerequisite: MIS 311.

MIS 419 Systems Development Using Advanced Software Tools

★3 (fi 6) (either term, 3-0-2). Covers the physical design and implementation of computer systems with modern software development tools. Is a continuation of the systems analysis and design topics introduced in MIS 413 and uses the outcomes of the logical systems analysis and design process to create the actual system. Prerequisites: MIS 413, 415 and CMPUT 115 or consent of Department. Note: There will be a lab component for up to 12 weeks during the term. Credit may not be obtained for both MIS 419 and CMPUT 301 or 401.

MIS 424 Introduction to Information Systems Project Management

★3 (fi 6) (either term, 3-0-0). Examines information system development project management. The system development project is a multi-stage activity involving investigation and analysis, scope definition, resource analysis and estimation, timing estimation, cost estimation, scheduling, monitoring, and implementation. Prerequisite: MIS 311.

MIS 426 Technology-Enabled Business Process Management

★3 (fi 6) (either term, 3-0-0). Focuses on the major operational activities and tasks that have come to be called 'business processes'. Will identify and categorize key business processes, demonstrate process mapping as a method of business process analysis, and demonstrate process redesign principles as a way to better manage these processes. Will feature the role of IT in process redesign. Prerequisite: MIS 311.

MIS 435 Information, Ethics and Society

★3 (fi 6) (either term, 3-0-0). For students in all majors who are interested in information and the roles it plays in business and society. Focus is on the nature and basic characteristics of information, and its importance in contemporary society, viewing information as a commodity that is produced, used, bought and sold. Two aspects of the ways in which information affects people are emphasized: (1) ethical issues relating to professions, businesses, government, and individuals; (2) the impact of information technology and technological change on society. Prerequisites: ACCTG 311, 322, MIS 311. Open only to third or fourth year Business students, or by consent of Department Chair. Credit may be granted for only one of ACCTG 435 or MIS 435.

MIS 437 Accounting Information Systems

★3 (fi 6) (either term, 3-0-0). An introduction to the field of computerized accounting information systems in organizations from the perspective of the information system professional. Accounting information systems are typically the foundation for many other information systems in organizations. Concentrates on the design of accounting information systems in organizations and integration of accounting information systems with other functional area and management information systems as well as commonalities in the system development process for accounting and other functional area information systems. Prerequisites: ACCTG 311, 322, MIS 311. Credit may be granted for only one of ACCTG 437 or MIS 437.

MIS 441 Managing Information Systems: A Senior Management Perspective

★3 (fi 6) (either term, 3-0-0). Intended as a capstone course to the MIS Major. Issues, opportunities, and problems involved in the management of information system resources in organizations. These include human resource, financial, policies, standards, and strategic alignment concerns relating to the information systems department. The role of the CIO (Chief Information Officer) will be explored as the focal point for the course. Integrative cases of information systems issues in small, medium and large organizations will be discussed. Prerequisites: MIS 311 and a minimum of two 400-level MIS courses.

MIS 488 Selected Topics in Management Information Systems

★3 (fi 6) (either term, 3-0-0). This course may contain a lab component. Normally restricted to third- and fourth-year Business students. Prerequisites: MIS 311 or consent of Department. Additional prerequisites may be required.

MIS 490 Management Information Systems Competition Part I

★1.5 (fi 3) (either term, 0-1.5s-0). Preparation for Student Competition in Management Information Systems. Prerequisite: consent of Instructor.

MIS 491 Management Information Systems Competition Part II

★1.5 (fi 3) (either term, 0-1.5s-0). Completion of Student Competition in Management Information Systems. Prerequisite: MIS 490 and consent of Instructor.

MIS 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.

MIS 496 Individual Research Project II

★3 (fi 6) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: MIS 495, consent of the Instructor and Assistant Dean, Undergraduate Program.

MIS 497 Individual Research Project III

★3 (fi 6) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: MIS 496, consent of the Instructor and Assistant Dean, Undergraduate Program.

Graduate Courses

MIS 541 Information Systems Planning and Management

★1.5 (fi 3) (either term, 18 hours). Focuses on key IT/IS issues especially relevant to non-technical managers and professionals in organizations who are likely to be involved in the overall management and/or use of IT/IS resources in organizations in a role such as user, evaluator, and/or manager of IT/IS resources. These issues include (1) strategic alignment of IT/IS and organizational goals and strategies, (2) critical IT/IS applications that support organizational decision making, business process improvement and competitive strategies, and (3) management of IT/IS resources. Offered in a six week period.

MIS 612 Managerial Support Systems

★3 (fi 6) (either term, 3-0-0). Provides students with an understanding of the interaction between decision-making and technology within organizational contexts. Within the context of decision support systems (DSS), focus is on four key components: 1) the technology; 2) the broader context, including the decision-making styles which exist at the organizational, group and individual levels; 3) the design and development of DSS; 4) the effectiveness of DSS to support decision-making processes, including issues of implementation and evaluation.

MIS 613 Systems Analysis and Design

★3 (fi 6) (either term, 3-0-0). This course examines the critical stages of the systems development process. These include the initiation, planning, analysis, design, implementation and maintenance of information systems needed to support business functions in organizations. The concepts of life cycle, requirements of definition, analysis and design methods, and computer assisted software engineering (CASE) tools are presented. Specific modeling techniques such as process models, data models and logic models are examined in detail. Hands-on experience with a high-end CASE tool is provided.

MIS 615 Data Base Design and Administration

★3 (fi 6) (either term, 3-0-2). Application of database concepts in organizations. A comprehensive introduction to the design and development of relational databases from a logical data model. The relational database access language SQL is used along with a number of key software development tools. Effective data administration techniques for enforcing integrity and security as well as enhancing performance are also discussed. Topics of special current interest include data warehousing and the object-oriented data model. Note: The lab component will be taught for ten weeks during the term.

MIS 618 Electronic Commerce

★3 (fi 6) (either term, 3-0-0). An examination of the development of electronic commerce in business across a number of different sectors. Using a process modelling approach, traditional vs. electronic business transactions are discussed in business-to-business and business-to-consumer modes; strategies for e-commerce are developed with a focus on the appropriate technical architecture to support business in an electronic marketplace. In particular, requirements of payment systems, and issues of security and privacy are discussed as key considerations in implementation. The course uses software development tools in the implementation of these electronic commerce strategies.

MIS 624 IT/IS Project Management

★3 (fi 6) (either term, 3-0-0). Examines information system development project management. The system development project is a multi-stage activity involving investigation and analysis, scope definition, resource analysis and estimation, timing estimation, cost estimation, scheduling, monitoring, and implementation.

MIS 626 IT/IS Enabled Process Management

★3 (fi 6) (either term, 3-0-0). Focuses on the major operational activities and tasks that have come to be called 'business processes'. Will identify and categorize key business processes, demonstrate process mapping as a method of business process analysis, and demonstrate process redesign principles as a way to better manage these processes. Will feature the role of IT in process redesign.

MIS 637 Accounting Information Systems

★3 (fi 6) (either term, 3-0-0). An introduction to the field of computerized accounting information systems in organizations from the perspective of the information system professional. Accounting information systems are typically the foundation for many other information systems in organizations. Concentrates on the design of accounting information systems in organizations and integration of accounting information systems with other functional area and management information systems as well as commonalities in the system development process for accounting and other functional area information systems.

MIS 641 Information Systems Management

★3 (fi 6) (either term, 3-0-0). Issues, opportunities, and problems involved in the management of information system resources in organizations. These include human resource, financial, policies, standards, and strategic alignment concerns relating to the information systems department. The role of the CIO (Chief Information Officer) will be explored as the focal point for the course. Integrative

cases of information systems issues in small, medium and large organizations will be discussed.

MIS 686 Selected Topics in Management Information Systems

★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.

221.133 Management Science, MGTSC

Department of Finance and Management Science
Faculty of Business

Note: Enrolment in all MGTSC 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

MGTSC 312 Probability and Statistics for Business

★3 (fi 6) (either term, 3-0-0). This course deals with model building, multiple regression analysis, and related methods useful in a business environment. Microcomputer software will be utilized throughout the course, with necessary computing skills being taught as the course proceeds. However, students are expected to already possess some basic familiarity with microcomputer applications. Prerequisite: MGTSC 301 or STAT 151. Credit will be granted for only one of MGTSC 312 and STAT 252.

MGTSC 352 Operations Management

★3 (fi 6) (either term, 3-0-1). A problem-solving course which introduces the student to deterministic and stochastic models which are useful for production planning and operations management in business and government. Note: Students are expected to have basic familiarity with microcomputer applications. Prerequisite: MATH 113 and MGTSC 301 or STAT 151.

MGTSC 404 Decision Analysis

★3 (fi 6) (either term, 3-0-0). This course helps students deal systematically with decisions involving two or more parties with opposing interests. Decision trees and influence diagrams are used to model available strategies and weigh tradeoffs. Game-theoretic models for bidding, bargaining, and negotiation are examined and applied in case studies and simulations. Particular attention is paid to the effect of uncertainty and the strategic use of private information. Possible examples include labor negotiations, baseball salary arbitration, construction bidding, international boundary disputes, and environmental hazard location. Ethical and moral issues are discussed. Prerequisites: MGTSC 312, 352.

MGTSC 405 Forecasting for Planners and Managers

★3 (fi 6) (either term, 3-0-0). Every decision rests upon a forecast. This course examines statistical procedures for forecasting time series, matching the forecasting method to the setting, and assessment of forecast accuracy. Topics covered include forecasting single and multiple time series, the optimal combination of forecasts, adjusting for unmeasured events, and how to compensate for low quality data series. The emphasis is on the manager as forecaster. The objective of the course is to provide the individual with the skills necessary to produce the best possible forecasts from the sources at hand. The analysis and forecasting of series from finance, economics, marketing, accounting, and other areas relevant to business will be required. Prerequisites: MGTSC 312, 352.

MGTSC 422 Simulation and Computer Modelling Techniques in Management

★3 (fi 6) (either term, 3-0-0). Computer modelling of management systems in such functional areas as accounting, finance, marketing and operations. Basic concepts of deterministic and probabilistic (Monte Carlo) simulation and their applications. Microcomputer implementation of case studies using spreadsheets particularly emphasized. Required term project. Prerequisites: MGTSC 312, 352, FIN 301 and ACCTG 311.

MGTSC 426 Service Operations Management

★3 (fi 6) (either term, 3-0-0). This course introduces tools that managers can use to increase profits from operating decisions in service businesses and other service organizations. These decisions range from strategic (where to locate, what to sell) to tactical (how to schedule employees for the coming week). The course will emphasize realistic business projects and the use of easily available software tools. Examples of topics are models to describe and reduce congestion, work force scheduling heuristics, and selected marketing models. Prerequisites: MGTSC 312, 352.

MGTSC 431 Managerial Performance Measures

★3 (fi 6) (either term, 3-0-0). The historical development and the current practice of performance measurement and evaluation in the public and private sectors. Topics include main purposes served by performance measures; uses of non-financial and financial measures within large organizations; input, throughput, output and outcome measures; measures that involve a built-in standard of comparison, which include growth rates, input-output coefficients and single

factor efficiencies, output-input coefficients and single factor efficiencies, multi-factor productivity measures, and managerial accounting cost and sales variances; managerial functions and alternative ways of computing aggregative measures on a non-technical level; strategies for using performance measure and evaluation evidence in accountability agreements. Prerequisite: MGTSC 312.

MGTSC 455 Quality Management

★3 (fi 6) (either term, 3-0-0). The objective of the course is to study and understand process and product variation, interactions among product and process variables, and ultimately to take action to reduce variation. The topics covered include statistical process control, design of experiment, factorial design, Taguchi's methods and cases, and applications of quality control in management. Prerequisites: MGTSC 312, 352.

MGTSC 461 Distribution Management

★3 (fi 6) (either term, 3-0-0). This course will deal with the economically efficient distribution of goods and services from their points of creation to the customers. Topics will include strategic decisions, such as aggregate distribution plans and warehouse location, as well as operational decisions, such as selection of delivery routes and dispatching. This course has a significant microcomputer component. The potential of geographic-information-systems as a profit tool will be demonstrated. Prerequisite: MGTSC 312, 352.

MGTSC 465 Management of New Technology

★3 (fi 6) (either term, 3-0-0). In many firms, new technology has the potential to increase competitive advantage. This course looks at the development of products and services which embody new scientific and technical information, and the incorporation of up-to-date technical information in manufacturing and distribution systems. The main thrust of the course will be decisions on the profitable development and adoption of new technology, but there will also be some consideration of policies for government-business cooperation in stimulating and using new inventions and discoveries. The course will include a mix of cases and lectures designed to focus on the significant ways in which new of technology can increase profit potential. Prerequisites: MGTSC 312, 352.

MGTSC 467 Analytical Techniques for Management Consulting

★3 (fi 6) (first term, 3-0-0). This case-based course will cover the most popular analytical problem-solving techniques such as regression, simulation, and optimization. Topics will include inventory management, queuing, multiple regression, facility location, genetic algorithms, optimization on spreadsheets, capacity selection, process mapping, data analysis tools in spreadsheets, aggregate planning, and supply chain management. Guest speakers from the consulting sector will be invited to speak. Prerequisites: MGTSC 352 and another 400-level MGTSC or consent of Instructor.

MGTSC 468 Quantitative Management Consulting Project

★3 (fi 6) (second term, 3-0-0). This course applies the techniques developed in MGTSC 467 to a group project. The emphasis in the projects is on quantitative approaches to operational problems. Student groups will be assigned to consulting projects from businesses and other organizations in and near Edmonton. Groups will work on their projects under the supervision of the instructor(s). Prerequisites: MGTSC 467 or consent of Instructor.

MGTSC 471 Decision Support Systems

★3 (fi 6) (either term, 3-0-0). Decision support systems integrated with various management tools in a microcomputer environment. Programming language to be used is Visual Basic for Applications. Different multicriteria decision making tools such as the Analytic Hierarchy Process, Multiattribute Utility Theory, Goal Programming and Multiobjective Optimization are introduced. Students create decision support systems with graphical user interfaces that use a formal multicriteria decision-making front end as well as optimization, simulation or other appropriate engines for calculations in the background. Student projects in this implementation-oriented course will come from different areas such as employee scheduling, facility location, project/product selection and portfolio optimization. Prerequisites: MGTSC 312, 352.

MGTSC 480 Honours Essay in Management Science

★3 (fi 6) (second term, 3-0-0). Preparation of the honours essay required for students in the Management Science Honours program. Prerequisite: consent of the Department.

MGTSC 488 Selected Topics in Management Science

★3 (fi 6) (either term, 3-0-0). Normally restricted to third- and fourth- year Business students. Prerequisites: MGTSC 312, 352 or consent of Department. Additional prerequisites may be required.

MGTSC 490 Management Science Competition Part I

★1.5 (fi 3) (either term, 0-1.5s-0). Preparation for Student Competition in Management Science. Prerequisite: consent of Instructor.

MGTSC 491 Management Science Competition Part II

★1.5 (fi 3) (either term, 0-1.5s-0). Completion of Student Competition in Management Science. Prerequisite: MGTSC 490 and consent of instructor.

MGTSC 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.

MGTSC 496 Individual Research Project II

★3 (fi 6) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: MGTSC 495, consent of the Instructor and Assistant Dean, Undergraduate Program.

MGTSC 497 Individual Research Project III

★3 (fi 6) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: MGTSC 496, consent of the Instructor and Assistant Dean, Undergraduate Program.

Graduate Courses**MGTSC 511 Data Analysis**

★1.5 (fi 3) (either term, 18 hours). This course begins with a survey of graphical and numerical techniques available for studying and describing data. A statistics computer software package is used. Following an introduction to probability distributions, an overview of statistical inference for means and proportions is provided. The emphasis will be on the application of these techniques to managerial decision making. Offered in a six-week period.

MGTSC 521 Statistical Models

★1.5 (fi 3) (either term, 18 hours). This course is concerned with statistical inference techniques for various models. Regression, analysis of variance, and time series models are discussed. Statistical computer software is used to apply the techniques to business data sets. The data analyzed throughout the course will be representative of data commonly employed by managers. Offered in a six-week period. Corequisite: MGTSC 511.

MGTSC 531 Decision Analysis

★1.5 (fi 3) (either term, 18 hours). This course provides an overview of probability theory. A survey of decision theory, computer simulation and central management science concepts and techniques is included. The student is introduced to concepts using a variety of cases and assignments. Formulation of problems and interpretation of results are stressed. Computer spreadsheet software is used throughout. Offered in a six-week period. Not open to students who have completed MGTSC 501. Prerequisite: MGTSC 521.

MGTSC 541 Production and Operations Management

★1.5 (fi 3) (either term, 18 hours). This course focuses on the creation and delivery of goods and services. The emphasis is on the analytical solution methods for strategic and tactical decisions. Specific modules may include forecasting, project management, facility location, aggregate planning, scheduling, inventory management, distribution and transportation. A number of cases will be introduced and models of realistic problems will be implemented on microcomputers. Prerequisite: MGTSC 531.

MGTSC 604 Bargaining and Negotiation

★3 (fi 6) (either term, 3-0-0). This course is a blend of both experiential learning and theory with the objective of making the student more effective in all types of bargaining. A study of positive theories on how to improve negotiation skills will be combined with analytical models of the game theoretic structure of bargaining. Through this mix of theories and several case studies and bargaining exercises, students will see both the opportunities for joint gain (win-win) and the constraints which can lead to inferior outcomes. Prerequisite: MGTSC 531 and BUEC 501.

MGTSC 626 Service Operations Management

★3 (fi 6) (either term, 3-0-0). This course introduces tools that managers can use to increase profits from operating decisions in service businesses and other service organizations. These decisions range from strategic (where to locate, what to sell) to tactical (how to schedule employees for the coming week). The course will emphasize realistic business projects and the use of easily available software tools. Examples of topics are models to describe and reduce congestion, workforce scheduling heuristics, and selected marketing models. Prerequisite: MGTSC 541.

MGTSC 631 Managerial Performance Measures

★3 (fi 6) (either term, 3-0-0). The historical development and the current practice of performance measurement and evaluation in the public and private sectors. Topics include main purposes served by performance measures; uses of non-financial and financial measures within large organizations; input, throughput, output and outcome measures; measures that involve a built-in standard of comparison, which include growth rates, input-output coefficients and single factor efficiencies, output-input coefficients and single factor efficiencies, multi-factor productivity measures, and managerial accounting cost and sales variances; managerial functions and alternative ways of computing aggregate measures on a non-technical level; strategies for using performance measure and evaluation evidence in accountability agreements. Prerequisite: MGTSC 511/521.

MGTSC 632 Simulation and Computer Modelling Techniques in Management

★3 (fi 6) (either term, 3-0-0). This course will discuss computer modelling of management systems in such functional areas as accounting, finance, marketing, and production. Basic concepts of deterministic and probabilistic (Monte Carlo) simulation and their applications will also be covered. Micro computer implementations of case studies using spreadsheets will be particularly emphasized. A term project will be required. Prerequisite: MGTSC 541.

MGTSC 655 Quality Management

★3 (fi 6) (either term, 3-0-0). The objective of the course is to study and understand process and product variation, interactions among product and process variables and ultimately to take action to reduce variation. The topics covered include statistical process control, design of experiment, factorial design, Taguchi's methods and cases and applications of quality control in management. Prerequisite: MGTSC 521.

MGTSC 661 Distribution Management

★3 (fi 6) (either term, 3-0-0). This course will deal with the economically efficient distribution of goods and services from their points of creation to the customers. Topics will include strategic decisions, such as aggregate distribution plans and warehouse location, as well as operational decisions, such as selection of delivery routes and dispatching. This course has a significant microcomputer component. The potential of geographic-information-systems as a profit tool will be demonstrated. Prerequisite: MGTSC 541.

MGTSC 665 Management of New Technology

★3 (fi 6) (either term, 3-0-0). In many firms, new technology has the potential to increase competitive advantage. This course looks at the development of products and services which embody new scientific and technical information, and the incorporation of up-to-date technical information in manufacturing and distribution systems. The main thrust of the course is decisions on the profitable development and adoption of new technology, but there is also some consideration of policies for government-business cooperation in stimulating and using new inventions and discoveries. The course includes a mix of cases and lectures designed to focus on the significant ways in which new technology can increase profit potential. Prerequisite: MGTSC 541.

MGTSC 667 Analytical Techniques for Management Consulting: A Problem Solving Approach

★3 (fi 6) (either term, 3-0-0). This case-based course covers the most popular analytical problem-solving techniques used in management consulting, such as regression, simulation, and optimization. The goal is to train the students to become better business problem solvers. Prerequisite: MGTSC 511 or consent of the Instructor.

MGTSC 668 Quantitative Management Consulting Project

★3 (fi 6) (either term, 3-0-0). This project course covers quantitative approaches to operational problems. The end product may be a study addressing a strategic question, or a computational tool designed to solve a tactical problem. Prerequisite: MGTSC 667 or consent of the Instructor.

MGTSC 671 Decision Support Systems

★3 (fi 6) (either term, 3-0-0). Decision support systems integrated with various management tools in a microcomputer environment. Programming language to be used is Visual Basic for Applications. Different multicriteria decision making tools such as the Analytic Hierarchy Process, Multiattribute Utility Theory, Goal Programming and Multiobjective Optimization are introduced. Students create decision support systems with graphical user interfaces that use a formal multicriteria decision-making front end as well as optimization, simulation or other appropriate engines for calculations in the background. Student projects in this implementation-oriented course will come from different areas such as employee scheduling, facility location, project/product selection and portfolio optimization. Prerequisite: MGTSC 511/521.

MGTSC 686 Selected Topics in Management Science

★3 (fi 6) (either term, 3-0-0). Topics in this seminar may vary from year to year and are chosen at the discretion of the Instructor.

MGTSC 698 Individual Study Project in Management Science

★3 (fi 6) (either term, 3-0-0).

MGTSC 701 Seminar in Mathematical Programming

★3 (fi 6) (either term, 3-0-0). Topics from the areas of linear programming, nonlinear programming, quadratic programming, integer programming, stochastic programming, network analysis, and large-scale programming (decomposition and column generation) in a business context. Students are expected to have as background at least a one-semester introduction to linear programming and optimization. This course may be appropriate for some graduate students in engineering or computing science. Prerequisite: Written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MGTSC 702 Seminar in Decision Analysis and Game Theory

★3 (fi 6) (either term, 3-0-0). Decision-making under uncertainty, analysis of competitive strategies, competitive bidding, theory of auctions, bargaining, and negotiation models. Students are expected to have as background at least a one semester introduction to probability and random variables. This course may be appropriate for some graduate students in engineering and computing science. Prerequisite: Written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MGTSC 703 Seminar on Advanced Applications of Operations Research

★3 (fi 6) (either term, 3-0-0). Applications selected from areas such as transportation and distribution, energy modeling, urban services, health care, natural resource management, workforce management, and environmental management. Students are expected to have taken at least one of MGTSC 701, 702, or 704 or have equivalent background. This course may be appropriate for some graduate students

in engineering and computing science. Prerequisite: Written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MGTSC 704 Seminar in Stochastic Models

★3 (fi 6) (either term, 3-0-0). Review of probability distributions and random variables, followed by selected topics from stochastic processes and their application in business contexts. Possible topics include Bernoulli, Poisson, Markov, and renewal processes, queueing theory, computational probability, simulation, and stochastic dynamic programming. Students are expected to have as background at least two semesters of calculus and one semester introduction to probability and random variables. This course may be appropriate for some graduate students in engineering and computing science. Prerequisite: Written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MGTSC 705 Multivariate Data Analysis I

★3 (fi 6) (either term, 3-0-0). An overview of multivariate data analysis normally taken by students in the first year of the Business PhD program. Designed to bring students to the point where they are comfortable with commonly used data analysis techniques available in most statistical software packages. Students are expected to complete exercises in data analysis and in solving proofs of the major results. Topics will include univariate analysis, bivariate analysis, multiple linear regression, and analysis of variance. It is expected that students have as background at least one semester of calculus, one semester of linear algebra, and two semesters introduction to probability, probability distributions and statistical inference. Prerequisite: Registration in Business PhD Program or written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MGTSC 706 Multivariate Data Analysis II

★3 (fi 6) (either term, 3-0-0). A continuation of the overview of multivariate data analysis begun in MGTSC 705. Topics include categorical data analysis, multivariate linear regression, discriminant analysis, canonical correlation, multivariate analysis of variance, principal component analysis, factor analysis, cluster analysis and logistic regression. Prerequisite: MGTSC 705 or consent of Instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MGTSC 710 Individual Research

★3 (fi 6) (either term, 3-0-0).

MGTSC 820 Data Analysis and Modeling

★3 (fi 32) (first term, 3-0-0). Developing the ability to collect information and to use information technology to analyze statistically and draw conclusions; developing computer skills and understanding research methods. Restricted to Executive MBA students only.

MGTSC 830 Operations Management

★3 (fi 32) (second term, 3-0-0). Understanding the strategic role of operations in an enterprise and the relationship between operations and other business functions; designing, implementing and controlling an effective and efficient operating process. Restricted to Executive MBA students only.

221.134 Marine Science (Biological Sciences), MA SC

Department of Biological Sciences, Bamfield Marine Science Centre
Faculty of Science

Notes

- (1) Courses are offered at Bamfield Marine Science Centre. Details are available from the Department of Biological Sciences.
- (2) Prerequisite for all of the following courses is consent of the Department of Biological Sciences.
- (3) Students will be expected to take a full course load of ★15 during the Fall term.
- (4) See also §173.11.

Undergraduate Courses

MA SC 400 Directed Studies

★3-6 (variable) (two term, 0-0-6). A course of directed studies under the supervision of a visiting professor. The study will involve a research project approved by the supervisor in the field of interest of the student, and will be designed to take maximum advantage of the laboratory and/or field opportunities offered by the Bamfield Marine Station.

MA SC 401 Special Topics in Marine Biology

★6 (fi 12) (two term, 0-0-6). Offered, as opportunities arise, by distinguished scientists who are working at the Bamfield Marine Station. It is expected that the course will generally be of a specialized nature and be at a level appropriate to graduate or senior undergraduate students.

MA SC 402 Special Topics in Marine Biology

★3 (fi 6) (either term, 0-0-6). Offered, as opportunities arise, by distinguished scientists who are working at the Bamfield Marine Station and are prepared to

offer a course extending over a three-week period. Course will be of a specialized nature.

MA SC 403 Directed Studies in Marine Science

★3-6 (variable) (first term, 13 weeks). Study will involve a research project approved by a supervisor in the student's field of interest, and will be designed to take maximum advantage of the laboratory and/or field opportunities. Students may arrange for a supervisor before the start of the fall semester. Advanced students may, with the permission of their university, take a ★6 directed study in lieu of MA SC 415, 425, or 437.

MA SC 410 Marine Invertebrate Zoology

★6 (fi 12) (two term, 0-0-6). A survey of the marine phyla, with emphasis on the benthic fauna in the vicinity of the Bamfield Marine Station. The course includes lectures, laboratory periods, field collection, identification, and observation. Emphasis is placed on the study of living specimens in the laboratory and in the field.

MA SC 412 Biology of Fishes

★6 (fi 12) (two term, 0-0-6). Classification, physiology, ecology, behavior and zoogeography of fishes with particular emphasis on those in the marine environment of the British Columbia coast. Course will involve some field projects.

MA SC 415 Structure and Function in Animals

★3 (fi 6) (first term, 4 weeks). This course is intended to examine the form and function of invertebrates and vertebrates using a comparative approach. The following subject areas are included: morphology and evolution, systems physiology, biomechanics, and development. The local marine and coastal fauna are used to illustrate the principles. The course includes fieldwork and a series of laboratory exercises and experiments.

MA SC 420 Marine Phycology

★6 (fi 12) (two term, 0-0-6). A survey of the marine algae, with emphasis on the benthic forms in the vicinity of the Bamfield Marine Station. The course includes lectures, laboratory periods, field collection, identification, and observation. Emphasis is placed on the study of living specimens in the laboratory and in the field.

MA SC 425 Ecological Adaptations of Seaweeds

★3 (fi 6) (first term, 4 weeks). The course explores morphological, physiological, genetic and reproductive adaptations of seaweeds to their natural and man-altered environments.

MA SC 430 Marine Ecology

★6 (fi 12) (two term, 0-0-6). An analytical approach to biotic associations in the marine environment. Opportunities will be provided for study of the intertidal realm in exposed and protected areas and of beaches and estuaries in the vicinity of the Bamfield Marine Station; plankton studies and investigations of the subtidal and benthic environments by diving and dredging are envisaged.

MA SC 437 Marine Population Ecology and Dynamics

★3 (fi 6) (first term, 4 weeks). An analytical approach to the study of marine ecology and marine populations. Intertidal and subtidal communities will be examined, with emphasis on the biota of the Barkley Sound region.

MA SC 440 Biology of Marine Birds

★6 (fi 12) (two term, 0-0-6). A study of the interrelationship of birds and the marine environment. Lectures will emphasize the systematics and ecological relationships, behavior, life histories, movements and conservations of marine birds. Census techniques and methods of studying marine birds in the field will be treated as we observe seabirds and marine associated birds in the Barkley Sound region. Seabird identification, classification, morphology, plumages and moult will be examined in the laboratory.

MA SC 445 Biology of Marine Mammals

★6 (fi 12) (two term, 0-0-6). A survey course covering systematics and distribution of marine mammals, their sensory capabilities and physiology, with special emphasis on the Cetacea. The course includes lectures, laboratory periods and the course will involve an independent field study.

MA SC 454 Special Topics in Aquaculture

★3 (fi 6) (either term, 0-0-6). An examination of the culture techniques for selected groups of aquatic plants, animals, or micro organisms. Participants will be expected to complete a project which examines some aspects of applied science relevant to commercial culture.

MA SC 470 Directed Research in Aquaculture

★3 (fi 6) (either term, 0-0-6). Design and execution of a research project in the field of aquaculture under the supervision of a scientist working in association with the Bamfield Station. A written report is a requirement.

MA SC 480 Seminars and Papers in Marine Science

★3 (fi 6) (first term, 13 weeks). A series of weekly seminars covering current topics of interest in the marine sciences. Seminars will be presented by BMS researchers, graduate students, visiting scientists as well as by the students themselves.

Graduate Courses

MA SC 500 Graduate Level Directed Studies

★6 (fi 12) (two term, 0-0-6). A graduate level course of directed studies under

the supervision of a member of the faculty. The study will involve a research project provided by the supervisor in the field of interest of the student, and will be designed to take maximum advantage of the laboratory and/or field opportunities offered at Bamfield Marine Station. May be offered over a 3-week period.

MA SC 502 Graduate Level Special Topics

★3 (*fi 6*) (two term, 0-0-6). Courses offered as opportunities arise, by distinguished scientists who are visiting at Bamfield Marine Station and are prepared to offer a course extending over a three-week period. The course will carry graduate credit.

221.135 Marketing, MARK

Department of Marketing, Business Economics, and Law
Faculty of Business

Note: Enrolment in all MARK 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

MARK 301 Introduction to Marketing

★3 (*fi 6*) (either term, 3-0-0). Students are introduced to the marketing concept and the role of marketing within the overall business framework. The basic tools of marketing are introduced: market segmentation, positioning, product, price, distribution, and promotion, together with marketing research, consumer behavior, planning, and global marketing. A critical theme of the course is the need for the marketing mix to fit with the requirements of consumers, the competitive environment, company strengths, and community expectations. These issues are considered from strategic and tactical perspectives. Prerequisites: ECON 101 and 102, MATH 113 or equivalent.

MARK 312 Marketing Research

★3 (*fi 6*) (either term, 3-0-0). Nature and significance of marketing research. Marketing research methods, investigation and analysis of specific research problems. Prerequisite: MARK 301. Not open to students with credit in MARK 412.

MARK 320 Consumer Behavior

★3 (*fi 6*) (either term, 3-0-0). The study of the factors affecting the consumer decision process. Analysis of consumer behavior models and their application to marketing decision making, with an emphasis on empirical research. Prerequisite: MARK 301. BCom degree credit will not be granted for both MARK 320 and HECOL 320. Not open to students with credit in MARK 422 or CONS 220.

MARK 420 Advanced Topics in Consumer Behavior

★3 (*fi 6*) (either term, 3-0-0). Advanced study of consumer behavior theories and their application to consumer research that informs marketing, consumer policy, and consumer education. Prerequisite: MARK 320 or HECOL 320. BCom degree credit will not be granted for both MARK 420 and HECOL 420. Not open to students with credit in MARK 423 or CONS 420.

MARK 432 Marketing Communications

★3 (*fi 6*) (either term, 3-0-0). Students study basic concepts of interpersonal and mass communications. An emphasis on integrated marketing communications (IMC) which consist of advertising, personal selling, sales promotion, direct marketing, and public relations. A focus on integrating the elements which make up an IMC plan, resulting in a coherent communications strategy. Consumer motivation and the measurement of communication effectiveness are also examined. Prerequisite: MARK 301.

MARK 442 Seminar in International Marketing

★3 (*fi 6*) (either term, 3-0-0). Analysis of problems of international marketing; development of marketing strategies in light of world cultural, economic, geographic, legal and political factors. Prerequisite: MARK 301.

MARK 450 Electronic Marketing

★3 (*fi 6*) (either term, 3-0-0). Provides an in-depth understanding of the marketing aspects of electronic commerce. Expands upon the principles of marketing by focusing on those aspects that are unique in electronic marketplaces. Combines the study of pertinent theoretical concepts with a discussion of current developments in the practice of electronic marketing. In a major group project, students have the opportunity to apply the skills and knowledge acquired in the course to a real-world electronic marketing challenge. Prerequisites: MARK 301 and MIS 311.

MARK 452 Strategic Marketing

★3 (*fi 6*) (either term, 3-0-0). The objective of this course is to provide students with the analytic, planning, and communication skills to be successful marketing managers. The focus is on practical marketing planning, along with the development and implementation of marketing strategies. Course activities may include the use of marketing simulation games, case analyses, field research projects, secondary research and in-depth discussion of current literatures. The course focuses on the integration of all the conceptual areas in marketing. Prerequisite: MARK 301.

MARK 465 Retailing and Services Internship

★3 (*fi 6*) (either term, 3-0-0). Practical application of marketing and related business skills and theory to a problem or issues addressed during a period of 13 weeks of summer placement in a sponsoring retailing or services organization. The internship includes preliminary instruction and requires, under the supervision of the Faculty, the presentation of a project report to the sponsoring organization. Prerequisites: MARK 301 and consent of Department.

MARK 466 Service Marketing

★3 (*fi 6*) (either term, 3-0-0). Students are introduced to the important differences between marketing tangible products and marketing services. The unique nature of services is examined and the importance of service quality to both consumer and business to business customers, is emphasized. The marketing mix variables are discussed from the service perspective. Designing a marketing mix for service, not-for-profit and government institutions poses interesting and formidable challenges which are dealt with in terms of marketing planning, implementation and control. Trade barriers to the global marketing of services, together with other global service issues are also given attention. Prerequisite: MARK 301.

MARK 468 Retailing and Channel Management

★3 (*fi 6*) (either term, 3-0-0). Students are introduced to the activities involved in retailing goods and services to consumers and to the elements that make up effective distribution channels. Retailing topics include the evolution of retailing, store location, store image, shopping behavior, retail marketing strategies and current trends in retailing management. Channel management topics include: channel structure, designing the marketing channel, channel relationships and responsibilities, selecting channel members, and physical distribution and transportation. Effective channel management, the application of marketing planning, and analysis of retailing and channel management are also examined. Prerequisite: MARK 301.

MARK 470 Selling and Sales Management

★3 (*fi 6*) (either term, 3-0-0). The role of selling and management of the sales force in diverse modern business environments. Topics include sales strategies, sales force planning, organization and evaluation, recruiting, selection and training, leadership and motivation, sales forecasting quotas and types of compensation. Prerequisite: MARK 301.

MARK 472 Product Management and Pricing

★3 (*fi 6*) (either term, 3-0-0). Development, management and pricing of interrelated goods and services. New product development, managing a product portfolio, bundling of goods and services, and tailoring price and product to different segments. Prerequisites: MARK 301 and BUEC 311.

MARK 488 Selected Topics in Marketing

★3 (*fi 6*) (either term, 3-0-0). Normally restricted to third- and fourth- year Business students. Prerequisites: MARK 301 or consent of Department. Additional prerequisites may be required.

MARK 490 Marketing Competition Part I

★1.5 (*fi 3*) (either term, 0-1.5s-0). Preparation for Student Competition in Marketing. Prerequisite: consent of Instructor.

MARK 491 Marketing Competition Part II

★1.5 (*fi 3*) (either term, 0-1.5s-0). Completion of Student Competition in Marketing. Prerequisite: MARK 490 and consent of Instructor.

MARK 495 Individual Research Project I

★3 (*fi 6*) (either term, 3-0-0). Special study for advanced undergraduates. Prerequisites: MARK 312 or equivalent, consent of Instructor and Associate Dean Undergraduate Program.

MARK 496 Individual Research Project II

★3 (*fi 6*) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: MARK 495, consent of the Instructor and Assistant Dean, Undergraduate Program.

MARK 497 Individual Research Project III

★3 (*fi 6*) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: MARK 496, consent of the Instructor and Assistant Dean, Undergraduate Program.

Graduate Courses

MARK 502 Principles of Marketing Management

★3 (*fi 6*) (either term, 3-0-0). Covers basic issues in marketing, including marketing orientation, segmentation and the market research process. Emphasis will also be placed on understanding factors relating to the marketing mix (product, price, place and promotion) and the integration of these concepts into a marketing plan.

MARK 586 Selected Topics in Marketing

★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.

MARK 612 Marketing Research

★3 (*fi 6*) (either term, 3-0-0). Provides an examination of marketing research methodologies emphasizing the translation of marketing problems into researchable

form, research design, data gathering, data analysis, and implementation of research results. Prerequisite: MARK 502, or 501 and 511. Credit will not be given for both MARK 612 and 620.

MARK 624 Consumer Behaviour

★3 (fi 6) (either term, 3-0-0). Individual and group influences on consumer decision-making and their implications for marketing strategy. Individual influences examined include personality, information processing strategies, and attitude change. Group influences include reference groups such as family, social class, culture, and sub-culture. Prerequisite: MARK 502, or 501 and 511. Credit will not be given for both MARK 624 and 620.

MARK 630 Advertising, Promotion and Retail Management

★3 (fi 6) (either term, 3-0-0). This course introduces the student to the management of advertising and other marketing communications tools in a managerial setting. It also examines the application of marketing analysis to retail management with emphasis on locations/spatial theory, market research techniques, consumer behavior, channel policies, competition analysis, and pricing, merchandising, and promotion strategies. Prerequisite: MARK 502 or 511.

MARK 644 International Marketing

★3 (fi 6) (either term, 3-0-0). Topics in international marketing, including the importance of international marketing to Canadian business, comparative marketing systems, evaluation of socioeconomic influences on international marketing, and marketing strategies as they relate to firm size. Prerequisites: MARK 501, 511.

MARK 650 Marketing in Electronic Environments

★3 (fi 6) (either term, 3-0-0). This course equips students with a conceptual understanding of the marketing-related issues that are of importance to e-commerce managers and a set of skills that will enable them to develop successful marketing strategies for digital marketplaces. In a major group project, students have the opportunity to apply the knowledge and skills acquired in the course to a real-world electronic-marketing challenge. Prerequisites: MARK 501 and 511.

MARK 664 Product Management and Pricing

★3 (fi 6) (either term, 3-0-0). Development, management and pricing of interrelated goods and services. New product development, pricing strategies for new products, managing a product portfolio, bundling of goods and services and pricing the bundles, and tailoring price and product to different segments. Prerequisites: MARK 501, 511, MANEC 511.

MARK 686 Selected Topics in Marketing

★3 (fi 6) (either term, 3-0-0).

MARK 701 Research Methodology in Marketing

★3 (fi 6) (either term, 3-0-0). The nature of scientific inquiry and its relevance and application to research in marketing. The development, and testing of marketing theory. Marketing measurement methodology. Prerequisite: Registration in the Business PhD Program or permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MARK 702 Buyer Behavior

★3 (fi 6) (either term, 3-0-0). In-depth study and analysis of the current buyer behavior research literature. Models of individual and group (organizational) buying processes. Information processing views of consumer decision making. Models of attitudes, perceptions, preferences, and choice. The use of advanced econometric and psychometric techniques in analyzing buyer behavior. Pre- or corequisite: MARK 620 or equivalent; registration in the Business PhD Program or permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MARK 703 Marketing Modelling

★3 (fi 6) (either term, 3-0-0). Marketing strategy and policy models. Marketing mix modeling in product strategy, product design, new product sales forecasting and control pricing, distribution, promotion, and sales force decision-making. Sales response function modeling. Marketing decision support systems. Prerequisite: Registration in the Business PhD Program or permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MARK 704 Individual Research

★3 (fi 6) (either term, 3-0-0).

MARK 705 Current Research in Marketing

★3 (fi 6) (either term, 3-0-0). An overview of recently published research in marketing with an emphasis on the research interests of enrolled students not adequately covered in other marketing doctoral courses. Prerequisite: Registration in the Business PhD Program or permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MARK 706 Research Seminar in Marketing

★3 (fi 6) (two term, 3-0-0). Introduces students to the most recent research in the area of marketing, examining current issues and trends. Students have an opportunity to present and discuss their own research and actively engage in the analysis and discussion of the work of others. The seminar is a single term course offered over two terms. Evaluation is based on participation and involves a presentation in the Marketing Seminar Series. Prerequisite: Registration in the Business PhD Program or permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

MARK 830 Marketing

★3 (fi 32) (second term, 3-0-0). Understanding the role of marketing in determining the direction of an organization; the customer-focused organization; opportunity identification; forecasting demand; marketing segmentation; market planning, and implementation. Restricted to executive MBA students only.

221.136 Master of Internetworking, MINT

Departments of Computing Science, Electrical and Computer Engineering
Faculties of Engineerin and ScienceScience

Graduate Courses

MINT 700 The Physical Layer

★3 (fi 6) (variable, 36 hours). Communication media, including copper, optical fiber and wireless. Modulation and coding standards. Framing. Error control techniques. MAN and WAN physical layers, including PDH, SONET/SDH, aATM, cable modems, xDSL, AMPS, GSM, GPRS, etc. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 702 Data Communication Protocols

★3 (fi 6) (variable, 36 hours). Structure of communication protocols, with an emphasis on the data link layer. SDLC and HDLC. Medium access control techniques. AAA. Local area, metropolitan area and wireless standards: Ethernet, 802.11 and Bluetooth. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 704 The Internet Protocol Suite

★3 (fi 6) (variable, 36 hours). Rationale and organization of the Internet protocols. IP, UDP, TCP, ICMP, ARP, RARP, Mobile-IP. Addressing and routing; intradomain routing protocols. Transport layer congestion control and flow control. IP over everything. Rationale and organization of the Internet protocols. IP, UDP, TCP, ICMP, ARP, RARP, Mobile-IP. Addressing and routing; intradomain routing protocols. Transport layer congestion control and flow control. IP over everything. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 706 Internet Application and Programming

★3 (fi 6) (variable, 36 hours). Concepts of Internet Applications. Sockets, client-server programming, proxies and gateways, application programming. XDR, example application protocols: SMTP, FTP, DNS and how to implement them. Possible source code inspection exercises covering BIND, zmailer. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 708 Internet Laboratory

★3 (fi 6) (variable, 36 hours). Demonstration of network principles. Practical aspects of network design and implementations. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 709 Internet Project

★6 (fi 12) (variable, 60 hours). Capstone project involving the design or analysis of a significant internetwork or internetworking component. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 711 Network Modeling, Simulation, and Analysis

★3 (fi 6) (variable, 36 hours). Elements of queueing theory. Erlang and Engset models. Closed and open queueing systems. Introduction to discrete event simulation, experimental design and interpretation. Traffic workloads, including self-similar traffic and models for multimedia traffic. Equivalent bandwidth. Performance criteria and measures. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 712 Internet Security

★3 (fi 6) (variable, 36 hours). Security: vulnerabilities of Internet protocols, penetration techniques and defenses, intrusion detection systems. Cryptography: Public and private key cryptography, key negotiation, certificates. E-commerce security standards for both protocols and hosts.

MINT 713 Internetworking Platforms

★3 (fi 6) (variable, 36 hours). Real-time operating systems. Resource sharing. Interrupts, clocked interrupts and polling. Shared memory, shared bus and shared interconnect architectures. Bridging, switching and routing. Time vs. space switching. Spanning tree algorithm. Tag switching. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 714 High Performance Server Programming

★3 (fi 6) (variable, 36 hours). Server architecture. Multi-threaded and high-

performance servers. Distributed databases. Transaction consistency. Load sharing and balancing. High availability, RAID. Case studies. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 715 Advanced Routing and Network Management

★3 (*fi 6*) (variable, 36 hours). Distance vector, link state and hybrid protocols. Intra-domain vs. inter-domain protocols. Multi-protocol routing and route redistribution. Network management protocols and procedures: autodiscovery, performance monitoring, fault isolation. Offered by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 716 Traffic Engineering and Network Design

★3 (*fi 6*) (variable, 36 hours). Configuring and dimensioning networks as an optimization problem. Designing fault-tolerant, cost-effective, secure networks. Iterative, multi-objective optimization. Linear and nonlinear programming. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 717 Internet Project Management

★3 (*fi 6*) (variable, 36 hours). Phases of implementing a new network. Phases of a network hardware or software upgrade. Risk management. Management tools including PERT, CPM, etc. Process mapping. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

MINT 719 Special Topics in Internet Technology

★3 (*fi 6*) (variable, 36 hours). Intended to enable individual students to study special internet topics under the supervision of a faculty member. Approval must be obtained from the program coordinator. Offered jointly by the Department of Electrical and Computing Engineering and the Department of Computing Science.

221.137 Materials Engineering, MAT E

Department of Chemical and Materials Engineering
Faculty of Engineering

Undergraduate Courses

MAT E 251 Materials Science I

★3 (*fi 6*) (either term or Spring/Summer, 3-0-0). An introduction to the science of materials from the standpoint of the relationships between structure and physical and mechanical properties. Atomic bonding, crystal structure and crystal imperfections, binary phase equilibria and phase transformations. Structures of metallic, non-metallic and composite materials. Elastic and plastic deformation, fracture, fatigue and creep in crystalline and amorphous solids. Corrosion and thermal stability of materials in service. Prerequisite: CHEM 105 or consent of Department.

MAT E 252 Materials Science II

★3.8 (*fi 6*) (either term or Spring/Summer, 3-0-3/2). An introduction to the science of materials relating their mechanical, thermal, electronic and chemical properties to atomic, molecular and crystal structure. Ceramic and metallic crystals, glasses, polymers and composite materials. Multi-phase materials, strengthening processes. Laboratories include mechanical properties of metals and polymers, microstructure, heat treatment of steel, corrosion. Prerequisite: CHEM 105 or consent of Department.

MAT E 256 Materials Engineering

★4.3 (*fi 6*) (second term, 3-1s-3/2). Elements of crystallography, x-ray diffraction, and applications in materials. Compositional and microstructural characterization of materials. Crystal defects. Introduction to electronic materials. Prerequisite: MAT E 252 or equivalent.

MAT E 331 Mineral Processing I

★3.8 (*fi 6*) (second term, 3-0-3/2). Unit operations employed to concentrate minerals including comminution, classification, gravity concentration, froth flotation, thickening, filtering; tailings disposal; marketing of minerals; economics. Prerequisite: STAT 235 or consent of Instructor.

MAT E 332 Pyrometallurgy

★3.8 (*fi 6*) (second term, 3-0-3/2). Nature of ores, furnaces fuels, slags, and mattes. Metallurgical calculations. Application of thermodynamics to metallurgical unit processes involving the use of elevated temperature to extract metals and metal compounds including calcining, roasting, reduction, smelting, refining and recycling. Air pollution problems in metallurgical industries. Prerequisites: CME 265 and MAT E 340.

MAT E 340 Materials Thermodynamics

★3 (*fi 6*) (first term, 3-0-0). Fundamentals of thermodynamics in metallurgy and materials. Review of thermodynamic variables. First and second laws. Reaction equilibria, stability diagrams. Solution thermodynamics applied to metallurgical processes. Phase relations, free energy-composition diagrams. Electrochemistry. Experimental methods and estimation of thermochemical data. Prerequisite: CH E 243.

MAT E 345 Corrosion and Oxidation

★3 (*fi 6*) (either term, 3-0-0). Electrochemical theory of galvanic attack, concentration cells and differential temperature cells. Uniform attack. The interaction of mechanical stresses and corrosion. Selection of corrosion-resistant materials. Protective coatings, inhibitors and cathodic protection, corrosion testing, high-temperature oxidation and other gas-metal reactions. Prerequisite: MAT E 251 or 252.

MAT E 353 Electronic Materials I

★3 (*fi 6*) (first term, 3-0-0). The science of electronic materials relating atomic, molecular and crystal structure to material properties; polymers, glasses, crystalline ceramics, metals, and composites; diffusion, electrochemical and corrosion properties; phase equilibria, strengthening mechanisms, mechanical properties and failure; electrical conductors, semiconductors, and dielectrics; thermal, magnetic, and optical properties. Prerequisite: CHEM 105.

MAT E 357 Fundamentals of Physical Metallurgy

★3.8 (*fi 6*) (first term, 3-0-3/2). Diffusion in metals. Phase diagrams. Solidification and casting. Annealing. Diffusional and diffusionless solid state phase transformations. Carbon and low alloy steels and their heat treatment. Prerequisite: MAT E 256.

MAT E 358 Mechanical Metallurgy

★3.8 (*fi 6*) (second term, 3-0-3/2). Tensile testing, elastic deformation and plastic deformation. Dislocation theory and plastic deformation. Strengthening mechanisms in metals. Fundamentals of fracture and fracture testing. Fatigue and creep. Introduction to powder metallurgy. Prerequisite: MAT E 357.

MAT E 365 Materials Process Engineering Design

★4.5 (*fi 6*) (second term, 3-0-3). Engineering design concepts in materials processing; cost estimation; project planning and scheduling; plant safety and hazards analysis; selected project design examples. Prerequisites: CME 265, ENGG 310 or 401 and MAT E 340. Corequisites: CH E 314.

MAT E 430 Hydrometallurgy and Electrometallurgy

★3.8 (*fi 6*) (first term, 3-0-3/2). Principles of hydrometallurgical and electrometallurgical unit processes to recover metals and metal compounds. Application of thermodynamics and kinetics to atmospheric and pressure leaching, ion exchange, solvent extraction, hydrogen reduction, electrowinning and electrorefining. Water pollution problems in metallurgical industries. Prerequisites: CME 265 and MAT E 340.

MAT E 433 Applied Surface Chemistry in Minerals and Materials Processing

★3.5 (*fi 6*) (either term, 3-1s-0). Fundamentals of surface and interfacial phenomena; physical chemistry of surfaces and interfaces; surface and interface energy and their origin; wetting adhesion and surface forces in material processing; role and mechanisms of surfactant adsorption and self assembly in materials engineering; techniques for surface characterization. Prerequisite CH E 243 or equivalent. Credit cannot be obtained in this course if credit has already been obtained in CH E 436.

MAT E 434 Metallurgical Process Analysis

★3.8 (*fi 6*) (second term, 3-0-3/2). The analysis, optimization and control of mineral and metallurgical processing systems through mathematical modelling and digital simulation. Instrumentation and control of metallurgical processing plants. Prerequisites: CH E 374, MAT E 331, MAT E 332.

MAT E 440 Kinetics and Mass Transfer

★3.5 (*fi 6*) (second term, 3-1s-0). The study of diffusion, mass transfer and reaction kinetics in materials process engineering. The fundamental equations governing mass transfer are applied to study the rate of metallurgical processes. The use of dimensional analysis in scale-up of reactors and mixing in batch and continuous processes is also presented. Prerequisites: MAT E 340, CH E 312, CH E 314.

MAT E 441 Materials Research Project I

★1.5 (*fi 2*) (either term, 0-0-3). Research on current topics in materials engineering including structure, properties, processing or mineral processing. Literature survey on a specific topic and submission of a detailed research proposal. Requires a minimum GPA of 2.7 and consent of instructor.

MAT E 442 Materials Research Project II

★4.5 (*fi 6*) (either term, 0-0-9). Execute research according to research proposal prepared in MAT E 441. Write research report. Prerequisite: MAT E 441.

MAT E 443 Materials Design Project

★4 (*fi 6*) (second term, 2-1s-3). Team or individual materials design projects. Selection and optimization of physical/mechanical properties and fabrication processes for chosen components or structures. Prerequisites: CIV E 265, 270, MAT E 345, 358, 452.

MAT E 448 Materials Engineering Field Trip

★0.5 (*fi 1*) (either term, 0-1s-0). An extended trip to visit materials and metallurgical plants may be made at the end of the summer by fourth-year Materials Engineering students accompanied by staff. Students in Materials may also be required to make several part-day trips during the session to materials, metallurgical and other industrial plants near Edmonton. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details. Prerequisite: MAT E 357.

MAT E 452 Applications of Physical Metallurgy

★4.5 (*fi 6*) (first term, 3-0-3). Composition, structure, heat treatment and mechanical

properties of alloy steels, cast irons and non-ferrous alloys. Mechanical processing of metals, including stress-strain relationships, forging, rolling, extrusion and sheet metal forming. Metallurgy of machining. Prerequisite: MAT E 357.

MAT E 454 Special Topics in Materials Engineering

★3 (fi 6) (either term, 3-0-0). Physical and chemical principles underlying metallurgical topics of current interest such as composite materials, materials problems in energy conversion, electrofinishing, recycling, extraction of metals from fossil fuels, iron and steelmaking, and refractory-slag interactions.

MAT E 455 Introduction to Stress Corrosion Cracking

★3 (fi 6) (either term, 3-0-0). The role of corrodents, stresses and microstructure in the phenomena of stress corrosion cracking; dissolution models and mechanical models proposed as mechanisms. Stress corrosion cracking of major systems. Evaluation and failure analysis of stress corrosion cracking. Prerequisite: MAT E 345 or consent of Instructor.

MAT E 456 Special Topics in Materials Processing

★3 (fi 6) (either term, 3-0-0). Studies of specific materials processing techniques which are of current interest. Prerequisite: MAT E 452.

MAT E 462 Introduction to Fracture of Materials

★3 (fi 6) (first term, 3-0-0). Fracture mechanisms in metals and non-metals. Sources of flaws. Linear elastic and elastic plastic fracture test methods and applications. Prerequisite: MAT E 358 or consent of Instructor.

MAT E 463 Introduction to Wear and Friction of Engineering Materials

★3 (fi 6) (either term, 3-0-0). The materials aspects of wear and tribology. Wear mechanisms, tribological behavior of materials, characterization techniques, wear protection. Prerequisite: MAT E 358 or consent of Instructor.

MAT E 465 Materials Process Engineering Design II

★4 (fi 6) (second term, 1-0-6). Integration of materials process engineering practice, theory and economics into the design and evaluation of proposed capital projects. Prerequisites: MAT E 365.

MAT E 467 Polymer Science and Engineering

★3.5 (fi 6) (either term or Spring/Summer, 3-1s-0). Introduction to polymer physical, mechanical and chemical properties, structure and behavior of polymers, polymer processing, fracture of polymers, fiber-polymer composites, polymer synthesis, polymer characterization, polymer solution and blend thermodynamics, crystallinity, fluid flow in melt processing. Prerequisites: MAT E 252, CH E 312, STAT 235, CHEM 261, or consent of Instructor.

MAT E 480 Ceramics

★3 (fi 6) (first term, 3-0-0). Structure, processing, characterization, properties and application of ceramic materials and glass. Ceramic raw materials. Crystal chemistry and physics. Glassy state. Crystal defects, nonstoichiometry, diffusion, phase diagrams. Powder preparation, ceramic fabrication. Characterization of ceramic powders and components. Thermal, mechanical and electrical properties. Traditional and recent applications. Prerequisites: MAT E 340, 357 or consent of Instructor.

MAT E 481 Processing and Applications of Ceramics

★3 (fi 6) (either term, 3-0-0). Production of raw materials, ceramic powders, additives, forming operations, thick and thin films, sintering, finishing steps. Defects, mass and electrical transport, microstructure. Applications include space shuttle tiles, superconductors, cutting tools, integrated circuit component and substrates, turbine engines, high energy density batteries, sensors, fuel cells, lasers and composites. Prerequisite: MAT E 480 or consent of Instructor.

MAT E 489 Advanced High Strength Steels

★3 (fi 6) (either term, 3-0-0). Processing and metallurgy of microalloyed steels for pipelines. Steelmaking, casting, thermomechanical processing, pipe fabrication, mechanical and chemical properties and in service performance. Prerequisite: MAT E 452.

MAT E 533 Mineral Processing II

★2.8 (fi 4) (either term, 2-0-3/2). Chemical and mineralogical analyses of ores, metallurgical testing, process evaluation, flowsheet development and economic evaluation. Prerequisite: MAT E 331.

Graduate Courses

MAT E 601 Research Techniques in Materials Engineering

★3.5 (fi 6) (either term, 2-0-3). Statistical analysis, electron diffraction, crystal growth, diffuse scattering of x-rays, electron emission, high speed strain measurements, internal friction and radioactive tracers. Zone refining, high pressure and vacuum processes.

MAT E 615 Quality Control of Weldments

★3.8 (fi 6) (either term, 3-0-3/2). Quality assurance schemes and audits; destructive and non-destructive testing methods; fabrication code requirements and fitness-for-purpose criteria; welding procedures; statistical methods; case studies. Prerequisites: MAT E 610 and 611 or consent of Instructor.

MAT E 630 Special Topics in Process Metallurgy

★3 (fi 6) (either term, 3-0-0). Topics of current interest related to process metallurgy, such as process analysis, mathematical modelling and simulation, metal extraction from secondary sources, iron and steel making, physical chemistry of molten systems and production of industrial minerals.

MAT E 633 Surface Chemistry in Minerals and Materials Processing

★5 (fi 6) (either term, 3-1s-3). Fundamentals of surface and interfacial phenomena; physical chemistry of surfaces and interfaces; surface and interface energy and their origin; wetting, adhesion and surface forces in material processing; role and mechanisms of surfactant adsorption and self-assembly in materials engineering; techniques for surfactant adsorption and self-assembly in materials engineering; techniques for surface characterization. The course includes an experimental research project of 3 hours per week. Credit cannot be obtained in this course if credit has already been obtained in MAT E 433.

MAT E 640 Advanced Materials Thermodynamics

★3 (fi 6) (first term, 3-0-0). Advanced topics in core fundamentals of materials thermodynamics. Thermodynamic laws, statistical thermodynamics, reaction equilibria, phase diagrams, solutions, changing standard states, electrochemistry, and thermodynamics of surfaces. Prerequisite: MAT E 340 or consent of Instructor.

MAT E 645 Electrochemical Processes

★3 (fi 6) (either term, 3-0-0). Aqueous, molten and solid electrolytes: thermodynamics, structure, transport properties. Applications of conductivity measurements. Electrodes: types, reactions, potential. Electrochemical cells. Applications of EMF measurements. Electrical double layer, electrode kinetics, overpotential. Chlor-alkali industry, electrometallurgy, electrolysis of water, electroplating. Electrochemical energy conversion: primary and secondary batteries, fuel cells. High temperature applications. Prerequisite: MAT E 430 or consent of Instructor.

MAT E 653 Stress Corrosion Cracking

★3 (fi 6) (either term, 3-0-0). The role of corrodents, stresses and microstructure in the phenomena of stress corrosion cracking; dissolution models and mechanical models proposed as mechanisms. Stress corrosion of high-strength steels, stainless steels and the principal nonferrous metals. Stress corrosion testing and methods of preventing stress corrosion cracking. Prerequisite: MAT E 345 or consent of Instructor. Credit cannot be obtained in this course if credit has already been obtained in MAT E 455.

MAT E 654 Electrochemical Theory of Corrosion

★3 (fi 6) (either term, 3-0-0). Principles and applications of electrochemical corrosion theory in basic and applied research. Equilibrium thermodynamics and electrode kinetics. Passivation and breakdown of passivity. The study of galvanic corrosion; alloy evaluation. Corrosion testing methods and electrochemical measurement of corrosion rates. Prerequisite: MAT E 345 or consent of Instructor.

MAT E 662 Fracture of Materials

★3 (fi 6) (either term, 3-0-0). Theoretical strength of solids, Griffith crack theory, mechanisms of brittle and ductile fracture, the ductile to brittle transition, fatigue and creep fracture, environmental effects on fracture. Prerequisites: MAT E 358 or consent of Instructor. Credit cannot be obtained in this course if credit has already been obtained in MAT E 462.

MAT E 663 Wear and Protection of Engineering Materials

★4.5 (fi 6) (either term, 3-0-3). The materials aspects of wear and tribology. Wear mechanisms, tribology behavior of materials, characterization techniques, wear protection. Prerequisite: MAT E 358 or consent of Instructor. Not open to students with credit in MAT E 463.

MAT E 664 Diffusion and Diffusion-Controlled Processes in Metallurgy and Materials

★3 (fi 6) (either term, 3-0-0). Fundamentals of diffusion, diffusion in dilute alloys, diffusion in a concentration gradient, diffusion in non-metals, high diffusivity paths, thermal diffusion. Applications to materials: sintering, superplasticity, creep, metal oxides and non-stoichiometry.

MAT E 665 Materials Applications of Transmission Electron Microscopy

★4.5 (fi 6) (either term, 3-0-3). Principles and design of the transmission electron microscope, specimen preparation, electron diffraction, image contrast theory, introduction to analytical electron microscopy. Applications to defects in metallic and non-metallic crystalline materials. Prerequisite: MAT E 358 or consent of Instructor.

MAT E 666 Materials Applications of Scanning Electron Microscopy

★3 (fi 6) (either term, 3-0-0). Principles and design of the scanning electron microscope, electron beam-specimen interactions, image formation, x-ray microanalysis in the scanning electron microscope, specimen preparation, application to materials analysis. Prerequisite: MAT E 358 or consent of Instructor.

MAT E 676 Special Topics in Physical Metallurgy

★3 (fi 6) (either term, 3-0-0). Subjects of current interest such as kinetics of heterogeneous nucleation and phase transformations in solids, grain boundary phenomena, internal friction, physics and chemistry of friction and wear.

MAT E 680 Advanced Ceramics

★3 (fi 6) (either term, 3-0-0). Important ceramic materials and products, processing, typical properties. Structure: binary and ternary compounds, crystalline silicates, glass. Point defects, nonstoichiometry, defect reactions, dislocations. Diffusion, electrochemical transport, examples. Thermal and mechanical properties, thermal shock resistance, electrical conduction. Applications: solid electrolytes, energy

conversion systems, refractories, electronics. Prerequisites: MAT E 332 and 357 or consent of Instructor. Credit cannot be obtained in this course if credit has already been obtained in MAT E 481.

MAT E 682 Graduate Seminar

★1 (*fi 2*) (variable, 1-0-0). Discussion of progress and problems in research under way in the metallurgical area. Graduate students are required to attend and to give a seminar related to their research.

MAT E 689 Advanced Processing of Microalloyed Steels

★3.5 (*fi 6*) (either term, 3-1s-0). Advanced processing and metallurgy of microalloyed steels for pipelines. Steelmaking, casting, microstructural development during thermomechanical processing, pipe fabrication, mechanical and chemical properties and in service performance. Prerequisites: MAT E 452 or the consent of Instructor. Not open to students with credit in MAT E 489.

MAT E 738 Process Metallurgy

★3 (*fi 6*) (either term, 3-0-0).

MAT E 778 Physical Metallurgy

★3 (*fi 6*) (either term, 3-0-0).

MAT E 900 Directed Research

★6 (*fi 12*) (variable, unassigned). An engineering project for students registered in a Master of Engineering program.

221.138 Mathematical Physics, MA PH

Department of Mathematical and Statistical Sciences; Physics
Faculty of Science

Undergraduate Courses

Note: Permission to enrol in any mathematical physics course will not normally be granted unless the stated prerequisites have been met. However, students may enrol in a mathematical physics course if their department and the course instructor agree that their background and academic standing warrant the waiver of the stated prerequisites.

MA PH 343 Classical Mechanics I

★3 (*fi 6*) (first term, 3-0-0). Principles of mechanics; non-inertial frames; Lagrange's equations and Hamilton's principle; dynamics of oscillating systems; rigid body kinematics and dynamics; Hamiltonian methods and canonical transformations. Prerequisite: PHYS 244. Corequisite: MATH 215 or 317.

MA PH 451 Mathematical Methods of Physics I

★3 (*fi 6*) (first term, 3-0-0). Application to problems in physics of method of steepest descent, Fourier and Laplace transforms; boundary-value problems, integral equations, and Green's functions. Prerequisites: PHYS 372 and 381. Corequisite: PHYS 481.

MA PH 453 Mathematical Methods of Physics II

★3 (*fi 6*) (second term, 3-0-0). Group representation theory and applications to problems in physics; spectral theory for matrices; application to the theory of solvents and their relation to Green's functions; calculus of variations; integral representations of special functions. Prerequisite: MA PH 451.

MA PH 467 Mechanics of Deformable Media

★3 (*fi 6*) (second term, 3-0-0). Stress and strain in continuous media; elasticity; mechanics of fluid flow in two dimensions using complex variables; three dimensional fluid flow using Eulerian and Lagrangian reference frames; thermodynamics and mechanics of compressible and viscous flows; onset of turbulence, convection, and instability. Examples from geophysics, oceanography, and atmospheric physics. Prerequisites: PHYS 211, MATH 334, MA PH 343, and MATH 411 or 311.

MA PH 468 Introduction to Relativity

★3 (*fi 6*) (second term, 3-0-0). Special relativity; principle of equivalence; Einstein field equations; stationary and static fields; Schwarzschild metric, experimental tests; black holes; linearized equations; gravitational collapse; cosmology. Prerequisite: PHYS 351 or MATH 446 or equivalent.

Graduate Courses

Note: The following undergraduate courses may be taken for graduate credit: MA PH 343, 451, 453, 467, 468.

221.139 Mathematics, MATH

Department of Mathematical and Statistical Sciences
Faculty of Science

Notes

- (1) MATH 100, 101, 102, 201, 209, 300, 309 are open to Engineering students only.
- (2) See Mathematical Physics (MA PH) listing for courses offered jointly by the Department of Physics and the Department of Mathematical and Statistical Sciences.

- (3) Students who might take a calculus course as part of their program at the University of Alberta are encouraged to take Math 31, or equivalent, as part of their high school program.

Undergraduate Courses

MATH 100 Calculus I

★4 (*fi 6*) (either term, 3-0-2). Review of numbers, inequalities, functions, analytic geometry; limits, continuity; derivatives and applications, Taylor polynomials; log, exp, and inverse trig functions. Integration, fundamental theorem of calculus substitution, trapezoidal and Simpson's rules. Prerequisites: Pure Mathematics 30 or equivalent, and Mathematics 31. Notes: (1) This course may not be taken for credit if credit has already been obtained in MATH 113, 114, or 117. (2) Students in all sections of this course will write a common final examination. (3) Restricted to Engineering students. Non-Engineering students who take this course will receive ★3.0.

MATH 101 Calculus II

★3.5 (*fi 6*) (either term, 3-0-1). Area between curves, techniques of integration. Applications of integration to planar areas and lengths, volumes and masses. First order ordinary differential equations: separable, linear, direction fields, Euler's method, applications. Infinite series, power series, Taylor expansions with remainder terms. Polar coordinates. Rectangular, spherical and cylindrical coordinates in 3-dimensional space. Parametric curves in the plane and space: graphing, arc length, curvature; normal binormal, tangent plane in 3-dimensional space. Volumes and surface areas of rotation. Prerequisite: MATH 100. Notes: (1) This course may not be taken for credit if credit has already been obtained in either MATH 115 or 118. (2) Students in all sections of this course will write a common final examination. (3) Restricted to Engineering students. Non-Engineering students who take this course will receive ★3.0.

MATH 102 Applied Linear Algebra

★3.5 (*fi 6*) (either term, 3-0-1). Vectors and matrices, solution of linear equations, equations of lines and planes, determinants, matrix algebra, orthogonality and applications (Gram-Schmidt), eigenvalues and eigenvectors and applications, complex numbers. Prerequisite or corequisite MATH 100. Notes: (1) This course may not be taken for credit if credit has already been obtained in MATH 120 or 125 or 127. (2) Students in all sections of this course will write a common final examination. (3) Restricted to Engineering students. Non-Engineering students who take this course will receive ★3.0.

MATH 113 Elementary Calculus I

★3 (*fi 6*) (either term, 3-0-1). Review of analytic geometry. Differentiation and integration of simple functions. Applications. Prerequisite: Pure Mathematics 30 or equivalent. Students who have taken Mathematics 31 are advised to take MATH 114. See Note (3) at the beginning of the Mathematic course listings. This course may not be taken for credit if credit has already been obtained in MATH 100, 114 or 117.

MATH 114 Elementary Calculus I

★3 (*fi 6*) (either term, 3-0-0). The course description is the same as for MATH 113. Prerequisites: Pure Mathematics 30, Mathematics 31 or equivalent. This course may not be taken for credit if credit has been obtained in MATH 100, 113 or 117.

MATH 115 Elementary Calculus II

★3 (*fi 6*) (either term, 3-0-0). Differentiation and integration of trigonometric, exponential and logarithmic functions. Indeterminate forms and improper integrals. Techniques of integration. Application. Prerequisite: MATH 113 or 114, or equivalent. Note: This course may not be taken for credit if credit has already been obtained in either of MATH 101 or 118.

MATH 117 Honors Calculus I

★3 (*fi 6*) (first term, 4-0-0). Functions, continuity, and the derivative. Applications of the derivative. Extended limits and L'Hospital's rule. Prerequisite: Pure Mathematics 30 and 31 or their equivalents. Notes: This course is designed for students with at least a 80 percent grade in Pure Mathematics 30 and Mathematics 31. Other students may be admitted with the consent of the Department. This course may not be taken for credit if credit has already been obtained in any of MATH 100, 113, or 114. Engineering students will receive a weight of 4.0 units for this course.

MATH 118 Honors Calculus II

★3 (*fi 6*) (second term, 4-0-0). Integration and the Fundamental Theorem. Techniques and applications of integration. Derivatives and integrals of the exponential, and trigonometric functions. Introduction to infinite series. Introduction to partial derivatives. Prerequisite: MATH 117 or its equivalent. Students with MATH 113 or 114 will be admitted with the consent of Department. Note: This course may not be taken for credit if credit has already been obtained in MATH 101 or 115. Engineering students will receive a weight of 4.0 units for this course.

MATH 120 Basic Linear Algebra I

★3 (*fi 6*) (either term, 3-0-0). Systems of linear equations. Vectors in n-space, vector equations of lines and planes. Matrix algebra, inverses and invertibility.

Introduction to linear transformations. Subspaces of n -space. Determinants. Introduction to eigenvalues and eigenvectors. The dot product and orthogonality. Applications in a variety of fields, numerical methods. Prerequisite: Pure Mathematics 30. Notes: (1) See also course description for MATH 125. (2) This course cannot be taken for credit if credit has already been obtained in any of MATH 102, 125 or 127. (3) Students planning to transfer into Engineering should take MATH 125 rather than MATH 120. (4) May contain Alternate Delivery sections; see Section 200.

MATH 125 Linear Algebra I

★3 (fi 6) (either term, 3-0-0). Systems of linear equations. Vectors in n -space, vector equations of lines and planes. Matrix algebra, inverses and invertibility. Introduction to linear transformations. Subspaces of n -space. Determinants. Introduction to eigenvalues and eigenvectors. The dot product and orthogonality. Applications in a variety of fields, numerical methods. Prerequisites: Pure Mathematics 30. Notes: (1) This course is an enriched version of the basic linear algebra course MATH 120. It covers the same basic topics as MATH 120. However, some of these basic topics will be covered in more depth than in MATH 120. Also the instructor will discuss some additional applications and/or discuss some of the applications in more depth. MATH 125 is recommended for all students with at least 80% in Pure Mathematics 30. It is also recommended for students who plan to take further courses in algebra. (2) This course cannot be taken for credit if credit has already been obtained in MATH 102, 120 or 127.

MATH 153 Elementary Theory of Interest

★3 (fi 6) (either term, 3-0-0). Simple and compound interest, simple and general annuities certain; variable annuities and perpetuities, amortization schedules, sinking funds, applications. Prerequisite: Pure Mathematics 30. Note: This course may not be taken for credit if credit has already been obtained in MATH 253.

MATH 160 Higher Arithmetic

★3 (fi 6) (either term, 3-0-0). Elementary Number Theory, Numeration Systems, Number Systems and Elementary Probability Theory. Math Fair. Prerequisite: Pure Mathematics 30 or consent of Department. Note: This course is restricted to Elementary Education students.

MATH 164 Higher Algebra

★3 (fi 6) (either term, 3-0-0). Polynomial functions, factorization, theory of equations, inequalities, convexity and concavity, extremal problems, additional topics. Restricted to students in Open Studies as part of the EPSB Teacher Upgrade Program.

MATH 201 Differential Equations

★3.5 (fi 6) (either term or Spring/Summer, 3-0-1). First-order equations; second-order linear equations: reduction of order, variation of parameters; Laplace transform; linear systems; power series; solution by series; separation of variables for PDEs. Prerequisite or corequisite: MATH 209 or 214. Notes: (1) Open only to Engineering students and Science students in the following programs: Specialization Physics, Specialization Geophysics or Specialization Computing Science. (2) This course may not be taken for credit if credit has already been obtained in any of MATH 205, 334, or 336. (3) Students in all sections of this course will write a common final examination. Non-Engineering students who take this course will receive ★3.0.

MATH 209 Calculus III

★3.5 (fi 6) (either term, 3-0-1). Partial differentiation, derivatives of integrals. Multiple integration using rectangular, cylindrical, and spherical coordinates. Vector Field Theory. Prerequisite: MATH 101. Prerequisite or corequisite: MATH 102. Notes: (1) Students in all sections of this course will write a common final examination. (2) Restricted to Engineering students. Non-Engineering students who take this course will receive ★3.0.

MATH 214 Intermediate Calculus I

★3 (fi 6) (either term, 3-0-0). Infinite Series. Plane curves and polar coordinates. Three dimensional analytic geometry. Partial derivatives. This course may not be taken for credit if credit has already been obtained in MATH 209 or MATH 217. Prerequisite: MATH 115 or equivalent.

MATH 215 Intermediate Calculus II

★3 (fi 6) (second term, 3-0-0). First order and second order linear differential equations with constant coefficients. Curves, tangent vectors, arc length, integration in two and three dimensions, polar cylindrical and spherical coordinates, line and surface integrals. Green's divergence and Stokes' theorems. Note: This course may not be taken for credit if credit has already been obtained in MATH 209 or 317. Prerequisite: MATH 214 or equivalent.

MATH 217 Honors Advanced Calculus I

★3 (fi 6) (first term, 4-0-0). Axiomatic development of the real number system. Topology of \mathbb{R}^n . Sequences, limits and continuity. Multi-variable calculus: differentiation and integration, including integration in spherical and polar coordinates. The differential and the chain rule. Taylor's Formula, maxima and minima. Introduction to vector field theory. Prerequisites: MATH 118 (or MATH 115 or 101 with consent of Department) and MATH 120 or 125 or any linear algebra course. Engineering students will receive a weight of 4.0 units for this course.

MATH 222 Introduction to Discrete Mathematics

★3 (fi 6) (either term, 3-0-0). A problem-solving approach to discrete mathematics,

covering secret codes, public-key codes, error-correcting codes, enumeration, recurrence relations, induction, graph theory, graph algorithms and parallel algorithms. Prerequisite: Any 100-level mathematics course, MATH 120 or 125 recommended.

MATH 225 Linear Algebra II

★3 (fi 6) (either term, 3-0-0). Vector spaces. Inner product spaces. Examples of n -space and the space of continuous functions. Gram-Schmidt process, QR-factorization of a matrix and least squares. Linear transformations, change of basis, similarity and diagonalization. Orthogonal diagonalization, quadratic forms. Applications in a variety of fields, numerical methods. Prerequisite: MATH 120 or 125 or any linear algebra course, Mathematics 31 or any calculus course. Note: This course cannot be taken for credit if credit has already been obtained in MATH 121 or 227.

MATH 228 Algebra: Introduction to Ring Theory

★3 (fi 6) (either term, 3-0-0). Integers. Mathematical induction. Equivalence relations. Commutative rings, including the integers mod n , complex numbers and polynomials. The Chinese remainder theorem. Fields and integral domains. Euclidean domains, principal ideal domains and unique factorization. Quotient rings and homomorphisms. Construction of finite fields. Applications such as public domain encryption, Latin squares and designs, polynomial error detecting codes, and/or addition and multiplication of large integers. Prerequisite: MATH 120 or 125 or any linear algebra course. Note: This course cannot be taken for credit if credit has already been obtained in MATH 128 or 223.

MATH 229 Algebra: Introduction to Group Theory

★3 (fi 6) (either term, 3-0-0). Groups as a measure of symmetry. Groups of rigid motions. Frieze groups, and finite groups in 2 and 3 dimensions. Groups of matrices. Group actions with application to counting problems. Permutation groups. Subgroups, cosets, and Lagrange's Theorem. Quotient groups and homomorphisms. Prerequisite: MATH 120 or 125 or any linear algebra course.

MATH 241 Geometry

★3 (fi 6) (either term, 3-0-0). Basic Euclidean geometry, congruence, parallelism, area, and similarity. Sound axiomatic development with emphasis on problem solving. Constructions and loci, inequalities, maxima and minima, circles, isometries, and additional topics. Prerequisites: Any 100-level Mathematics course.

MATH 243 Transformation Geometry

★3 (fi 6) (second term, 3-0-0). Transformation geometry, isometry and homothety, applications in Euclidean geometry; the algebra of transformations, the Classification Theorem, frieze patterns and wall-paper groups. Prerequisite: MATH 241

MATH 253 Theory of Interest

★3 (fi 6) (either term, 3-0-0). Accumulation and amount functions, effective, nominal, simple, and compound rates, force of interest and discount, simple and general annuities certain, variable annuities and perpetuities, amortization schedules and sinking funds, bonds and other securities, applications, installment loans, depreciation, depletion, capitalized cost. Prerequisite: MATH 115 or equivalent. Corequisite: MATH 214.

MATH 260 Topics in Mathematics

★3 (fi 6) (second term, 3-0-0). Problem solving in different areas of mathematics. Note: This course is intended for Education students and is not open to Science students. Prerequisite: MATH 160 or teaching experience at the elementary or junior high school level.

MATH 300 Advanced Boundary Value Problems I

★3 (fi 6) (either term, 3-0-0). Derivation of the classical partial differential equations of applied mathematics, solutions using separation of variables. Fourier expansions and their applications to boundary value problems. Introduction to Fourier Transform. Emphasis on building an appropriate mathematical model from a physical problem, solving the mathematical problem, and carefully interpreting the mathematical results in the context of the original physical problem. Prerequisites: MATH 201 and 209 or equivalents. Notes: (1) Open only to students in Engineering, Specialization Computing Science, Specialization Physics, and Specialization Geophysics. (2) This course may not be taken for credit if credit has already been obtained in MATH 337.

MATH 309 Mathematical Methods for Electrical Engineers

★3 (fi 6) (second term, 3-0-0). Complex numbers, analytic functions, Cauchy-Riemann equation, Cauchy Theorem, power series and Laurent expansions, residues, inverse Laplace transform. Complex inner product spaces, orthogonal expansions, Gram-Schmidt orthogonalization completeness, Fourier expansions applied signals, Parseval's relation and Bessel's inequality. Prerequisite MATH 209. This course may not be taken for credit if credit has already been obtained in MATH 311 or 411.

MATH 311 Theory of Functions of a Complex Variable

★3 (fi 6) (either term, 3-0-0). Complex numbers. Complex series. Functions of a complex variable. Cauchy's theorem and contour integration. Residue Theorem and its applications. Introduction to Fourier integrals and the Heisenberg inequality. Prerequisite or corequisite: MATH 209 or 215.

MATH 314 Analysis I

★3 (fi 6) (first term, 3-0-0). Construction of real numbers, Heine-Borel and related theorems, differentiation and Riemann integral of functions, topological concepts

in metric spaces, sequences, continuous maps, contraction maps, and applications. Prerequisite: MATH 209 or 215 or equivalent.

MATH 317 Honors Advanced Calculus II

★3 (fi 6) (second term, 4-0-0). Implicit function theorem. Transformations of multiple integrals. Line integrals, theorems of Green, Gauss and Stokes. Sequences and series of functions. Uniform convergence. Prerequisite: MATH 217.

MATH 322 Graph Theory

★3 (fi 6) (first term, 3-0-0). Graphs, paths and cycles, trees, planarity and duality, coloring problems, digraphs, matching problems, matroid theory. Prerequisite: MATH 120 or 125 or equivalent and any 200-level MATH course. MATH 222 recommended.

MATH 324 Elementary Number Theory

★3 (fi 6) (first term, 3-0-0). Divisibility, prime numbers, congruences, quadratic residues, quadratic reciprocity, arithmetic functions and diophantine equations; sums of squares. Prerequisites: MATH 228 (or 128 or 223).

MATH 325 Algebra: Vector Spaces and Modules

★3 (fi 6) (second term, 3-0-0). Abstract vector spaces. Modules over a principal ideal domain. Finitely generated abelian groups. Linear transformations, the Jordan canonical form and the rational canonical form. Application to matrix powers, discrete system evolution, matrix exponentials and differential equations. Prerequisites: MATH 225 (or 121 or 227) and 228 (or 128 or 223). Notes: (1) This course cannot be taken for credit if credit has already been obtained in MATH 427. (2) This course will be offered starting in 2000/2001.

MATH 329 Algebra: Groups and Fields

★3 (fi 6) (first term, 3-0-0). Field extensions. Groups of automorphisms of fields. Galois theory. Finite fields and applications. Solvable groups, the insolubility of the quintic equation. Ruler and compass construction. Prerequisite: MATH 228 (or 128 or 223) and 229 (or 128). MATH 225 recommended. Notes: (1) This course cannot be taken for credit if credit has already been obtained in MATH 427. (2) This course will be offered starting in 2000/2001.

MATH 334 Introduction to Differential Equations

★3 (fi 6) (either term, 3-0-0). First order equations, linear equations of higher order. Power series solution. Laplace transform methods. Introduction to special functions. Introduction to linear systems. Prerequisite: MATH 120 or 125 or equivalent. Corequisite: MATH 215 or 317. Note: This course may not be taken for credit if credit has already been obtained in MATH 201 or 336.

MATH 337 Introduction to Partial Differential Equations

★3 (fi 6) (second term, 3-0-0). Boundary value problems of classical Math Physics, orthogonal expansions, classical special functions. Advanced transform techniques. Note: This course may not be taken for credit if credit has already been obtained in either MATH 300 or equivalent. Prerequisite: MATH 334 or 336.

MATH 341 Geometry of Convex Sets

★3 (fi 6) (first term, 3-0-0). Combinatorial geometry and topology, convex sets, sets with constant width, Helly-type problems, extremal problems. Prerequisite: MATH 120 or 125 or equivalent, MATH 222 or MATH 241.

MATH 343 Projective and Inversive Geometries

★3 (fi 6) (second term, 3-0-0). Projective geometry, Poncelet-Steiner constructions, inverse geometry, Mohr-Mascheroni constructions, Principle of Duality, conic sections. Prerequisite: MATH 241.

MATH 347 Set Theory

★3 (fi 6) (first term, 3-0-0). Axioms for set theory, transfinite induction, cardinal and ordinal numbers, applications. Primarily intended for students enrolled in an honors or specialization program in mathematics. Prerequisite: One of MATH 215, 217, 228, 229.

MATH 356 Introduction to Mathematical Finance I

★3 (fi 6) (first term, 3-0-0). Simple Market Model: one-step binomial model, basic notions and assumptions. Risk-Free Assets: simple interest, zero-coupon bonds, money market account. Risky Assets: dynamic of stock prices, binomial tree model, trinomial tree model. Discrete time market model: stock and money market model, extended models. Portfolio management: risk, two securities, capital asset pricing model. Prerequisite: MATH 253 and STAT 265 or consent of the Department.

MATH 357 Introduction to Mathematical Finance II

★3 (fi 6) (second term, 3-0-0). Forward and futures contracts: forward and futures prices, hedging with futures. Options: put-call parity, bounds on option prices, time value of options. Option pricing: European and American options in the binomial tree model, Black-Scholes formula. Financial engineering: hedging option positions, hedging business risk. Variable interest rates: maturity-independent yields, general term structure. Stochastic interest rates: arbitrage pricing of bonds, interest rate derivative securities. Prerequisite: MATH 356 or consent of the Department.

MATH 363 History of Mathematics

★3 (fi 6) (second term, 3-0-0). Topics or trends, as selected by the instructor, in ancient (including all cultures), classical or modern mathematics will be covered from an historical point of view. May be offered in alternate years. Prerequisites: MATH 101 or 115 or 118, MATH 102 or 120 or 125 and any 200-level MATH course.

MATH 372 Mathematical Modelling I

★3 (fi 6) (either term, 3-0-0). This course is designed to develop the students' problem-solving abilities along heuristic lines and to illustrate the processes of Applied Mathematics. Students will be encouraged to recognize and formulate problems in mathematical terms, solve the resulting mathematical problems and interpret the solution in real world terms. Typical problems considered include nonlinear programming, optimization problems, diffusion models. Prerequisite: MATH 120 or 125 or equivalent; MATH 215.

MATH 373 Mathematical Programming and Optimization I

★3 (fi 6) (first term, 3-0-0). Introduction to optimization. Problem formulation. Linear programming. The simplex method and its variants (revised Simplex method, dual simplex method). Extreme points of polyhedral sets. Theory of linear inequalities (Farkas Lemma). Complementary slackness and duality. Post-optimality analysis. Interior point methods. Applications (elementary games, transportation problems, networks, etc.). Pre- or corequisites: MATH 120 or 125 or equivalent; any 200-level MATH course.

MATH 374 Mathematical Programming and Optimization II

★3 (fi 6) (second term, 3-0-0). Maximizing and minimizing functions of several variables (with or without constraints). Optimality conditions (necessary, sufficient, Karush-Kuhn-Tucker conditions). Iterative methods for unconstrained optimization. Penalty methods for constrained optimization. Trust region methods. Convex sets, convex functions, convex programming and dual convex programs. Dynamic programming. Applications. Prerequisites: MATH 215 or 217 or and MATH 373.

MATH 381 Numerical Methods I

★3 (fi 6) (either term, 3-0-1). Approximation of functions by Taylor series, Newton's formulae, Lagrange and Hermite interpolation. Splines. Orthogonal polynomials and least-squares approximation of functions. Direct and iterative methods for solving linear systems. Methods for solving non-linear equations and systems of non-linear equations. Introduction to computer programming. Prerequisite: MATH 214 or equivalent, MATH 120, 125 or equivalent. Note: Credit can be obtained for at most one of MATH 280, 381, CMPUT 340. Note: Extra classes may be held for students lacking a background in one of the major programming languages such as Fortran, C, C++ or Matlab.

MATH 400 Industrial Internship Practicum

★3 (fi 6) (first term, 0-3s-0). Required by all students who have just completed a Mathematical Sciences Industrial Internship Program. Must be completed during the first academic term following return to full-time studies. Note: A grade of F to 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 to learn from the experience of the Internship as demonstrated in an oral presentation. Prerequisite: WKEX 953.

MATH 411 Honors Complex Variable I

★3 (fi 6) (first term, 3-0-0). Complex number system. Analytic functions. Single- and multi-valued functions, Cauchy's theorem and formula. Applications including the maximum modulus principle, Taylor's theorem and Laurent expansion. Harmonic functions. Dirichlet problem for the disk. Series of analytic functions. Calculus of residues. Idea of Analytic Continuation. Note: This course is primarily for Honors students in Mathematics or Physics. Offered in alternate years. It may be offered in intervening years if demand is sufficient. Prerequisite: MATH 314 or 317.

MATH 414 Analysis II

★3 (fi 6) (second term, 3-0-0). Differentiation of maps in R^n , implicit function and mapping theorems, sequences of functions, Riemann-Stieltjes integration, additional topics at the discretion of the instructor. Prerequisite: MATH 314.

MATH 417 Honors Real Variables I

★3 (fi 6) (first term, 3-0-0). Elements of set theory, cardinality, brief construction of real numbers. Lebesgue measure and Lebesgue integral on the line. Differentiability, Riemann-Stieltjes integral and functions of bounded variation. Prerequisite: MATH 317 or equivalent.

MATH 418 Honors Real Variables II

★3 (fi 6) (second term, 3-0-0). Differentiation and integration. Elementary metric space theory. Banach space. Hilbert space. Baire Category. L_p spaces. Trigonometric series. Prerequisite: MATH 417.

MATH 421 Combinatorics

★3 (fi 6) (second term, 3-0-0). Permutations and combinations, Binomial Theorem, Principle of Inclusion-Exclusion, recurrence relations, generating functions, orthogonal Latin squares, balanced incomplete block designs, Steiner triple systems, perfect difference sets, Boolean algebra and Finite State Machines. Prerequisites: MATH 228 (or 223 or 128); any 300-level MATH course, MATH 322 recommended.

MATH 422 Coding Theory

★3 (fi 6) (second term, 3-0-0). Elements of group theory, cosets, Lagrange's theorem, binary group codes, polynomials, finite field theory, error correcting codes. Prerequisites: MATH 228 (or 223, or 128), any 300-level MATH course.

MATH 428 Algebra: Advanced Ring Theory

★3 (fi 6) (second term, 3-0-0). Topics in ring theory selected by the Instructor. The topics will be chosen to illustrate the use of ring theory in another area of mathematics such as the theory of numbers, algebraic geometry, representations

of groups or computational algebra. Note: This course will normally be offered in alternate years beginning in 2000/2001. Prerequisite: MATH 325 (or 427) or consent of Department.

MATH 429 Algebra: Advanced Group Theory

★3 (fi 6) (second term, 3-0-0). The Sylow theorems, p -groups. Groups of small order. Simple groups and composition series. Additional topics in group theory. Note This course will normally be offered in alternate years beginning in 2001/2002. Prerequisite: MATH 329 or consent of Department.

MATH 432 Intermediate Differential Equations

★3 (fi 6) (second term, 3-0-0). Elementary existence and uniqueness theorems. Systems of equations, stability, perturbation theory. Introduction to numerical methods. Introduction to phase plane analysis. Prerequisite: MATH 334 or 336.

MATH 436 Intermediate Partial Differential Equations I

★3 (fi 6) (first term, 3-0-0). Introduction to partial differential equations as physical models. Linear and quasilinear first-order equations. Classification of second order linear equations and reduction to canonical form. Characteristic surfaces and curves and shock formation. Formulation of initial and boundary-value problems. Stability theory and well-posedness. Introduction to spectral theory for positive self-adjoint operators on bounded domains. Finite Fourier Transforms. Duhamel's Principle. Eigenfunction expansions for nonlinear stability theory. Prerequisite: MATH 337.

MATH 438 Intermediate Partial Differential Equations II

★3 (fi 6) (second term, 3-0-0). Introduction to transforms; Fourier, Hankel, Laplace; asymptotic approximation of Fourier Integrals; applications to discontinuous solutions of the wave equation, point sources, fundamental solutions, Green's Functions, with an introduction to generalized functions. Eigenfunction expansions and applications. Difference equations. Prerequisite: MATH 436.

MATH 446 Tensor Analysis

★3 (fi 6) (first term, 3-0-0). Algebra of tensors, covariant differentiation in flat space, affine geometry, Riemannian geometry, Lie differentiation, subspaces, differential forms. Prerequisites: MATH 225 (or 227); MATH 217.

MATH 447 Elementary Topology

★3 (fi 6) (second term, 3-0-0). Set Theory, metric spaces and general topology. Compactness, connectedness. Urysohn's Lemma and Tietze's Theorem. Baire Category Theorem. The Tychonoff Theorem. Homotopy and covering spaces. Primarily intended for third and fourth year students with a good background in Mathematics. Prerequisite: MATH 347 (or 217 and any 300-level MATH course). Offered in alternate years. It may be offered in intervening years if demand is sufficient.

MATH 448 Elementary Differential Geometry I

★3 (fi 6) (first term, 3-0-0). Local and global geometry of curves in 3-space; surfaces in 3-space: quadrics, surfaces of revolution, ruled surfaces, minimal surfaces, Gaussian curvature, theorema egregium, geodesics, complete surfaces, Gauss-Bonnet Theorem. Prerequisites: MATH 225 (or 121 or 227); MATH 217; any 300-level MATH course. Offered in alternate years. It may be offered in intervening years if demand is sufficient.

MATH 472 Mathematical Modelling II

★3 (fi 6) (second term, 3-0-0). This course is a continuation of MATH 372, but with more emphasis on individual student projects (a term paper may be required) decided in consultation with the instructor and consideration of a student's present interest and mathematical/scientific background. Prerequisite: MATH 372.

MATH 481 Numerical Methods II

★3 (fi 6) (second term, 3-0-1). Numerical differentiation and integration. Numerical solution of initial value problems for systems of ordinary differential equations. Numerical solution of boundary value problems for ordinary and partial differential equations. Weighted residual methods and introduction to the finite element method. Prerequisite: MATH 381. Pre- or corequisite: MATH 334. Credit can be obtained for at most one of MATH 380, 481, 486.

MATH 496 Honors Seminar

★3 (fi 6) (second term, 3-0-0). This course is intended to give students experience with independent reading, and to improve their ability to present and explain mathematical ideas. The course is compulsory for all fourth year Honors students in BSc and BA Mathematics and BSc Applied Mathematics. Normally offered in alternate years. Prerequisite: MATH 317.

MATH 497 Reading in Mathematics

★3 (fi 6) (either term, 3-0-0). This course is designed to give credit to mature and able students for reading in areas not covered by courses, under the supervision of a staff member. A student, or group of students, wishing to use this course should find a staff member willing to supervise the proposed reading program. A detailed description of the material to be covered should be submitted to the Chair of the Department Honors Committee. (This should include a description of testing methods to be used.) The program will require the approval of both the Honors Committee, and the Chair of the Department. The students' mastery of the material of the course will be tested by a written or oral examination. This course may be taken in Fall or Winter and may be taken any number of times, subject always to the approval mentioned above. Prerequisite: Any 300-level MATH course.

Graduate Courses

MATH 501 Directed Study I

★3 (fi 6) (either term, 3-0-2). Basic principles of experimental design, completely randomized design-one way ANOVA and ANCOVA. Randomized block design. Latin square design, Multiple comparisons. Nested design. Factorial experiments. Each student will give a written report and seminar presentation highlighting statistical methods used in a research project. Prerequisite: STAT 252 or 337 or equivalent and a course in linear algebra. Note: Not open to graduate students in the Department of Mathematical Sciences.

MATH 506 Complex Variables

★3 (fi 6) (either term, 3-0-0). Conformal mapping, normal families, Riemann mapping theorem and symmetry principle. Harmonic functions: basic properties. Maximum modulus principle with Phragmen-Lindelof and Hadamard 3 circle theorem. Entire functions, infinite products and Hadamard factorization. Riemann surfaces. Prerequisite: MATH 411.

MATH 512 Algebraic Number Theory

★3 (fi 6) (either term, 3-0-0). Valuations and their extensions, ramifications; integral dependence, algebraic number fields, ideals and divisors, class number. Prerequisite: MATH 427.

MATH 515 Mathematical Finance I

★3 (fi 6) (either term, 3-0-0). Probability tools for discrete financial analysis; Conditional probabilities/expectations. Filtrations, adapted and predictable processes. Martingales, submartingales and supermartingales in discrete-time. Doob-Meyer decomposition for supermartingales. Predictable representation. Discrete-time financial models: Arbitrage, complete and incomplete markets. Self-financing property, value and gain processes. Valuation of contingent claims. Binomial model: Model specifications, Perfect hedging. Utility functions and consumption/investment problems. European and American options in discrete time. Futures and forward contracts in discrete time. Transition to the continuous-time framework. Prerequisite: Math 417 or Stat 571.

MATH 516 Linear Analysis

★3 (fi 6) (either term, 3-0-0). Banach spaces, Hahn-Banach theorem, Banach-Steinhaus theorem, Banach open mapping and closed graph theorems in Banach spaces. Hilbert spaces and orthonormal bases. Spectral theory of compact normal operators. Examples. Basic fixed point theorems and applications. Prerequisite: MATH 418 or consent of Department.

MATH 518 Functional Analysis

★3 (fi 6) (either term, 3-0-0). Locally convex spaces, weak topologies and duality in Banach spaces, weak compactness in Banach spaces, structure of classical Banach spaces, local structures, infinite-dimensional geometry of Banach spaces and applications. Prerequisite: MATH 516. Corequisite: MATH 447 or consent of Department.

MATH 519 Introduction to Operator Algebras

★3 (fi 6) (either term, 3-0-0). Banach algebras and spectral theory, compact and Fredholm operators, the spectral theorem for bounded normal operators, operator algebras, representations of C^* -algebras, elementary von Neumann algebra theory, and other topics. Prerequisite: MATH 516. Corequisite: MATH 447 or consent of Department.

MATH 520 Mathematical Finance II

★3 (fi 6) (either term, 3-0-0). Probability tools: Brownian motion, diffusion processes and continuous martingales, Ito formula and stochastic differential equation, change of probability measures. Financial markets in continuous-time: Arbitrage, completeness, self-financing strategies. Black Scholes model. Option pricing and hedging in complete markets: European and American options. Consumption-investment problem in complete markets. Introduction to models of term structure of interest rates. Prerequisite: Math 515.

MATH 521 Differential Manifolds

★3 (fi 6) (either term, 3-0-0). Finite dimensional manifolds/submanifolds; tangent bundle, differential, inverse, and implicit function theorems, partitions of unity; imbeddings, immersions, submersions; vector fields and associated flows; Lie derivative, Lie bracket; tensor analysis, differential forms, orientation, integration, Stokes' theorem; basics of smooth bundle theory, Riemannian metrics; notion of a Lie group with basic examples, smooth Lie group actions, principal bundles. Prerequisite: MATH 446 or 448.

MATH 523 Application of Differential Geometry to Mechanics

★3 (fi 6) (either term, 3-0-0). Configuration and phase spaces as smooth manifolds, second order equations, connections, holonomic and nonholonomic systems. Review of the calculus of variations on manifolds, Lagrangians, Hamiltonians, Legendre transformations. General contact, symplectic and Poisson structures on manifolds. Actions of symmetry groups on symplectic manifolds, Noether's theorems and generalizations. Introduction to systems with infinite degree of freedom. Prerequisite: MATH 521.

MATH 524 Ordinary Differential Equations IIA

★3 (fi 6) (either term, 3-0-0). Existence theorems, uniqueness theorems; linear systems (basic theory); stability (basic theory); nonlinear systems (local theory); nonlinear systems (global theory); bifurcations. Prerequisite: MATH 334 or equivalent.

MATH 525 Ordinary Differential Equations IIB

★3 (fi 6) (either term, 3-0-0). Asymptotics; boundary value problems; Poincare-Bendixon theory. Additional material will be chosen from among the following topics at the option of the instructor: separation; dichotomies; comparison and oscillation theory; bifurcation theory; nonautonomous systems; dynamical systems; functional differential equations; contingent equations; differential equations in Banach spaces. Prerequisite: MATH 524 or equivalent.

MATH 527 Intermediate Partial Differential Equations

★3 (fi 6) (either term, 3-0-0). Notions; Elliptic PDE's; Parabolic PDE's; Hyperbolic PDE's; Nonlinear Integrable PDE's. Prerequisite: MATH 436 or equivalent; pre- or corequisite: MATH 518.

MATH 530 Algebraic Topology

★3 (fi 6) (either term, 3-0-0). Particular background from point set topology (pasting and quotienting constructions); homotopy relation between maps and spaces; fundamental group; Seifert VanKampen theorem; covering spaces. Additional topics at the discretion of the instructor. Prerequisites: MATH 227, 317 and 447 or consent of Department. Corequisite: MATH 426.

MATH 531 Algebraic Topology II

★3 (fi 6) (either term, 3-0-0). Basics from homological algebra; (co)-homology; Lefschetz number, Euler characteristics, Lefschetz fixed point theorem (via singular theory and/or CW-theory and/or differential forms). Additional topics at the discretion of the instructor. Prerequisite: MATH 530 or consent of Department.

MATH 532 General Topology I

★3 (fi 6) (either term, 3-0-0). Elementary concepts of topology, nets and filters. Continuity homeomorphisms, product and quotient spaces. Axioms of separation and countability. Compactness, metrization, connectedness. Prerequisite: MATH 417 or 447.

MATH 534 Introduction to the Theory of Approximation

★3 (fi 6) (either term, 3-0-0). Polynomial interpolation, remainder formulae and error bounds. Best approximations in C, Lp and other norms. Degree of approximation by polynomials and trigonometric polynomials. Spline interpolation and approximation. Numerical differentiation, quadrature formulae and other applications to numerical analysis. Prerequisite: MATH 418.

MATH 535 Numerical Methods I

★3 (fi 6) (first term, 3-0-0). Direct and iterative methods for solving linear systems, iterative methods for nonlinear systems, polynomial and spline interpolations, least square approximation, numerical differentiation and integration, initial value problems for ODE's (one-step, multistep methods, stiff ODE's). Prerequisite: 400-level MATH course. Students are required to have knowledge of advanced Calculus and introductory knowledge in Analysis and Linear Algebra and some computer programming. Note 1: Restricted to graduate students only. Note 2: May not be taken for credit if credit has already been obtained in MATH 381, 481 or 486 or equivalent.

MATH 536 Numerical Solutions of Partial Differential Equations I

★3 (fi 6) (either term, 3-0-0). Finite difference and finite element methods for boundary-value problems of elliptic equations. Numerical algorithms for large systems of linear algebraic equations: direct, classical relaxation, multigrid and preconditioned conjugate gradient methods. Algorithms for vector/parallel computers and the domain decomposition method. Prerequisites: MATH 337, 436 or equivalent and some computer programming.

MATH 537 Numerical Solutions of Partial Differential Equations II

★3 (fi 6) (either term, 3-0-0). Finite difference and finite element methods for parabolic and hyperbolic equations, initial-value and initial-boundary-value problems. Methods for linear/nonlinear scalar and systems of equations, singular equations. Convergence, stability analysis, and error estimate. Numerical dissipation and dispersion. Discontinuous solutions, shock and conservation laws. Prerequisites: MATH 337, 436 or equivalent, MATH 536 (recommended) and some computer programming.

MATH 538 Techniques of Applied Mathematics

★3 (fi 6) (either term, 3-0-0). Continuation of asymptotic expansion of integrals. Perturbation theory, asymptotic matching, perturbative eigenvalue problems. Boundary layer theory. WKB theory. Prerequisite: MATH 438.

MATH 542 Fourier Analysis

★3 (fi 6) (either term, 3-0-0). Review, theory and extension of Fourier series for square integrable functions; orthonormal systems, Bessel's inequality, completeness, Parseval's identity, Riesz-Fischer Theorem. Extension to Fourier series for functions in other Lebesgue classes; Fejer means, conjugate series, Dirichlet, Fejer and Poisson kernels. Norm convergence; remarks on pointwise convergence. Fourier transforms and series in several dimensions; inverse transform, Plancherel formula, Poisson Formula, maximal functions, Riesz-Thorin Theorem and applications. Elementary distribution theory; D, D', S, S' and some elementary results, Fourier transforms of tempered distributions. Examination of some earlier results with tempered distributions instead of functions and getting familiar with basic concepts. Prerequisite: MATH 418.

MATH 543 Measure Theory

★3 (fi 6) (either term, 3-0-0). Abstract measures. Integration. Lp spaces. Radon-Nikodym theorem. Hahn and Lebesgue decomposition theorems. Product measures. Fubini's theorem. Prerequisite: MATH 418.

MATH 556 Introduction to Fluid Mechanics

★3 (fi 6) (first term, 3-0-0). Fundamentals including continuum hypothesis surface tension, classical thermodynamics, and transport phenomena. Introduction to Cartesian tensors. Kinematics of flow including Lagrangian and Eulerian descriptions, streamline, path line, streak line, vorticity and circulation. Derivation of the conservation laws for mass, momentum, and energy and a detailed description of the Boussinesq approximation. Conservation laws in a rotating frame. Vortex lines and tubes, role of viscosity in vortices, Kelvin's circulation theorem, the vorticity equation in nonrotating and rotating frames. Irrotational flow including its relevance, velocity potential, sources and sinks, and flow past various shapes. Gravity waves in deep and shallow water with and without surface tension in both the linear and nonlinear contexts. Dynamic similarity and Buckingham's Pi Theorem. Prerequisites: One of MATH 311, 411 and MATH 436 or consent of Instructor.

MATH 557 Intermediate Fluid Dynamics

★3 (fi 6) (second term, 3-0-0). Linear and nonlinear waves, mixing, and turbulence in fluids with varying density. Application of dimensional analysis and scaling theory to lee waves, interfacial waves, trapped and propagating internal waves, gravity currents, internal hydraulic jumps, upstream wakes, blocking, plumes, thermals, and double diffusion. The dynamics of fluids on planetary scales and Coriolis effects. Conservation laws of potential vorticity and potential temperature/density. Derivation of geostrophic and thermal wind balance. Derivation of approximate governing equations including the quasi-geostrophic equations. Planetary wave dispersion relationships and dynamics of Kelvin, Rossby, Poincare and baroclinic waves. Derive the approximate equations and dynamics of the planetary boundary layer, the Ekman layer, the Eliassen-Palm flux, sudden stratospheric warming, and the Quasi-Biennial Oscillation. Prerequisites: MATH 556 or consent of Instructor.

MATH 570 Mathematical Biology

★3 (fi 6) (either term, 3-0-0). Mathematical modeling in the biological and medical sciences. Students will learn how to apply mathematical methods and theory to a variety of different biological problems. Topics will be taken from: (i) continuous and discrete dynamical systems describing interacting and structured populations, resource management, biological control, reaction kinetics, biological oscillators and switches, the dynamics of infectious diseases and genetics and (ii) models of spatial processes in biology including random walks, pattern formation in morphogenesis and ecology, applications of traveling waves to population dynamics, epidemiology, chemical reactions, and models for neural patterns. Prerequisites: MATH 524 and 527 or consent of Instructor.

MATH 581 Group Theory

★3 (fi 6) (either term, 3-0-0). Sylow theory, free groups, soluble/nilpotent groups; Bilinera forms, classical groups; Character theory of finite groups. Prerequisite: MATH 427.

MATH 582 Rings and Modules

★3 (fi 6) (either term, 3-0-0). Introduction to valuations; Free and projective modules, direct sums and products; Tensor products, central simple algebras; Aerin-Wedderburn theory; Commutative Noetherian rings including Nullstellensatz. Topics from homological algebra and category theory which may vary from year to year. Prerequisite: MATH 427 or consent of the Department.

MATH 600 Reading in Mathematics

★3 (fi 6) (either term, 3-0-0). Students registered in this course are supervised by individual staff members in areas of interest of the staff members. Students will be allowed to take this course only in exceptional circumstances and with the permission of the Chairman of the Department. This course shall not be counted against the minimum course requirement for graduate students.

MATH 610 Stochastic Control

★3 (fi 6) (either term, 3-0-0). Optimal stopping, classical stochastic control, stochastic singular control, stochastic impulse control, and applications. Prerequisites: Stat 580 and either Math 417 or Stat 471, or consent of the Department.

MATH 615 Mathematical Models for the Term Structure of Interest Rates

★3 (fi 6) (either term, 3-0-0). The models of Vasicek and Cox-Ingersoll-Ross. The Heath-Jarrow-Morton model of forward rates. The short-rate process; single-factor and affine models. Estimation methods: Exponential splines. Nelson-Siegel Term Premia and the expectation hypothesis. Prerequisites: MATH 515, STAT 672.

MATH 617 Topics in Functional Analysis I

★3 (fi 6) (either term, 3-0-0).

MATH 618 Topics in Functional Analysis II

★3 (fi 6) (either term, 3-0-0).

MATH 620 Topics in Stochastic Analysis and Applications

★3 (fi 6) (two term, 1.5-0-0).

MATH 623 Topics in Differential Geometry and Mechanics

★3 (fi 6) (either term, 3-0-0).

MATH 625 Advanced Mathematical Finance

★3 (fi 6) (either term, 3-0-0). Multi-asset complete market models with random

coefficients: hedging, pricing, portfolio optimization and equilibrium. Incomplete market models: hedging, pricing and portfolio optimization. Market models with transaction costs and constraints. Prerequisites: MATH 517 or consent of the Department.

MATH 630 Topics in Algebraic Topology

★3 (fi 6) (either term, 3-0-0).

MATH 638 Nonlinear Waves

★3 (fi 6) (either term, 3-0-0).

MATH 641 Banach Space Theory

★3 (fi 6) (either term, 3-0-0). Prerequisite: MATH 519.

MATH 642 Abstract Harmonic Analysis

★3 (fi 6) (either term, 3-0-0). Prerequisite: MATH 519.

MATH 643 Topics in Analysis

★3 (fi 6) (either term, 3-0-0).

MATH 650 Seminar in Algebra

★1 (fi 2) (either term, 0-2s-0). Credit for this course may be obtained more than once.

MATH 651 Seminar in Analysis

★1 (fi 2) (either term, 0-2s-0). Credit for this course may be obtained more than once.

MATH 652 Seminar in Differential Equations

★1 (fi 2) (either term, 0-2s-0). Credit for this course may be obtained more than once.

MATH 653 Seminar in Functional Analysis

★1 (fi 2) (either term, 0-2s-0). Credit for this course may be obtained more than once.

MATH 654 Seminar in Nonlinear Waves/Fluid Mechanics

★1 (fi 2) (either term, 0-2s-0). Credit for this course may be obtained more than once.

MATH 655 Topics in Fluid Dynamics

★3 (fi 6) (either term, 3-0-0).

MATH 656 Seminar in Mathematical Biology

★1 (fi 2) (either term, 0-2s-0). Credit for this seminar course can be obtained more than once.

MATH 659 Research Seminar in Mathematics

★1 (fi 2) (either term, 0-2s-0). Credit for this course may be obtained more than once.

MATH 663 Topics in Applied Mathematics I

★3 (fi 6) (either term, 3-0-0).

MATH 664 Topics in Applied Mathematics II

★3 (fi 6) (either term, 3-0-0).

MATH 667 Topics in Differential Equations I

★3 (fi 6) (either term, 3-0-0).

MATH 676 Topics in Geometry I

★3 (fi 6) (either term, 3-0-0).

MATH 677 Topics in Geometry II

★3 (fi 6) (either term, 3-0-0).

MATH 681 Topics in Algebra

★3 (fi 6) (either term, 3-0-0).

MATH 682 Topics in Algebra

★3 (fi 6) (either term, 3-0-0).

MATH 900 Directed Research Project

★6 (fi 12) (variable, unassigned). Open only to students taking the MSc non-thesis option in mathematics.

221.140 Mathématiques, MATHQ

Faculté Saint-Jean

Cours de 1er cycle

MATHQ 100 Calcul élémentaire I

★3 (fi 6) (premier semestre, 3-0-2). Les nombres, inéquations, fonctions, géométrie analytique, limite, continuité, dérivées et applications, polynôme de Taylor, fonctions exponentielles et logarithmiques, fonctions trigonométriques inverses et hyperboliques, différentielle et calculs approximatifs. Intégration et théorème fondamental du calcul intégral. Méthode des trapèzes et méthode de Simpson. Préalable(s): Mathématique 30 et 31. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MATH 117, MATHQ 113 ou 114.

MATHQ 101 Calcul élémentaire II

★3 (fi 6) (l'un ou l'autre semestre, 3-0-1). Techniques d'intégration et applications

du calcul d'intégrales: calcul de longueurs, aires, volumes et masses, intégrales impropres, équations différentielles ordinaires d'ordre un; séparables, linéaires, méthode d'Euler, applications. Séries infinies, séries de Taylor, séries de puissances et critère de convergence d'une série. Coordonnées polaires, rectangulaires, sphériques et cylindriques dans l'espace de trois dimensions, courbes paramétriques dans le plan et l'espace. Volume et aire d'une surface de révolution. Préalable(s): MATHQ 100. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MATHQ 115 ou MATH 118.

MATHQ 102 Algèbre linéaire appliquée

★3 (fi 6) (deuxième semestre, 3-0-1). Vecteurs et matrices; solution d'équations linéaires; équations de lignes et de plans; déterminants; algèbre matricielle; orthogonalité de Gram-Schmidt et applications; valeurs propres, vecteurs propres et applications; nombres complexes. Préalable(s) ou concomitant(s): MATHQ 100. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MATHQ 120, MATH 125 ou 127.

MATHQ 113 Calcul élémentaire

★3 (fi 6) (l'un ou l'autre semestre, 3-0-1). Revue de la géométrie analytique, différentiation et intégration des fonctions simples, applications. Préalable(s): Mathématiques 30 ou l'équivalent. Les étudiants ayant complété Mathématiques 31 devront normalement suivre MATHQ 100 ou MATH 114. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MATHQ 100, MATH 114 ou 117.

MATHQ 115 Calcul élémentaire II

★3 (fi 6) (deuxième semestre, 3-0-0). Différentiation et intégration des fonctions trigonométriques, exponentielles et logarithmiques. Formes indéterminées et intégrales impropres. Techniques d'intégration. Applications. Préalable(s): MATHQ 113, 114 ou l'équivalent.

MATHQ 120 Algèbre linéaire I

★3 (fi 6) (premier semestre, 3-0-0). Vecteurs et algèbre matricielle. Déterminantes. Système d'équations linéaires. Espaces vectoriels. Valeurs propres et vecteurs propres. Applications. Préalable(s): Mathématiques 30 ou l'équivalent. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MATH 102, 125 ou 127.

MATHQ 160 Mathématiques pour enseignants

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Les concepts étudiés ont pour but d'aider l'enseignant à formuler une idée intuitive des concepts qu'il doit enseigner aux élèves. Nous aborderons les statistiques et les probabilités, les suites et les séries, les fonctions trigonométriques, les fonctions du deuxième degré, les polynômes. Note: Ce cours est réservé aux étudiants du BEd Élémentaire. Préalable(s): Math 30 ou l'approbation du Vice-doyen aux affaires académiques.

MATHQ 201 Equations différentielles

★3 (fi 6) (l'un ou l'autre semestre, 3-0-1). Equations du premier ordre; équations linéaires du deuxième ordre; réduction d'ordre, variation des paramètres; transformation de Laplace; systèmes linéaires; séries de puissance; solutions par séries; séparation des variables pour les équations ou dérivées partielles. Préalable(s) ou concomitant(s): MATH 209 ou MATHQ 214. Note: Ce cours est accessible seulement aux étudiants en génie et aux étudiants en sciences dans les programmes suivants: spécialisation physique, spécialisation géophysique, spécialisation sciences informatiques, ou spécialisation géographie (météorologie). Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MATH 205, 334 ou 336.

MATHQ 222 Introduction aux mathématiques discrètes

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Approche appliquée des mathématiques discrètes, couvrant les codes secrets, la cryptographie à clef publique, codes correcteurs d'erreurs, relations de récurrences, induction, théorie des graphes, algorithmes pour les graphes et algorithmes parallèles. Préalable(s) : ★3 de niveau 100 en mathématiques.

221.141 Maîtrise ès sciences de l'éducation, M EDU

Faculté Saint-Jean

Cours de 2e cycle

M EDU 500 Langue, culture et éducation

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude interdisciplinaire (anthropologie, sociologie, psychologie sociale) des théories scientifiques contemporaines sur la nature de la culture, ses rapports avec la langue et ses mécanismes de transmission et de modification. La problématique locale sera examinée dans le contexte de la communauté scientifique internationale. L'histoire de la science de l'éducation bilingue sera aussi abordée. 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.

M EDU 501 La culture et l'individu

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude de la relation entre culture et

personnalité dans les sociétés homogènes selon les théories de l'anthropologie psychologique. L'application de ces principes aux sociétés industrialisées permettra de mieux comprendre le développement de l'identité culturelle chez l'être humain et ses rapports avec l'identité de soi dans/parmi les groupes ethno-culturels en situation minoritaire. 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.

M EDU 511 Fondements théoriques de l'acquisition de la langue

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des diverses théories de l'acquisition de la langue. Le rôle de la langue dans le développement de l'enfant. Le lien entre le développement langagier et le développement cognitif. 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.

M EDU 520 Tendances actuelles en éducation des francophones

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des phénomènes propres à l'éducation des Francophones au Canada selon la pratique et la recherche effectuées dans les diverses provinces: abandon du bilinguisme institutionnel; programmes socio-culturels; innovations en didactique de la langue maternelle. 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.

M EDU 521 Tendances actuelles en pédagogie de l'immersion française

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude critique des orientations théoriques et des pratiques actuelles dans la pédagogie de l'immersion française. Analyse de questions importantes dans l'implantation des programmes d'immersion. 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.

M EDU 531 La problématique de la technologie et de la science face au curriculum

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des récents développements technologiques, scientifiques et sociaux qui ont un impact significatif sur le curriculum.

M EDU 532 L'écologie de la salle de classe

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des influences et des relations interpersonnelles qui ont un effet sur l'apprentissage, l'enseignement et la communication en salle de classe. 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.

M EDU 540 Dimensions politiques et administratives de l'éducation bilingue

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des structures de l'éducation française et bilingue dans les diverses provinces canadiennes et du rapport existant entre ces structures et le contexte socio-politique.

M EDU 541 Enseignement des langues assisté par ordinateur

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Ce cours vise à faire connaître les différentes approches et les fondements de l'enseignement des langues assisté par ordinateur. Il vise aussi à fournir les outils pour concevoir, construire et évaluer des didacticiels. 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.

M EDU 560 L'administration de l'éducation

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude approfondie de concepts d'administration. Les rôles du gestionnaire de l'éducation. Gestion des ressources humaines et financières en éducation. Examen des problèmes en milieu d'éducation et analyse de solutions administratives pertinentes.

M EDU 561 Formation des habiletés de supervision et de leadership

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Principes, organisation et techniques de supervision. Le développement des habiletés de leadership en gestion, particulièrement pour l'éducation en français.

M EDU 562 Stage pratique de direction

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Vise à développer des habiletés en observation, en entrevues, en animation de groupes et en réflexion lors de visites dans des écoles et en travaillant avec la direction des écoles.

M EDU 580 Méthodologie de la recherche en éducation I

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude du processus de la recherche et des concepts de base de la recherche en éducation. Présentation des divers types de recherches: méthodes de collecte de données et les instruments, analyse et interprétation. 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.

M EDU 582 Séminaire de recherche

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Rédaction d'un exposé écrit dans lequel l'étudiant doit tenter de préciser le problème qui est à la source de sa recherche et les objectifs de celle-ci, de situer le sujet étudié dans un cadre de référence

général, de formuler la problématique de la recherche. Présentation par l'étudiant d'un exposé écrit. 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.

M EDU 583 La recherche et le praticien

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Étude des retombées de la recherche sur la pratique éducative. Méthodologie de la recherche-action, et la formation professionnelle continue des enseignants. 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.

M EDU 589 Le processus créateur chez l'enseignant

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Ce cours approfondit les dimensions multiples du processus créateur dans les pratiques éducatives. Un apprentissage interdisciplinaire fait état des recherches théoriques et pratiques visant à développer ce processus dans divers contextes culturels.

M EDU 594 Lectures dirigées

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

M EDU 596 Thème ouvert

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

M EDU 597 Séminaire portant sur l'enseignement au niveau élémentaire et secondaire

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

M EDU 598 Choix de sujet en éducation

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

M EDU 599 Étude personnelle dirigée

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

M EDU 900 Activité de synthèse

★3 (fi 6) (variable, unassigned).

221.142 Mechanical Engineering, MEC E

Department of Mechanical Engineering
Faculty of Engineering

The following courses were renumbered effective 2000/2001

Old	New	Old	New
MEC E 470	MEC E 370	MEC E 310	ENG G 310

Undergraduate Courses

MEC E 200 Introduction to Mechanical Engineering

★1 (fi 2) (either term, 0-2s-0). Introduction to the profession of mechanical engineering with special emphasis of industries in Alberta. Selected guest speakers on design problems in mechanical engineering. Communication skills including written and oral presentations.

MEC E 250 Engineering Mechanics II

★3.5 (fi 6) (either term, 3-1s-0). Moments of inertia. Kinematics and kinetics of rigid body motion, energy and momentum methods, impact, mechanical vibrations. Prerequisites: ENGG 130, EN PH 131 and MATH 101. There is a consolidated exam.

MEC E 260 Mechanical Design I

★3.5 (fi 6) (either term, 2-0-3). Design morphology, analysis and design of components, computer-aided design introduction, design project. Corequisite: MEC E 265.

MEC E 265 Engineering Graphics and CAD

★3.5 (fi 6) (first term, 2-0-3). Engineering drawing and sketching, conventional drafting, computer-aided drawing in 2D and 3D, solid modelling, and computer-aided design. Prerequisite: ENCOMP 100.

MEC E 300 Mechanical Measurements

★3.5 (fi 6) (either term, 3-1s-0). Characterization and behavior of measuring systems. Statistics and analysis of measurement data; measurement techniques applied to fundamental mechanical engineering phenomena. Prerequisites: CIV E 270, E E 239, STAT 235. Corequisite: MEC E 330.

MEC E 301 Mechanical Engineering Laboratory I

★2.5 (fi 6) (either term, 1-0-3). Laboratory experiments in mechanical engineering measurement techniques, treatment of measurement data, introduction to engineering report writing. Corequisite: MEC E 300.

MEC E 330 Fluid Mechanics I

★3.5 (fi 6) (either term, 3-0-1). Basic equations, hydrostatics, Bernoulli equations,

momentum theories, similitude fluid metering, fluid friction, fluid friction in pipes, external flow, boundary layers. Prerequisites: MEC E 250, MATH 209. Corequisite: CH E 243.

MEC E 340 Applied Thermodynamics

★3 (fi 6) (either term, 3-0-0). Review of the fundamentals of thermodynamics. Applications to gas compressors, gas and steam turbines, refrigeration. Availability analysis. Principles of combustion, psychrometry, and compressible flow. Prerequisite: CH E 243.

MEC E 360 Mechanical Design II

★3.8 (fi 6) (either term, 3-0-3/2). Design procedures, theories of failure, material selection, design for fatigue, creep and relaxation, selection of gears and bearings, development and application of computer-aided design software. Prerequisite: MEC E 260.

MEC E 362 Mechanics of Machines

★3.8 (fi 6) (either term, 3-0-3/2). Velocities and acceleration in plane mechanisms, balancing of rotating and reciprocating machinery, gears and gear trains. Prerequisite: MEC E 250.

MEC E 364 Manufacturing Processes

★2.8 (fi 6) (either term, 2-0-3/2). Primary and secondary processes in metal forming, material removal and fabrication techniques, selected field trips and laboratory and shop exercises. Prerequisite: MEC E 260.

MEC E 370 Heat Transfer

★3.5 (fi 6) (either term, 3-1s-0). Mechanisms of heat transfer, steady and unsteady heat conduction, numerical analysis, thermal radiation, free and forced convection, heat exchanger analysis and heat transfer with change of phase. Note: Credit cannot be obtained for both MEC E 370 and 470. Prerequisites: CH E 243. Corequisites: MATH 300 and MEC E 330.

MEC E 380 Advanced Strength of Materials I

★3.5 (fi 6) (either term, 3-1s-0). Stress, strain, stress-strain relation, time-independent and time-dependent behavior, virtual work and energy theorems, deformations, indeterminate systems, matrix methods. Prerequisite: MEC E 260.

MEC E 390 Numerical Methods of Mechanical Engineers

★3.5 (fi 6) (either term, 3-0-1). Application of numerical methods to mechanical engineering problems; topics include sources and definitions of error, root finding, solutions of linear and non-linear systems of equations, regression, interpolaton, numerical integration and differentiation, solution of initial value and boundary value ordinary differential equations. Applications include dynamics, solid mechanics, heat transfer and fluid flow. Prerequisites: MATH 102, 201, ENCMP 100 (or equivalent).

MEC E 403 Mechanical Engineering Laboratory II

★2.5 (fi 6) (either term, 1-0-3). Selected laboratory experiments in applied mechanics and thermosciences. Note: Credit cannot be obtained in both MEC E 303 and 403. Prerequisites: MEC E 300 and 301.

MEC E 409 Experimental Design Project I

★2.5 (fi 6) (either term, 1-0-3). Selected group projects in experimental measurement and mechanical design. Two to four person groups develop planning, design, testing and report writing skills on projects in applied mechanics, thermosciences and engineering management. Prerequisites: MEC E 301 and ENGG 310 or 401.

MEC E 420 Feedback Control Design of Dynamic Systems

★3.8 (fi 6) (first term, 3-0-3/2). Design of linear feedback control systems for command-following error, stability, and dynamic response specifications. PID, Root-locus, frequency response and design techniques. An introduction to structural design limitations. Examples emphasizing Mechanical Engineering systems. Some use of computer aided design with MATLAB/Simulink. Controls Lab - control of mechanical systems. Prerequisites: MEC E 390 or equivalent and consent of Instructor. Credit can only be granted for one of MEC E 420, E E 469, CH E 448.

MEC E 430 Fluid Mechanics II

★3 (fi 6) (first term, 3-0-0). One dimensional flow in pipes and varying area-nozzles, normal shock waves, flow in constant area pipes with friction and heat addition, methods of measurement in compressible flow, behavior of real, non-ideal gases and two phase flow, flow transients. Prerequisite: MEC E 330.

MEC E 439 Principles of Turbomachines

★3 (fi 6) (either term, 3-0-0). Use of turbomachines in ground based and flight applications, thermodynamic cycles for gas turbines and cogeneration, performance predictions of propellers, compressors and turbines, air-breathing combustion and emissions. Prerequisites: MEC E 370.

MEC E 443 Energy Conversion

★3 (fi 6) (either term, 3-0-0). Sources, flow and overall efficiency of use of various energy forms in society, thermodynamic analysis of energy conversion devices such as thermoelectric and magnetohydrodynamic generators, solar and fuel cells, energy from fission and fusion reactors. Prerequisite: MEC E 340.

MEC E 451 Vibrations and Sound

★3.5 (fi 6) (first term, 3-0-1). Free and forced vibration of single degree of freedom systems with and without damping, vibration isolation, free vibration of multi

degrees of freedom systems, vibration absorption, beam vibrations, sound waves, sound sources, subjective aspects of noise. Prerequisites: MEC E 250 and MATH 300.

MEC E 460 Design Project

★3 (fi 6) (either term, 1-0-4). Feasibility study and detailed design of a project which requires students to exercise creative ability, to make assumptions and decisions based on synthesis of technical knowledge, and in general, devise new designs, rather than analyse existing ones. Prerequisites: ENGG 310 (or 401), MEC E 330, 340, 360, 362, 370, 380.

MEC E 463 Thermo-Fluids Systems Design

★4 (fi 6) (first term, 3-0-2). Design and optimization of thermo-fluid systems, heating and ventilating equipment and load calculations, system design, piping networks, heat exchanger analysis and design, computer-aided design projects. Corequisite: MEC E 370.

MEC E 469 Experimental Design Project II

★2.5 (fi 5) (either term, 1-0-3). Advanced project in experimental measurement and mechanical designs in applied mechanics, thermosciences and engineering management. Prerequisite: MEC E 409.

MEC E 480 Advanced Strength of Materials II

★3 (fi 6) (first term, 3-0-0). Special topics for beams, torsion, pressure vessels, plane stress and strain, stability, fracture mechanics. Prerequisites: MEC E 360, 380, MATH 300.

MEC E 494 Introduction to Research

★0.5 (fi 1) (first term, 0-1s-0). Introduction to methods of mechanical engineering research. Organizational seminars for the research project in the following term. Prerequisites: MEC E 330, 380, and consent of Department.

MEC E 495 Research Project

★3 (fi 6) (second term, 0-0-6). Mechanical Engineering undergraduate research project with a faculty member. Prerequisites: MEC E 494 and consent of Department.

Graduate Courses

Note: The courses ENG M 620, MEC E 630, 640, 670, 680 and 681 normally will be offered annually. Other courses will be offered on a lecture basis when there is sufficient enrolment; otherwise they will be offered on a guided reading basis.

MEC E 512 Quality Engineering & Management

★3 (fi 6) (either term, 3-0-0). Quality engineering and management evolution, definitions, concepts and principles. Essential quality management theories and models. ISO 9000 principles models and applications. Seven quality engineering and management tools. Quality function deployment. Failure analysis. Quality costing. Statistical quality. Prerequisites: STAT 235 or equivalent.

MEC E 513 Production and Operations Management

★3 (fi 6) (either term, 3-0-0). Production and operations management, analysis, and design of work, forecasting, inventory management including MRP, JIT, and Kanban, maintenance management, facility layout, operations scheduling, and project planning and management. Prerequisites: ENGG 310 or 401; and STAT 235 or equivalent.

MEC E 514 Reliability for Design

★3 (fi 6) (either term, 3-0-0). Concepts of reliability, failure rate, maintainability, and availability. Properties of various statistical distributions and their applications in reliability engineering. Failure data analysis techniques including probability plotting. Load and strength interference in mechanical component design. Design of components for high reliability. System reliability models and system reliability evaluation methods. Optimal system design considering reliability issues. Models for operation and maintenance of equipment. Prerequisite: STAT 235.

MEC E 520 Digital Control Design of Dynamic Systems

★3 (fi 6) (either term, 3-0-0). Design of sampled-data control systems using discrete equivalents, transform techniques and state space methods with an introduction to multivariable and optimal control. Control and estimator design with emphasis on Mechanical Engineering systems. Projects will be used to implement control on real systems to validate the control design and to understand the effects of sample rate, parameter variation, and signal noise. Prerequisite: consent of instructor.

MEC E 537 Aerodynamics

★3 (fi 6) (either term, 3-0-0). Boundary layer flow, vorticity, circulation and aerodynamic lift, wing theory, aeronautical applications. Prerequisite: MEC E 330 or equivalent.

MEC E 539 Applied Computational Fluid Dynamics

★3 (fi 6) (either term, 3-0-0). Grid generation, time-marching methods, control volume formulations, shock capture, artificial dissipation, upwind flux-limiting, space-marching multigrid acceleration. Hands-on experience with commercial CFD codes to illustrate practical implementations and performance of theory. Prerequisites: MEC E 390, and 330 or equivalent.

MEC E 541 Combustion Engines

★3 (*fi 6*) (either term, 3-0-0). History of basic cycles, combustion theory including ignition flame propagation and engine knock, cycle analysis with deviations from ideal cycles and performance characteristics, fuels, design and operation of carburation and injection processes, exhaust emissions measurements. Identification of design parameters and their effect on emissions. Prerequisite: MEC E 340.

MEC E 543 Nanotechnology in Mechanical Engineering

★3.8 (*fi 6*) (either term, 3-0-3/2). Scanning probe microscopy, characterization and detection techniques, nanofabrication techniques, self-assembly and self-organization, DNA-based assembly, nanotube devices, molecular electronics, single-electron and nanoscale inorganic devices, DNA computation, nanotechnology in integrated systems and optoelectronics, and nanobiotechnology. Prerequisite: MEC E 340 or consent of Instructor.

MEC E 553 Acoustics and Noise Control

★3 (*fi 6*) (either term, 3-0-0). Acoustic waves, sound transmission through walls and structures, acoustics of large and small rooms, mechanisms of sound absorption. Design of silencers. Prerequisites: MEC E 330 and 451.

MEC E 563 Finite Element Method for Mechanical Engineering

★4.5 (*fi 6*) (either term, 3-0-3). Application of finite element methods to mechanical engineering problems; topics include direct stiffness methods, assembly, constraints, solution techniques, post-processing, element types and the Galerkin procedure. Applications include beam truss and frame analysis, plane strain and stress problems, heat transfer and dynamic analysis. Prerequisites: MATH 300, MEC E 360, 390 (or equivalents).

MEC E 564 Design and Simulation of Micro-Electromechanical Systems (MEMS)

★3 (*fi 6*) (either term, 3-0-0). Overview of micro-systems, common micro-systems and their working principles, mechanical modeling and simulation of MEMS, scaling laws in miniaturization, material for MEMS and micro-systems, mechanical design of micro devices, mechanical packaging of micro devices, overview on micro-systems fabrication processes. Corequisite: MEC E 563 or equivalent.

MEC E 565 Environmental Factors in Mechanical Engineering

★3 (*fi 6*) (either term, 3-0-0). System dynamics and limits to technological growth. Source inventories and regulatory standards for biological effects of pollutants, atmospheric dispersion models, stack design, analysis of source control of particulate and combustion product emissions, probability theory for risk analysis, and toxic release hazard assessments. Prerequisite: CH E 243. Corequisite: MEC E 330.

MEC E 567 Engineering Evaluation Using Life Cycle Assessment

★3 (*fi 6*) (either term, 3-0-0). Introduction to the concept of Life Cycle Assessment (LCA). History and development of existing LCA methodologies. Stages of LCA analysis: goal definition, scoping, inventory assessment, impact analysis, improvement analysis, reporting. Sources of data, boundary selection and uncertainty. Relationship between LCA, Design for Environment, and the ISO 14000 Environmental Management Standards. Prerequisites: STAT 235 or equivalent, and consent of Instructor.

MEC E 568 Numerical Simulation in Mechanical Engineering Design

★4.5 (*fi 6*) (either term, 3-0-3). Computer modelling in mechanical engineering. Simulation of mechanisms. Stress analysis and heat transfer using commercial software. Emphasis is on numerical model design including testing and verification methods, and the critical interpretation of the computed results. Prerequisites: MEC E 265, 362, 370, 380, 390, or consent of Instructor.

MEC E 569 Mechanics and Design of Composite Materials

★3 (*fi 6*) (either term, 3-0-0). Introduction to composite materials. Mechanical characterization and strength theories of a lamina. Micro-mechanical analysis of a lamina. Macro-mechanical analysis of laminates. Failure analysis and design of laminates. Prerequisite: MEC E 380.

MEC E 583 Mechanics of Electroelastic Solids

★3 (*fi 6*) (either term, 3-0-0). Dielectrics, polarization, ferroelectrics. Electrostatics of dielectrics. Linear piezoelectrics, thickness vibrations, multi-layered piezoelectric plates. Fracture of electroelastic solids. Piezoelectric composites, effective medium models. Applications to transducers, actuators and reliability design of electromechanical devices. Prerequisites: MEC E 480 or consent of Instructor.

MEC E 585 Biomechanics of Connective Tissues

★3 (*fi 6*) (either term, 3-0-0). Biomechanics; mechanical characterization of biological tissues, including bone, cartilage, ligament, and tendon; measurement techniques; applications, including injury analysis and orthopaedics. Prerequisite: MEC E 300 and MEC E 380 or consent of instructor.

MEC E 601 Graduate Seminar

★0.5 (*fi 1*) (either term, 0-1s-0). Presentations by Master's graduate students, staff, and visiting scientists on current research topics.

MEC E 602 Graduate Seminar

★0.5 (*fi 1*) (either term, 0-1s-0). Presentations by PhD graduate students on current research projects.

MEC E 612 Engineering Optimization

★3 (*fi 6*) (either term, 3-0-0). The applications of optimization techniques in

solving engineering problems. Linear programming, non-linear programming, dynamic programming, integer programming, stochastic programming, genetic algorithms, heuristic methods, queuing theory, and new optimization methods. Credit may not be obtained in both ENG M 640 and MEC E 612. Prerequisite: MP E 497, MGTS 352 or equivalent.

MEC E 620 Combustion

★3 (*fi 6*) (either term, 3-0-0). Chemical reactions, chemical equilibrium and flame temperatures. Flame propagation and explosion theories. Detonations. Air pollution from combustion sources.

MEC E 630 Fluid Dynamics

★3 (*fi 6*) (either term, 3-0-0). Kinematics of fluid motion, fundamental fluid equations and concepts, laminar boundary layers, potential flow, stability and transition, introduction to turbulence.

MEC E 632 Turbulent Fluid Dynamics

★3 (*fi 6*) (either term, 3-0-0). Governing equations of turbulent flow. Statistical and phenomenological theories of turbulent transport of momentum, heat and mass in wall-bounded and free flows. Computational techniques, empirical data and applications. Prerequisite: MEC E 630 or equivalent or consent of Instructor.

MEC E 635 Mechanics of Respiratory Drug Delivery

★3 (*fi 6*) (either term, 3-0-0). Introduction to pharmaceutical aerosol delivery to the lung. Particle size distributions. Motion of a single aerosol particle in a fluid. Particle size changes due to evaporation or condensation. Fluid dynamics and particle deposition in the respiratory tract. Jet nebulizers. Dry powder inhalers. Metered dose propellant inhalers. Prerequisite: MEC E 330 or equivalent or consent of Instructor.

MEC E 637 Colloidal Hydrodynamics

★3 (*fi 6*) (either term, 3-0-0). Colloidal Systems; Colloidal Interactions; Hydrodynamics; Analysis of Complex Fluid flows; Thin Films; Flow in Porous Media; Microfluidics; Selected applications: Coagulation, flocculation and particle deposition; Sedimentation; Separation technologies such as deep bed filtration, membrane filtration, and chromatography; Microfluidic applications involving complex fluids; Colloid applications involving complex fluids; Colloid facilitated transport. Prerequisite/Co-requisite: MEC E 430, MEC E 630, or approval of instructor.

MEC E 638 Vortex Flows

★3 (*fi 6*) (either term, 3-0-0). Vortex dynamics approach to large-scale structures in turbulent flows. Vortex motion equations, conservation laws, and modelling using discrete vortices. Prerequisite: a senior undergraduate course in fluid mechanics or consent of Instructor.

MEC E 639 Computational Fluid Dynamics

★3 (*fi 6*) (either term, 3-0-0). Computational fluid dynamics methods for incompressible and compressible fluids. Application to aeronautical and internal flows, finite difference, finite volume, and spectral methods. Prerequisite: CH E 674 or equivalent or consent of Instructor.

MEC E 640 Analytical Thermodynamics

★3 (*fi 6*) (either term, 3-0-0). Postulatory approach to thermodynamics, equilibrium and maximum entropy principles, fundamental equations, Legendre transformation, Maxwell relations, calculation of property changes, thermodynamics of elastic systems, rubber elasticity, and surface thermodynamics. Prerequisite: MEC E 340 or consent of Instructor.

MEC E 642 Surface Thermodynamics and Nanotechnology in Mechanical Engineering

★3 (*fi 6*) (either term, 3-0-0). Introduction to surface thermodynamics, theory of capillarity, modern techniques for surface tensions and contact angles, surface energetics, surface preparation, molecular self-assembly, nanofabrication, analytical tools for surface characterization, application of nanotechnology. Prerequisite: MEC E 640 or consent of Instructor.

MEC E 650 Analytical Dynamics

★3 (*fi 6*) (either term, 3-0-0). Principle of virtual work; Lagrange's equations of motion for holonomic and non-holonomic systems; Hamilton's principle; application to gyroscopes, stabilizers, etc.

MEC E 653 Signal Processing of Time and Spectral Series

★3 (*fi 6*) (either term, 3-0-0). Practical application of processing techniques to the measurement, filtering and analysis of mechanical system signals; topics include: signal classification, A/D conversion, spectral analysis, digital filtering and real-time signal processing.

MEC E 655 Dynamics of Structures

★3 (*fi 6*) (either term, 3-0-0). Behavior of elastic structures subjected to dynamic loads. Vibrations of buildings and bridges excited by machinery, earthquakes, wind and traffic.

MEC E 656 Wave Propagation in Structures

★3 (*fi 6*) (either term, 3-0-0). Introduction to advanced structures, dynamic elasticity equations and concepts, wave propagation in flexural structures, active control of wave propagation and vibration.

MEC E 663 Discrete Element Analysis of Mechanical Systems

★3 (*fi 6*) (either term, 3-0-0). Applications of matrix methods, finite element and

boundary element techniques to problems in applied mechanics. Emphasis on the use of micro-computers.

MEC E 664 Adv Design & Simulation of Micro and Nano Electromechanical Sensors (MEMS/NEMS)

★3 (fi 6) (either term, 3-0-0). Advanced topics dealing with MEMS technologies, transduction mechanisms, and microfabricated sensors and actuators. Sensors for acceleration, rotation rate, pressure, and different micro actuators. MEMS in microfluidics and biomedical applications. Chemical, gas, and biosensors. Prerequisite: MEC E 563 and consent of Instructor. Not open to students with credit in MEC E 564.

MEC E 665 Pressure Vessel Design

★3 (fi 6) (either term, 3-0-0). This course offers an integrated treatment of stress analysis, design theory, material behavior and construction of pressure vessels used in the energy, chemical and petroleum industries. Special topics covered include the basis of the ASME code, stresses in shells and heads, discontinuity stresses arising from openings and attachments, and design of welded joints. Prerequisite: MEC E 480 or consent of Instructor.

MEC E 670 Advanced Heat Transfer

★3 (fi 6) (second term, 3-0-0). Advanced topics in conduction and convection heat transfer; solution by analytical and numerical methods.

MEC E 680 Continuum Mechanics

★3 (fi 6) (either term, 3-0-0). Introduction to cartesian tensor algebra and calculus; analysis of finite deformation and kinematics of motion; transport theorems and balance laws; analysis of stress; continuum thermodynamics, constitutive equations and material symmetry with application to solids and fluids.

MEC E 681 Elasticity

★3 (fi 6) (either term, 3-0-0). Extension, torsion and flexure of beams; two-dimensional problems; complex variable methods; integral transform methods; variational methods.

MEC E 684 Static and Dynamic Stability

★3 (fi 6) (either term, 3-0-0). Classical stability analysis of bars and plates subjected to various loading conditions. Energy methods. Dynamic stability of non-conservative force systems and the effects of internal friction. Inelastic buckling, torsional buckling.

MEC E 685 Macro Fracture Mechanics

★3 (fi 6) (either term, 3-0-0). Basic concepts of linear and nonlinear fracture mechanics: linear and nonlinear stationary crack-tip stress, strain and displacement fields; energy balance and energy release rates; fracture resistance concepts-static and dynamic fracture toughness; criteria for crack growth; fracture control methodology and applications.

MEC E 686 Fatigue of Engineering Materials

★3 (fi 6) (either term, 3-0-0). A study of mechanisms and mechanics of fatigue process: damage caused by constant and variable cyclic amplitudes and random loading; effects of load interaction; initiation and propagation of fatigue cracks; life prediction; effects of multiaxial stress states, temperature and environment.

MEC E 687 Introduction to Impact Dynamics of Materials

★3 (fi 6) (either term, 3-0-0). Elastic waves, plastic waves, shock waves and stress wave propagation in solids. Low velocity impact on fibre composite materials and failure criteria. High velocity impact mechanisms and fracture criteria. Impact penetration mechanics. Dynamic deformation and fracture of materials. Prerequisite: MEC E 480 or consent of Instructor.

MEC E 690 Analytical Techniques in Engineering

★3 (fi 6) (either term, 3-0-0). Application of mathematical techniques to the solution of ordinary and partial differential equations arising in engineering problems. In particular, separation of variables, method of characteristics, transform methods, solution by complex variables, and variational methods will be considered. Prerequisite: MATH 300 or equivalent.

MEC E 728 Advanced Topics in Applied Thermodynamics I

★3 (fi 6) (either term, 3-0-0). 0

MEC E 729 Advanced Topics in Applied Thermodynamics II

★3 (fi 6) (either term, 3-0-0). Combustion, refrigeration.

MEC E 738 Advanced Topics in Fluid Dynamics I

★3 (fi 6) (either term, 3-0-0).

MEC E 739 Advanced Topics in Fluid Dynamics II

★3 (fi 6) (either term, 3-0-0). Aerodynamics, rarefied gas dynamics, turbulence, hydro and thermo stability.

MEC E 748 Advanced Topics in Thermodynamics I

★3 (fi 6) (either term, 3-0-0).

MEC E 749 Advanced Topics in Thermodynamics II

★3 (fi 6) (either term, 3-0-0). Energy conversion, general thermodynamics, irreversible thermodynamics.

MEC E 758 Advanced Topics in Dynamics I

★3 (fi 6) (either term, 3-0-0).

MEC E 759 Advanced Topics in Dynamics II

★3 (fi 6) (either term, 3-0-0). Wave propagation, orbital dynamics.

MEC E 778 Advanced Topics in Heat Transfer I

★3 (fi 6) (either term, 3-0-0).

MEC E 779 Advanced Topics in Heat Transfer II

★3 (fi 6) (either term, 3-0-0). Conduction, convection, radiation.

MEC E 788 Advanced Topics in Solid Mechanics I

★3 (fi 6) (either term, 3-0-0).

MEC E 789 Advanced Topics in Solid Mechanics II

★3 (fi 6) (either term, 3-0-0). Elasticity plasticity, viscoelasticity, shells.

MEC E 900 Directed Research Project

★6 (fi 12) (variable, unassigned). Detailed Engineering report in the student's major area of interest.

MEC E 910 Directed Research Project

★3 (fi 6) (variable, unassigned). Detailed Engineering Report in the student's major area of interest.

221.143 Medical Genetics, MDGEN

Department of Medical Genetics
Faculty of Medicine and Dentistry

Graduate Courses

MDGEN 601 Selected Topics in Medical Genetics

★3 (fi 6) (either term, 0-3s-0). A directed reading and seminar course based on papers taken from the recent literature of medical genetics. The course consists of lectures on a specific topic in medical genetics and oral presentations of the current literature by students. Selected topics vary so that students may take the same course but examining a different topic for additional credit. Prerequisite: consent of the Department of Medical Genetics.

MDGEN 602 Special Topics in Medical Genetics

★1 (fi 2) (either term, 0-1s-0). This course is designed as a journal club and discussion group in which topics in medical genetics are discussed. Students will critically discuss papers and give oral presentations to the class. Specific topics will include research in genomics, disease gene cloning, chromosome structure, and clinical aspects of medical genetics. Prerequisite: consent of the Department of Medical Genetics.

MDGEN 604 Statistical Methods in Medical Genetics

★3 (fi 6) (first term, 3-0-0 in 8 weeks). An advanced course on statistical and computational techniques of human genetics. Topics include theory of linkage analysis, linkage disequilibrium mapping, comparative genomics, phylogenetic inference, and population genetics. An overview of modern numerical techniques for carrying out genetic analyses, such as Markov chain Monte Carlo and coalescent theory, will be presented with examples. Students will develop computer programs implementing the concepts in a computer language of their choice. Pre- or corequisites: STAT 265 and CMPUT 101 or 114, or consent of Instructor. Offered in alternate years.

221.144 Medical Laboratory Science, MLSCI

Division of Medical Laboratory Science
Faculty of Medicine and Dentistry

Notes

- (1) See also INT D 409 and 491 for courses offered by more than one Department or Faculty and which may be taken as options or as a course in this discipline.
- (2) MLSCI 320, 330, 340, 350, 360, and 370 are to be taken as a unit over a 42-week period. They are open to students of Medical Laboratory Science only or by special permission of the Division.

Undergraduate Courses

MLSCI 230 Hematology

★3 (fi 6) (first term, 3-0-6). An introduction to the theory and practise of hematology, this course will include the morphology, structure, and function of red cells, white cells, and platelets, malignant and benign conditions that affect each cell type, and tests to distinguish among disease states including anemia and leukaemia. Restricted to Medical Laboratory Science students.

MLSCI 231 Hematology

★3 (fi 6) (first term, 3-0-0). This course is designed for students who are excused from the laboratory component of the normal MLSCI course. An introduction to the theory and practise of hematology, this course will include the morphology, structure, and function of red cells, white cells, and platelets, malignant and benign conditions that affect each cell type, and tests to distinguish among disease states including anemia and leukaemia. Prerequisite: RT (CSMLS) certification or consent of Department. Credit granted for only one of MLSCI 230 or 231.

MLSCI 235 Hemostasis

★1 (fi 2) (second term, 3-0-6 in 4 weeks). Four weeks. This course will present the theory and practice of hemostasis. Topics include the vascular, platelet, clotting factor, fibrinolytic, and inhibitor systems: coagulation disorders; tests that identify factor deficiencies, monitor anticoagulant therapy, and assess thrombolytic states; disorders of hemostasis. Prerequisite: MLSCI 230 or consent of Department. Restricted to Medical Laboratory Science students.

MLSCI 236 Hemostasis

★1 (fi 2) (second term, 3-0-0 in 4 weeks). Four weeks. This course is designed for students who are excused from the laboratory component of the normal MLSCI course. This course will present the theory and practice of hemostasis. Topics include the vascular, platelet, clotting factor, fibrinolytic and inhibitor systems: coagulation disorders; tests that identify factor deficiencies, monitor anticoagulant therapy, and assess thrombolytic states; disorders of hemostasis. Prerequisite: MLSCI 230 or consent of Department. Restricted to Medical Laboratory Science students.

MLSCI 240 Pathogenic Microbiology

★6 (fi 12) (two term, 3-0-4). Considers the role of bacteria, viruses, fungi, and parasites in human disease. Lectures emphasize mechanisms of microbial pathogenicity and immune response to infection. Laboratory emphasizes diagnostic procedures. Restricted to Medical Laboratory Science students. May not be taken for credit if credit already received in MMID 240 or MMI 240.

MLSCI 241 Pathogenic Microbiology

★6 (fi 12) (two term, 3-0-0). Considers the role of bacteria, viruses, fungi, and parasites in human disease. Lectures emphasize mechanisms of microbial pathogenicity and immune response to infection. Prerequisite: CSMLS general certification or consent of department. May not be taken for credit if credit already obtained in MMID 241 or MMI 241.

MLSCI 250 Human Histology and Histotechnology

★3 (fi 6) (either term, 3-0-4). This course is primarily designed to provide an understanding of human histology and of the techniques used in its study. It will also include, in part, basic pathology (including the nature of malignant disease) and the application of histological and histochemical techniques to demonstrate the diagnostic features of human disease processes. The goal of the course is for students to understand the structure and functions of the cell, and the components and functions of organ systems. The course will also teach students to recognize human tissues at the light and electron microscopical levels. Lectures will be used to illustrate basic principles, and the ability to recognize tissues and organ systems will be acquired in the laboratory. Students will be expected to acquire a detailed knowledge of the subject both from a theoretical and practical level. Restricted to Medical Laboratory Science students or consent of Department.

MLSCI 262 Clinical Biochemistry

★3 (fi 6) (first term, 3-0-3). This course considers how the analysis of samples from the body for various constituents can give insight into pathological processes. Included are the principles for tests routinely carried out in a clinical biochemistry laboratory, and the biological understanding of test results. Specific subjects considered are carbohydrates, renal function, blood proteins and electrolytes, and acid-base balance. Restricted to Medical Laboratory Science students.

MLSCI 263 Clinical Biochemistry

★3 (fi 6) (second term, 3-0-3). This course considers how the analysis of samples from the body for various constituents can give insight into pathological processes. Included are the principles for tests routinely carried out in a clinical biochemistry laboratory, and the biological understanding of test results. Specific subjects considered are clinical enzymology, heme catabolism, liver function toxicology and therapeutic drug monitoring principles of immunoassays, blood lipids porphyrins, endocrinology, gastric and GI function, fetal-placental function, and biochemical tumor markers. Restricted to Medical Laboratory Science students.

MLSCI 264 Clinical Biochemistry

★3 (fi 6) (first term, 3-0-0). This course considers how the analysis of samples from the body for various constituents can give insight into pathological processes. Included are the principles for tests routinely carried out in a clinical biochemistry laboratory, and the biological understanding of test results. Specific subjects considered are carbohydrates, renal function, blood proteins and electrolytes, and acid-base balance. Prerequisites for non-Medical Laboratory Science students only: CHEM 101, 161, 163 and BIOL 107. Credit granted for only one of MLSCI 262 or 264.

MLSCI 265 Clinical Biochemistry

★3 (fi 6) (second term, 3-0-0). This course considers how the analysis of samples from the body for various constituents can give insight into pathological processes. Included are the principles for tests routinely carried out in a clinical biochemistry laboratory, and the biological understanding of test results. Specific subjects considered are clinical enzymology, heme catabolism, liver function, toxicology and therapeutic drug monitoring, principles of immunoassays, blood lipids, porphyrins, endocrinology, gastric and GI function, fetal-placental function, and biochemical tumor markers. Prerequisites for non-Medical Laboratory Science students only: MLSCI 264. Credit granted for only one of MLSCI 263 or 265.

MLSCI 270 Transfusion Science

★2 (fi 4) (second term, 3-0-6 in 9 weeks). Nine weeks. This course will present the theory and practice of transfusion science. Topics covered include the genetics

of blood groups pretransfusion testing, blood donation and component therapy, adverse effects of transfusion, hemolytic disease of the newborn, and autoimmune hemolytic anemia. Prerequisite: MLSCI 230 or consent of Department. Restricted to Medical Laboratory Science students.

MLSCI 271 Transfusion Science

★2 (fi 4) (second term, 3-0-0 in 9 weeks). Nine weeks. This course is designed for students who are excused from the laboratory component of the normal MLSCI course. This course will present the theory and practice of transfusion science. Topics covered include the genetics of blood groups, or pretransfusion testing, blood donation and component therapy, adverse effects of transfusion, hemolytic disease of the newborn, and autoimmune hemolytic anemia. Prerequisite: MLSCI 230 or consent of Department. Restricted to Medical Laboratory Science students.

MLSCI 320 Analysis and Communication of Biomedical Information

★3 (fi 6) (two term, 1-0-2). Lectures, seminars, and assignments address the following components of writing a literature review: library searches, critical analysis, organizing, writing and editing. Speaking skills are developed through oral presentation of case studies. Prerequisite: consent of Division.

MLSCI 330 Clinical Hematology

★5 (fi 10) (two term, clinical rotation). As a part of a clinical laboratory education for Medical Laboratory Science students, this course will provide experience in a modern hospital hematology laboratory along with weekly tutorials followed by comprehensive theoretical and practical examinations.

MLSCI 340 Clinical Microbiology

★5 (fi 10) (two term, clinical rotation). As a part of a clinical laboratory education for Medical Laboratory Science students, this course will provide experience in a modern hospital microbiology laboratory along with weekly tutorials followed by comprehensive theoretical and practical examinations.

MLSCI 350 Histopathology

★3 (fi 6) (two term, clinical rotation). As a part of a clinical laboratory education for Medical Laboratory Science students, this course will provide experience in a modern hospital histopathology laboratory along with weekly tutorials followed by comprehensive theoretical and practical examinations.

MLSCI 360 Clinical Biochemistry

★5 (fi 10) (two term, clinical rotation). As a part of a clinical laboratory education for Medical Laboratory Science students, this course will provide experience in a modern hospital clinical biochemistry laboratory along with weekly tutorials followed by comprehensive theoretical and practical examinations.

MLSCI 370 Transfusion Science

★3 (fi 6) (two term, clinical rotation). As a part of a clinical laboratory education for Medical Laboratory Science students, this course will provide experience in a modern hospital transfusion service laboratory, along with weekly tutorials, followed by comprehensive theoretical and practical examinations.

MLSCI 410 Introduction to Clinical Laboratory Management

★1 (fi 2) (second term, 1-0-0). An introduction to the principles of management as they apply to clinical laboratories. Subject matter will include healthcare funding and allocation of funds, the management process in small and large clinical laboratories, performance appraisals, ethics and setting priorities for laboratory services. Prerequisite: consent of Division.

MLSCI 430 Advanced Hematology

★3 (fi 6) (second term, 3-0-0). This course is designed to enhance the student's ability to assimilate new and specialized knowledge in an evolving hematology discipline. As such, the course content will change from year to year. Consent of Division is required for non-Medical Laboratory Science students.

MLSCI 460 Clinical Biochemistry

★3 (fi 6) (second term, 3-0-0). Advanced lectures on specialized topics including diagnostic enzymology, blood lipids, transplantation biochemistry, hormone receptors and protein purification. Other topics will be considered through studies of case reports. A term paper is a requirement for this course. Prerequisite: BIOCH 200 and 330 or equivalents and consent of Division.

MLSCI 466 Applied Toxicology

★3 (fi 6) (first term, 3-0-0). A consideration of the protocols and their rationale used in a large toxicology laboratory. Topics include analytical, environmental, regulatory, and inhalation toxicology; clinical and forensic toxicology; and doping related to sports. Prerequisites: BIOCH 200 and 330 or equivalents and consent of Division.

MLSCI 475 Clinical Immunology

★3 (fi 6) (first term, 3-0-0). The application of basic immunology concepts to disease and transplantation, and their monitoring by the clinical laboratory. Topics include the cellular and humoral immune responses, human immune development, immunology and cancer, immune deficiency, autoimmune disease, immunopathology, and transplant immunology. Prerequisite: IMIN 370 or equivalent and consent of Division.

MLSCI 480 Molecular Genetic Approaches to the Study and Diagnosis of Disease

★3 (fi 6) (first term, 3-0-0). Emphasis on the application of techniques of molecular

genetics to the practice of Medicine. General subject areas include: organization of the genome, techniques of molecular genetics and their application to medicine, molecular genetics and oncology, and ethical issues involving these techniques as applied to medicine. Prerequisites: Genetics and BIOCH 200 and 330 or equivalents and consent of Division.

MLSCI 481 Techniques in Molecular Biology

★3 (fi 6) (either term, 1-0-5). A laboratory course emphasizing introductory and advanced techniques in molecular biology. Isolation of RNA, Northern blotting, construction of cDNA, amplification of DNA by the polymerase chain reaction, analysis of DNA by restriction digestion, transfection of eukaryotic cells for protein expression and Western blot analysis. Corequisite: MLSCI 480 or consent of Department. This course is designed for senior undergraduate and graduate students.

221.145 Medical Microbiology and Immunology, MMI

Department of Medical Microbiology and Immunology
Faculty of Medicine and Dentistry

Note: See also the IMIN listings for the following courses offered by more than one department or faculty which may be taken as options or as a course in this discipline, specifically: IMIN 200, 324, 371, 372, and 452 (courses in immunology and infection); and INT D 409 and 491 (research project courses for medical laboratory science students).

Undergraduate Courses

MMI 133 Medical Microbiology for Nurses

★3 (fi 6) (first term, 3-0-0). Introductory course in Microbiology designed specifically for students in the BScN program. The course begins with basic information on microorganisms, the immune system, hospital hygiene, transmission of infection, infections, antimicrobials, disinfection and sterilization. The later part of the course concentrates on pathogenic organisms related to organ systems and how they cause disease.

MMI 351 Bacterial Pathogenesis

★3 (fi 6) (second term, 3-0-0). Medically important bacteria, how they cause disease and the body's immune response to bacteria. Lectures will systematically discuss the organisms and describe their distinctive as well as their common features of structure and pathogenicity. Prerequisites: MICRB 265 and either MICRB 295 or IMIN 200. May not be taken for credit if credit already obtained in MMID 240 or 241 or 350, or in MMI 240 or 241 or 350.

MMI 352 Practical Pathogenic Bacteriology

★3 (fi 6) (second term, 0-0-4). This laboratory course will emphasize development of skills and knowledge for the safe handling of infectious bacteria, how medically important organisms are identified and will examine some of the molecular mechanisms of bacterial virulence. Prerequisite or corequisite: MMI 351 or consent of the Department. May not be taken for credit if credit already obtained in MMID 240 or 241 or 350, or in MMI 240 or 241 or 350.

MMI 405 Mechanisms of Pathogenicity I

★3 (fi 6) (first term, 3-3s-0). Selected topics regarding the production of disease by bacterial pathogens, with special emphasis on the biochemical, immunological, and physiological properties of the host and microbe that account for the pathological process. Contemporary concepts will be introduced by means of lectures and student seminars. Prerequisites: BIOCH 203 and 205, and MMI 240 or 241 or 351.

MMI 415 Mechanisms of Pathogenicity II

★3 (fi 6) (second term, 3-0-0). Mechanisms of pathogenesis of globally significant infectious agents, such as protozoa, viruses and other microbes relevant to current endemics, oncogenesis, biological weapons, social and emerging diseases. Prerequisites: BIOCH 203 and 205, and MMI 240 or 241 or 350 or 351, and INT D 370 or 371.

MMI 422 Microbiology

★2 (fi 4) (first term, 37 hours). A course in medical microbiology and immunology designed for students in dental hygiene. The course deals with general characteristics of microorganisms, their distribution, relation to disease and their control. Bacterial, viral and mycotic infectious diseases, as related to general health, dental health and dental hygiene are covered. Resistance (immunity) to disease with practical infection control as applied to patient care and treatment of disease is also covered.

MMI 426 Medical Parasitology

★3 (fi 6) (first term, 3-0-3). A survey of the protozoan and metazoan parasites of man. Emphasis will be placed on biology epidemiology clinical presentation and methods for detection and identification as well as global impact of parasitic diseases in today's world. Prerequisite: MMI 240 or 241, consent of Department.

MMI 427 Fungi in the Human Environment

★3 (fi 6) (first term, 3-0-3). Human health implications of allergenic, toxigenic,

and pathogenic fungi will be considered. Topics include pathogenicity, epidemiology, ecology and distribution, occupational and environmental risks of exposure to fungi or their metabolites, immune responses, diversity of fungi involved in human disease, aspects of clinical disease, and therapy. Laboratories will emphasize techniques for detection, isolation, manipulation, and identification of medically important fungi. Prerequisites: Introductory course in medical microbiology (MMI 240 or MMI 350) or mycology (BOT 306) or microbiology (MICRB 265 or 391) or consent of Department.

MMI 498 Research Project in Infection and Immunity

★3 (fi 6) (either term, 0-0-6). Directed research on a specific topic in medical microbiology or immunology in the laboratory of a faculty member in the department. Can be taken for credit more than once. An oral presentation on the research project is required for completion of the course. Pre- or corequisites: INT D 370 or 371 or INT D 452 or MMI 351 and/or consent of Department.

MMI 499 Independent Research in Infection and Immunity

★6 (fi 12) (two term, 0-0-6). Directed research project in the laboratory of an academic staff member of the Department of Medical Microbiology and Immunology. An oral presentation and a written report on the research project is required for completion of the course. Pre- or corequisites: INT D 370 or 371 or INT D 452 or MMI 351 and/or consent of Department.

Graduate Courses

MMI 505 Mechanisms of Pathogenicity I

★3 (fi 6) (first term, 3-3s-0). Selected topics regarding the production of disease by bacterial pathogens, with special emphasis on the biochemical, immunological and physiological properties of the host and microbe that account for the pathological process. Contemporary concepts will be introduced by means of lectures and student seminars. Lectures and seminars are the same as MMI 405, but there will be an additional requirement of a written research proposal. This course may not be taken for credit if credit has already been obtained in MMI 405. Prerequisites: BIOCH 203 and 205, and MMI 240 or 241 or 351.

MMI 512 Special Projects

★3 (fi 6) (either term, 0-0-3).

MMI 515 Mechanisms of Pathogenicity II

★3 (fi 6) (second term, 3-0-0). Mechanisms of pathogenesis by globally significant infectious agents, such as protozoa, viruses and other microbes relevant to current endemics, oncogenesis, biological weapons, social and emerging diseases. Lectures are the same as MMI 415, but there will be an additional requirement of a written/oral presentation on selected topics of emerging diseases. May not be taken for credit if credit has already been obtained in MMI 415. Prerequisites: BIOCH 203 and 205, MMI 240 or 241 or 350 or 351, and INT D 370 or 371.

MMI 520 Bacterial Plasmids

★3 (fi 6) (first term, 3-0-0). The biology of plasmids and plasmids as tools for molecular biology. The structure and properties of various bacterial plasmids (antibiotic resistance plasmids, colicin and enterotoxin-producing plasmids) will be considered in light of our current understanding of the evolution of plasmids. The involvement of insertion sequences and transposons in plasmids organization will be discussed. The course will focus on the modes of plasmids DNA replication and the means by which bacterial plasmids are maintained in host cells. Important plasmid-coded functions such as incompatibility and conjugative transfer will be discussed in detail. The effect of plasmids in human and veterinary medicine and on plant pathogenesis (the crown gall disease) will also be considered. The use of plasmids in genetic engineering including the choice of vectors, cloning methods and risks and benefits will complete the course. Note: Designed for advanced honors and graduate students and offered in alternate years. Prerequisites: BIOCH 203 and 205, GENET 270, or consent of Department.

MMI 526 Medical Parasitology

★3 (fi 6) (first term, 3-0-3). A survey of the protozoan and metazoan parasites of man. Emphasis will be placed on biology, epidemiology, clinical presentation and methods for detection and identification, as well as the global impact of parasitic diseases in today's world. Lectures and laboratories are the same as MMI 426, but there will be an additional requirement for a written literature review/discussion paper on recent developments or controversies in the field of parasitology. This course may not be taken for credit if credit has already been obtained in MMI 426. Prerequisite: MMI 240 or 241, consent of Department.

MMI 552 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. Interaction between immune systems and pathogens, and immunogenetics. Lectures are the same as IMIN 452, but there will be an additional requirement of a written paper to evaluate a current controversy in immunology. May not be taken for credit if credit has already been obtained for IMMUN 452, MICRB 451 or INT D 452. Prerequisites: BIOCH 203 and 205 and IMIN 371.

MMI 601 Seminar in Medical Microbiology and Immunology

★3 (fi 6) (either term, 0-3s-0). The student will prepare a seminar on an assigned

topic in medical microbiology or immunology. Evaluation will focus on presentation, content, discussion of other student seminars, and proficiency in chairing other presentations. Required of all second- and third-year graduate students in medical microbiology and immunology. Open to graduate students in Medical Microbiology and Immunology only.

MMI 605 Current Topics in Infection and Immunity

★3 (*fi 6*) (either term, 0-4s-0). Selected topics in infections and immunity are explored in depth through evaluation of the primary research literature. Emphasis is on the molecular and cellular mechanisms underlying pathogenesis, host resistance, and immune regulation. Information is provided through selected readings and student seminar presentations. The primary objective is to introduce students to current research topics in infection and immunity, and develop their ability to critically evaluate, organize, and present scientific information.

221.146 Medicine, MED

Department of Medicine
Faculty of Medicine and Dentistry

Note: Joint Medicine/Dentistry Courses are listed in \$201.52 (DMED).

Undergraduate Courses

221.147.1 Department of Medicine Courses

MED 555 Geriatrics Student Internship

★2 (*fi 4*) (either term, 2 weeks). Student internship in Geriatrics for students registered in the MD Program. Credit will not be granted for both MED 545 and 555.

221.147.2 Faculty of Medicine and Dentistry Courses

MED 400 Two-Week Medical Elective

★0 (*fi 1*) (either term, 2 weeks). This represents a contract period of registration with variable start and end dates for undergraduate medical students who are undertaking clinical electives. The type of clinical elective is open to any area of specialization. Prerequisite: enrolment in an MD program and approval by the Electives Coordinator of the Faculty of Medicine.

MED 401 Four-Week Medical Elective

★0 (*fi 1*) (either term, 4 weeks). This represents a contract period of registration with variable start and end dates for undergraduate medical students who are undertaking clinical electives. The type of clinical elective is open to any area of specialization. Prerequisites: enrolment in an MD program and approval by the Electives Coordinator of the Faculty of Medicine.

MED 402 Eight-Week Medical Elective

★0 (*fi 2*) (either term, 8 weeks). This represents a contract period of registration with variable start and end dates for undergraduate medical students who are undertaking clinical electives. The type of clinical elective is open to any area of specialization. Prerequisites: enrolment in an MD program and approval by the Electives Coordinator of the Faculty of Medicine.

MED 403 Twelve-Week Medical Elective

★0 (*fi 3*) (either term, 12 weeks). This represents a contract period of registration with variable start and end dates for undergraduate medical students who are undertaking clinical electives. The type of clinical elective is open to any area of specialization. Prerequisites: enrolment in an MD program and approval by the Electives Coordinator of the Faculty of Medicine.

MED 516 Patient-Centred Care, Part 1

★6 (*fi 12*) (two term, 2-6s-0). A discussion of medical skills which may be generalized across different disease states and different specialties. Topics include epidemiology, evidence-based Medicine, and public health, clinical skills, family issues, ethics, the role of the health-care team, and related areas. Instruction in the role of the health-care team will be carried out in conjunction with INT D 410. Open only to students registered in the MD program.

MED 517 First-Year Elective

★1 (*fi 2*) (either term, 12 hours). Electives time to be developed by the students in consultation with a Faculty supervisor. Open only to students registered in the MD program.

MED 518 Optional Summer Elective

★1 (*fi 2*) (variable, variable). An optional elective of variable length, to be developed by the student in consultation with a Faculty supervisor. Open only to students registered in the MD program.

MED 520 Pre-Clinical Exam

★5 (*fi 10*) (second term, 9 hours). Final pre-clinical exam for students registered in the MD program.

MED 521 Gastroenterology and Nutrition

★5 (*fi 10*) (either term, 6 weeks). An integrated course covering nutrition, gastrointestinal physiology, pathophysiology and anatomy. Related surgical, paediatric and geriatric topics will also be addressed. Open only to students registered in the MD program.

MED 522 Reproductive Medicine and Urology

★6 (*fi 12*) (either term, 7 weeks). An overview of reproductive medicine in both genders, including discussion of conception, pregnancy and fetal development, birth, reproductive technology and relevant health-related issues in men and women. Also covered will be the physiology, pathophysiology and anatomy of the urinary tract, and management of problems in the genitourinary system. Open only to students registered in the MD program.

MED 523 Musculoskeletal System

★6 (*fi 12*) (two term, 7 weeks). Anatomy, physiology, pathophysiology and management in the musculoskeletal system. Open only to students registered in the MD program.

MED 524 Neurosciences

★9 (*fi 18*) (either term, 11 weeks). Fundamental Clinical Neurosciences taught in an integrated fashion. Involves instruction in subject areas related to the head and neck, including Neuroanatomy, Neurophysiology, Neuropathology, Neuropharmacology, Neuroradiology, Neurology, Neurosurgery, Psychiatry, Rehabilitation Medicine, otorhinolaryngology and Ophthalmology. Open only to students registered in the MD program.

MED 525 Oncology

★3 (*fi 6*) (either term, 4 weeks). Principles and concepts of clinical oncology. Open only to students registered in the MD program.

MED 526 Patient-Centred Care, Part II

★6 (*fi 12*) (two term, 2-6s-0). A continuation of MED 516, which involves further discussion of medical skills which may be generalized across different disease states and different specialties. Open only to students registered in the MD program.

MED 527 Second Year Elective

★1 (*fi 2*) (either term, 12 hours). Elective time to be developed by the student in consultation with a Faculty supervisor. Open only to students registered in the MD program.

MED 528 Optional Summer Elective

★1 (*fi 2*) (variable, variable). An optional elective of variable length, to be developed by the student in consultation with a Faculty supervisor. Open only to students registered in the MD program.

MED 531 Clinical Problems Series

★1 (*fi 2*) (two term, 36 hours). A series for students registered in the MD program.

MED 532 Link Block

★3 (*fi 6*) (first term, 3 weeks). This block serves as a link between the pre-clinical and clinical years. It will include procedural skills, emergency medicine, otolaryngology, radiology, a review of history taking and physical exam skills and of the responsibilities of the health care team. Open only to students registered in the MD Program.

MED 540 Exams

★5 (*fi 10*) (second term, 18 hours). Final exams for students registered in the MD program.

MED 541 Clinical Problems Series

★1 (*fi 2*) (two term, 36 hours). A series for students registered in the MD Program.

MED 542 Review of Student Internship

★1 (*fi 2*) (second term, 3 weeks). Lecture and seminar series for students registered in the final year of the MD Program.

MED 546 Medicine Student Internship

★11 (*fi 22*) (either term, 11 weeks). Student internship in Medicine for students registered in the MD Program.

MED 547 Clinical Electives

★5 (*fi 10*) (either term, 5 weeks). Student internship in electives for students registered in the MD program.

MED 556 Medicine Student Internship

★6 (*fi 12*) (either term, 6 weeks). Student internship in medicine for students registered in the MD Program.

MED 557 Clinical Electives

★8 (*fi 16*) (either term, 8 weeks). Electives for students registered in the MD Program.

MED 558 Emergency Medicine Students Internship

★4 (*fi 8*) (either term, 4 weeks). Student internship in emergency medicine for students registered in the MD Program.

Graduate Courses

221.146.3 Department of Medicine Courses

MED 501 Clinical Pulmonary Physiology

★3 (*fi 6*) (second term, 2-0-0). Basic and clinical lectures on: Lung Structure;

Pulmonary Blood Flow; Airflow; Gaseous Diffusion; Ventilation/Perfusion Matching; Control of Ventilation; Oxygen Transport; Lung Defense; Mucociliary Transport; ARDS; Asthma; Exercise; Lung Growth; Surfactant; Lung Metabolism; Pulmonary Function Testing. Prerequisites: General courses in Physiology, Physics and Biochemistry or consent of Department.

MED 571 Directed Reading in the Basic Medical Sciences

★3 (fi 6) (either term, 3-0-0). Reading and study of basic medical science topics relevant to the student's chosen field of study under the direction of one or more faculty members. Prerequisite: consent of Department.

MED 573 Directed Reading in Clinical Medicine

★3 (fi 6) (either term, 3-0-0). Reading and study in a field relevant to the student's chosen field of study under the direction of one or more Faculty members. Prerequisite: consent of Department.

MED 575 Nutrition and Metabolism

★3 (fi 6) (two term, 1-1s-0). A seminar and discussion course in advanced nutrition and metabolism that examines current topics in nutrition and features regular seminars on alternate weeks throughout Fall and Winter Terms. A discussion group meets after each seminar. Preference will be given to graduate and postgraduate students in the area of nutrition and metabolism. Maximum enrolment of 15. Prerequisite: consent of Department.

MED 600 Advanced Clinical Trials

★3 (fi 6) (either term, 3-0-0). A formal lecture course to provide a background knowledge in clinical trials. Each session will consist of a formal lecture, followed by discussion on class assignments. Lectures will consist of Experimental Designs; Patient Recruitment, Randomization, Blinding, Compliance and Generalization; Sample Size Calculations, Statistical Methods; Outcomes Measures; Equivalence Trials; Economic Evaluation and Clinical Trials; Multicentre Clinical Trials; Data: Efficacy and Safety and Working with Industry and Funding Agencies. Prerequisite: consent of Department.

MED 650 Fundamentals for Clinical Investigators

★3 (fi 6) (two term, 3/2-0-0). A biweekly lecture course covering the important aspects of becoming a clinical investigator. Each session will include a lecture followed by a full class discussion and take home assignments related to the lecture. The topics include: clinical trial design, bioethics, biostatistics, literature appraisal, grant writing, manuscript writing, slide presentation for oral presentations, teaching enhancement, time management, ethics of industry liaisons, linking basic bench research to the bedside, technology transfer, career opportunities. Prerequisite: consent of Department.

MED 671 Current Topics in Biomedical Research

★2 (fi 4) (two term, 0-1s-0). A general seminar course covering recent advances across the field of biomedical research. Research topics will feature the areas of research being investigated by the graduate students and staff of the department. All graduate students are required to participate and to give a research presentation. Other topics will provide for the acquisition of basic skills and knowledge in biomedical research and will include experimental design, critical review of the literature, communication skills, ethics of experimentation, and career development. Note: Restricted to graduate students in the Department of Medicine.

221.147 Microbiologie, MICRE

Faculté Saint-Jean

Cours de 1er cycle

MICRE 133 Microbiologie Médicale pour Infirmières

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Cours d'introduction pour les étudiants du BSclnf (bilingue). La première partie du cours se concentre sur les microorganismes, le système immunitaire, l'hygiène en milieu hospitalier, la transmission d'infection, les infections, les antibactériens, la désinfection et la stérilisation. La deuxième partie du cours se concentre sur les organismes pathogènes reliés aux systèmes d'organes et comment ils causent la maladie. Notes: La priorité sera accordée aux étudiants du BSclnf (bilingue). Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MMI 133.

221.148 Microbiology (Biological Sciences), MICRB

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); Genetics (GENET); Zoology (ZOOL)
- 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

MICRB 265 General Microbiology

★3 (fi 6) (either term, 3-0-4). This course will focus on the structure and physiology of free-living and pathogenic bacteria. The diversity of their metabolic activities, the interaction of microbes with their environment, symbiotic relationships and cell-to-cell communication are major topics. Lectures and laboratory exercises are coordinated to explore topics in basic microbiology, environmental microbiology, molecular microbiology, and the production of economically or medically important products through microbial biotechnology. Prerequisites: BIOL 107 and CHEM 161 or 261.

MICRB 311 Microbial Physiology

★3 (fi 6) (first term, 3-0-0). The structure, growth, and metabolic path-ways used by bacteria, yeasts, and molds. Emphasis is placed on the comparative biochemical aspects of microbial life. Prerequisites: MICRB 265 and BIOCH 200 or 205.

MICRB 316 Molecular Microbiology

★3 (fi 6) (second term, 3-0-0). Factors that affect gene expression at the levels of replication, transcription, post-transcriptional and post-translational control. Topics will include mobile genetic elements and their effect on chromosome structure and gene expression; alternate sigma factors; protein modification and degradation; RNA structure, processing and decay; and DNA modification and rearrangements in gene control. Prerequisites: GENET 270, MICRB 265 and BIOCH 203/205. Note: MICRB 316 and 516 cannot both be taken for credit.

MICRB 343 Topics In Microbial Laboratory Techniques

★3 (fi 6) (second term, 3-0-0). Description and critical discussion of current techniques used for the isolation and characterization of macromolecular constituents of prokaryotic cells. Emphasis will be placed on examples from the recent literature. Prerequisite: GENET 390. Corequisite: MICRB 345.

MICRB 345 Microbial Laboratory Techniques

★3 (fi 6) (second term, 0-0-8). A series of laboratory projects employing current techniques used in the isolation and characterization of macromolecular constituents of prokaryotic cells. Prerequisite BIOL 391. Corequisite MICRB 343. Credit may not be obtained for both MICRB 344 and 345.

MICRB 406 Topics in Cell Biotechnology

★3 (fi 6) (two term, 0-2s-0). This course is designed to develop familiarity with current research literature in Cell Biotechnology. Note: Restricted to Honors Cell Biotechnology students. Prerequisites: A 300-level Microbiology course and consent of the Cell Biotechnology Committee.

MICRB 410 Structure of Microorganisms

★3 (fi 6) (second term, 3-0-0). Cellular structure of prokaryotes with particular emphasis on cell wall active antibiotics and experimental methodologies. Prerequisite: MICRB 311. Note: MICRB 410 and 510 cannot both be taken for credit.

MICRB 415 Industrial Microbiology

★3 (fi 6) (first term, 3-0-0). Microbial production of commercially important metabolites and products. Emphasis will be placed on control and regulation of metabolic pathways involved in the production of these microbial products and the use of genetic manipulation to improve production levels. Prerequisites: GENET 270 and MICRB 311.

MICRB 450 Fermentation Biotechnology

★3 (fi 6) (first term, 0-0-6). Involves a series of laboratory exercises designed to give students hands-on experience with the cultivation of various microbes at large scale. Students are responsible for all stages of the cultivation process, from medium preparation through inoculum development to harvesting and downstream processing, and so work at times outside of the scheduled laboratory period is required. Co-requisite: MICRB 415 or consent of Department.

MICRB 491 Environmental Microbiology

★3 (fi 6) (first term, 3-0-0). Interactions between microorganisms and the environment. Topics include methods of sampling various environments, methods for monitoring microbial activities, petroleum microbiology, bioremediation, survival of airborne microorganisms, microbial metabolism of selected pollutants. Prerequisite: MICRB 265, corequisite: a 300-level Biological Sciences course or consent of Instructor. Note: Credit can be received in only one of MICRB 391, 491 and 591.

MICRB 492 Laboratory Methods for Environmental Microbiology

★3 (fi 6) (second term, 0-0-6). Laboratory experiments evaluate methods for enumerating bacteria from aquatic environments and introduce methods for monitoring their metabolic activities. Factors that influence petroleum biodegradation and comparisons of methods for sampling airborne microorganisms are also studied. Strong emphasis on statistical analysis of numerical data obtained. Pre- or corequisite: MICRB 491. MICRB 392 and 492 cannot both be taken for credit.

Note: For other Immunology courses not listed above, see MMI listing.

Graduate Courses

Notes

- 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 graduate programs in the Department of Biological Sciences with approval of the student's supervisor or supervisory committee: BIOC 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.

MICRB 510 Advanced Topics in Microbial Structure

★3 (fi 6) (second term, 3-0-0). Lecture course on cellular structure of prokaryotes with particular emphasis on experimental methodologies. Oral presentations are required. Prerequisite: consent of the Department. Note: MICRB 410 and 510 cannot both be taken for credit.

MICRB 514 Advanced Topics in Microbiology

★3 (fi 6) (second term, 3-0-0). Critical reading and discussion of scientific literature. Students will present scientific articles for group discussion and will also prepare a major literature review in their field of study. Topics covered will vary from year to year. Prerequisite: consent of Department.

MICRB 516 Advanced Molecular Microbiology

★3 (fi 6) (second term, 3-0-0). Lecture course on molecular mechanisms relating to gene expression of prokaryotes based on the current literature. In addition, students will prepare an analytical literature review on a chosen topic relating to this field. Prerequisite: consent of the Department. Note: MICRB 316 and 516 cannot both be taken for credit.

MICRB 591 Environmental Microbiology

★3 (fi 6) (first term, 3-0-0). Interactions between microorganisms and their environment. Topics include methods of sampling various environments, methods for monitoring microbial activities, petroleum microbiology, bioremediation, survival of airborne microorganisms, microbial metabolism of selected pollutants. Lectures and exams are the same as MICRB 491, but preparation of a major term paper and an oral presentation are required. Prerequisite: consent of Instructor. Note: Credit can be received in only one of MICRB 391, 491 and 591.

MICRB 606 Microbiology Seminar

★6 (fi 12) (two term, 0-3s-0). Intended for all Microbiology and Biotechnology graduate students, except those in their second year who should register for MICRB 607. Credit may be obtained more than once. MSc students need not register after the third year of their program. PhD students need not register after the fifth year of their program.

MICRB 607 Microbiology Seminar

★6 (fi 12) (two term, 0-3s-0). Intended for second-year graduate students.

221.149 Middle Eastern and African Studies, MEAS

Office of Interdisciplinary Studies
Faculty of Arts

Undergraduate Courses

MEAS 200 Introduction to Middle Eastern and African Studies

★3 (fi 6) (either term, 0-3s-0). Explores conceptual framework and interdisciplinary tools for understanding Middle East and Africa as geographical and intellectual space.

MEAS 400 Topics in the Study of the Middle East and Africa

★3 (fi 6) (either term, 0-3s-0). Explores themes and issues central to what unifies and divides the Middle East and Africa. Exploits interdisciplinarity as a tool to deepen methodological and theoretical understanding.

221.150 Mining Engineering, MIN E

School of Mining and Petroleum Engineering
Department of Civil and Environmental Engineering
Faculty of Engineering

Note: See also Materials Engineering (MATE); Mining and Petroleum Engineering (MPE); and Petroleum Engineering (PET E) listings.

Undergraduate Courses

MIN E 295 Introduction to Mining Engineering

★3.8 (fi 6) (either term, 3-0-3/2). Essential mining concepts and terminology; mining in Alberta; company operations; stages of mining; unit mining operations; surface mine development and methods; underground mine development and methods; mining methods selection and comparison; feasibility studies and mine costs. Laboratories will cover case studies, basic mine design problems, mine visits and mining films/videos. Students will also undertake small group projects on the operations of selected Canadian mining companies. Prerequisite: consent of Instructor.

MIN E 310 Ore Reserve Estimation

★4.5 (fi 6) (second term, 3-0-3). Conventional and geostatistical methods for construction of orebody models. Contouring techniques for mapping bounding surfaces of stratigraphic layers. Coordinate transforms and geometric techniques for modelling rock types. Estimation and simulation methods for characterizing ore grade variability. Students will learn the principles and procedures for constructing orebody models in a variety of geologic settings. Specialized topics such as ore reserve classification, uncertainty assessment, mine selectivity, and grade control will also be covered. A variety of public-domain and commercial software will be used for a series of laboratories. Pre- or corequisites: MATH 209 and STAT 235 and EAS 210.

MIN E 323 Rock Mechanics

★4.5 (fi 6) (first term, 3-0-3). Mechanical properties of rock masses, field and laboratory determination; classification and index testing; permeability and flow; stresses around underground openings, elastic prototypes and numerical methods; ground support principles and mechanics of common support systems, loads on supports; hydraulic backfill, earth pressures, consolidation theory and practical consequences in mining; mechanics of subsidence and caving; rockburst mechanics; slope stability, rock mechanics instrumentation. Prerequisite: CIV E 270 or consent of Instructor.

MIN E 324 Drilling, Blasting, and Explosives

★3 (fi 6) (either term, 3-0-0). Drilling methods, breakage mechanics, performance, and equipment. Explosive characteristics, initiation systems, selection, handling, and loading. Blasting, rock dynamics, design of surface and underground blasts, fragmentation prediction, vibrations and damage control, monitoring. Prerequisite: MIN E 295 or consent of Instructor.

MIN E 325 Mine Planning and Design

★4.5 (fi 6) (first term, 3-0-3). Planning of surface mines; pit designs, pit limits and optimization; haul road design; waste dump design; and mine plan requirements. Planning of underground mines; mine access and development methods; mine layout and mine plan requirements. Laboratories will include introduction to commercially available Mine Planning software. Prerequisites: MIN E 295, CIV E 265, MIN E 310 or consent of Instructor.

MIN E 330 Mine Transport and Plant Engineering

★3.8 (fi 6) (either term, 3-3s/2-0). Covers underground and surface mine transport systems, rail haulage, hoisting, conveying and slurry pipelining. Auxiliary mining services such as electric power distribution, pumping and compressed air power. Seminars will include design problems dealing with the materials taught in the classroom. Oral presentation is required. Prerequisites: MIN E 295 and E E 239 or consent of Instructor.

MIN E 402 Mine Design Project I

★4 (fi 6) (first term, 1-0-6). First phase of a full Prefeasibility Study of a commercial mining property. Data collection, preparation of geological model using commercially available software. Calculate reserves and prepare plans and sections. Prepare geotechnical, hydrogeological, hydrological sections and review and identify conceptual mining methods for development in Mine Design Project II, (see MIN E 403). Prepare report. Present report at seminar. Weekly session (one hour) with project supervisor. Prerequisites or corequisites: MIN E 310, MIN E 325, MIN E 413 and MIN E 414 or consent of instructor.

MIN E 403 Mine Design Project II

★4 (fi 6) (second term, 1-0-6). Second phase of a full Prefeasibility Study of a commercial mining property. This phase follows on from Phase I (MIN E 402) requiring the development of marketing plans, detailed mine plans and equipment selection, environmental aspects, capital and operating cost estimates and financial and economic analyses. Prepare report. Submit report and present at seminar. Weekly session (one hour) with project supervisor. Prerequisite: MIN E 402.

MIN E 407 Principles of Mine Ventilation

★3.8 (fi 6) (second term, 3-0-3/2). Principles and practices for control of the underground environment including application of software and governing legislation. Prerequisite: CH E 312, MIN E 414, or equivalent.

MIN E 408 Mining Enterprise Economics

★3 (fi 6) (either term, 2-0-2). Fundamentals of economic evaluation. Cost estimation, commodity price modelling and revenue forecasts and taxation related to mine development. Economic evaluation of mining ventures, profitability, risks and uncertainty analyses. Commodity markets and mine management strategies. Weekly laboratory/tutorial sessions will address case studies and specific problems. Prerequisites: ENGG 310 or 401, STAT 235 or consent of Instructor.

MIN E 413 Surface Mining Methods

★3.8 (fi 6) (first term, 3-0-3/2). Surface mining methods, equipment types specification and operation; production and productivity; control of operations; mine drainage; land conservation and reclamation. Prerequisites: MIN E 310, MIN E 330, MIN E 323, and MIN E 325 or consent of Instructor.

MIN E 414 Underground Mining Methods

★3.8 (fi 6) (first term, 3-0-3/2). Underground mining methods; Equipment types; specification and operation, mine organization, labor productivity, cost estimating and cost control. Methods studied include room-and-pillar, sublevel stoping and caving, vertical crater retreat, block caving, selective methods for vein mines, and

underground coal mining systems. Prerequisites: MIN E 323, MIN E 324 and MIN E 325 or consent of Instructor.

MIN E 420 Mine Equipment Selection and Maintenance

★3 (fi 6) (second term, 3-0-0). Equipment selection principles; equipment sizing and matching; mining/mechanical/electrical aspects; capital and operating costs; decision/risk analysis; purchasing principles; maintenance principles and practices; maintenance characteristics of major equipment, maintenance support facilities. Prerequisite: MIN E 413 or 414 or consent of Instructor.

MIN E 428 Mining Field Trip

★2 (fi 4) (Spring/Summer, 0-4s-0). An extended trip to visit surface and underground mines is made every year by students entering third or fourth year Mining Engineering, accompanied by staff. A report on the trip is to be submitted. All Mining students may be required to make other field trips during the sessions. Prerequisite: MIN E 295.

MIN E 555 Special Topics in Mining Engineering

★3 (fi 6) (either term, 3-0-0). Research studies and/or projects dealing with selected metal, nonmetal and coal mining subjects. Suitable subjects are chosen in consultation with a mining engineering faculty member. Typical study categories are reserve evaluation, surface and underground mining methods and operations, mine planning, computer simulation of mining operations, mineral processing, ventilation, regulations, mine safety, feasibility studies, economics and management. Prerequisite: consent of Instructor

Graduate Courses

MIN E 602 Design Project I

★3 (fi 6) (either term, 3-0-0). Design of a mining operation.

MIN E 612 Geostatistical Methods for Modelling Earth Sciences Data

★3.5 (fi 6) (either term, 3-1s-0). Geostatistical methods are presented for characterizing the spatial distribution of regionalized variables, such as ore grades, porosity, permeability, and contaminant concentrations. This class focuses on the geostatistical methodologies for quantifying spatial variability with variograms/covariance functions, estimation with kriging techniques, and stochastic simulation with Gaussian, indicator, and annealing-based methods. Important subjects such as uncertainty quantification, volume-variance relations, and modelling multiple variables will also be addressed. Case studies will be presented from mining, petroleum, and environmental engineering. Students will undertake a variety of theoretical and practical assignments using the GSLIB software (where appropriate). Prerequisite: consent of Instructor.

MIN E 613 Application of Geostatistical Methods to Spatial Mapping and Decision Making

★3.5 (fi 6) (either term, 3-1s-0). Geostatistical methods are used for orebody modelling, petroleum reservoir modelling, or environmental site characterization. This class focuses on the computational and hands-on aspects of using geostatistical methodologies for practical problem solving. Lectures present practical approaches to problems of (1) variogram inference in presence of sparse data, (2) optimal estimation, (3) stochastic simulation for local and global uncertainty, (4) volume-variance relationships, and (5) loss functions for optimal decision making in the presence of uncertainty. Students undertake a class project individually or in small groups. Prerequisite: consent of Instructor.

MIN E 620 Rock Mechanics

★4 (fi 6) (either term, 3-1s-1). An advanced treatment of selected topics in rock mechanics.

MIN E 622 Surface Mining Systems and Equipment

★3.5 (fi 6) (either term, 3-1s-0). An advanced treatment of selected topics in surface mine methods, selection of mining equipment, equipment maintenance techniques, and equipment performance and productivity. Case studies. Prerequisite: MIN E 413 or consent of Instructor.

MIN E 623 Rock Slope Stability in Surface Mining

★3.5 (fi 6) (either term, 3-1s-0). Economic, operational and geological factors affecting slope design. Design stages; collection of structural and strength data. Data synthesis, interpretation, design values. Methods of design, deterministic and probabilistic methods. Bench design. Controlled blasting; stabilization techniques. Monitoring. Spoil pile stability. Prerequisite: MIN E 323 or equivalent.

MIN E 630 Advanced Mine Transport

★3.5 (fi 6) (either term, 3-1s-0). Advanced studies in the methods and systems of material movement in mines. In-depth consideration of selection, specifications, and costs of transportation for surface and underground mines. Prerequisites: MIN E 330 and 413, or 414, or consent of Instructor.

MIN E 631 Surface Mine Design and Optimization

★3.5 (fi 6) (either term, 3-1s-0). Surface mining methods, mechanics of surface mine layouts design, haul roads design, waste dump design, theory of Lerchs-Grossman's, floating cone, conditional simulation, neural network and heuristic algorithms for surface mine optimization. Large scale applications of these algorithms for designing and optimizing surface mine layouts and subsequent advance mining systems design. Students undertake design projects under Instructor's direction. Prerequisites: MIN E 413 or consent of Instructor.

MIN E 632 Surface Mine Production Engineering

★3.5 (fi 6) (either term, 3-1s-0). Surface mine production methods, equipment selection, maintenance and mine production economics. Theory and application of operations research techniques in strategic and tactical mine production models and mine plans, production and development schedules, blending and stockpiling, cut-off grade dynamics, fleet production management and inventory control and management. Case studies from existing mining operations will be presented by guest lecturers. Students undertake design projects under Instructor's direction. Prerequisites: MIN E 413 or consent of Instructor.

MIN E 640 Simulation of Industrial Systems

★3.5 (fi 6) (either term, 3-1s-0). Formulation of models of engineering problems and industrial systems for experimentation using a general purpose simulation language. Statistical and operational validation of simulation results. Prerequisite: consent of Instructor.

MIN E 650 Special Topics in Mining Engineering

★3 (fi 6) (either term, 3-0-0). Special studies of developments of current interest within the mining industry in exploration, mining methods, mine planning, mine simulation, environment, regulations, economics and management; e.g. tar sands mining, ocean mining, in situ gasification.

MIN E 685 Advanced Energy and Mineral Economics

★3 (fi 6) (either term, 3-0-0). Application of advanced statistical and probability theory in mineral resource investment risk and uncertainty analysis in random multivariable states. Numerical modelling of mineral resource stochastic processes using derivative mine valuation concepts. Case studies include application of simulation and numerical modelling packages for mineral resources, coal and oil and gas properties analysis. Prerequisite: consent of Instructor.

MIN E 710 Mining

★3 (fi 6) (either term, 3-0-0). Readings and discussion of selected topics in mining engineering.

MIN E 900 Directed Research

★3 (fi 6) (either term, unassigned). An engineering project for students registered in a Masters of Engineering program.

221.151 Mining and Petroleum Engineering, MP E

Department of Civil and Environmental Engineering
Faculty of Engineering

Note: See also Mining Engineering (MIN E), Materials Engineering (MAT E), and Petroleum Engineering (PET E) listings.

The following courses were renumbered effective 1997/98:

Old	New	Old	New
MMP E 392	MP E 292	MMP E 508	MP E 408
MMP E 422	MP E 322	MMP E 597	MP E 497
MET E 431	MP E 331	MMP E 599	MP E 499
MMP E 490	MP E 390		

Undergraduate Courses

MP E 322 Rock Structures and Intact Rock Properties

★3.5 (fi 6) (second term, 3-1s-0). Rock texture and fabric; compaction, fracture and deformation properties, effect of environment and time, strength theories. State of stress in the Earth's crust and its measurement. Formation, geometry and classification of depositional, diastrophic and non-diastrophic structures including bedding, jointing, faulting, folding, cleavage. Representation of structures on maps and stereographic projections. Prerequisite: CIV E 270 or consent of Instructor.

MP E 499 Undergraduate Seminar

★1 (fi 2) (first term, 1-0-0). Special lectures and discussion on topics in engineering.

221.152 Modern Languages and Cultural Studies, MLCS

Department of Modern Languages and Cultural Studies
Faculty of Arts

Undergraduate Courses

01 MLCS 201 Reading European Cultures

★3 (fi 6) (either term, 3-0-0). Basic questions of culture in Europe, their common denominator, and historical foundations from the Middle Ages to the present.

01 MLCS 205 Folklore

★3 (fi 6) (either term, 3-0-0). Basic concepts and practices of folklore studies

using specific examples of stories, customs, beliefs, and objects from diverse cultures.

L MLCS 300 Introduction to Translation

★3 (fi 6) (either term, 3-0-0). Translation problems and strategies illustrated with examples from a variety of languages. Prerequisite: ★6 in a foreign language at the 150-level or above.

MLCS 301 Topics in Literary Representations of Science and Technology

★3 (fi 6) (either term, 3-0-0). Representation of science and technology in both literary and non-literary texts. This course is taught in English. Prerequisites: ★6 in a language other than English and ★6 at the 200-level in any subject.

MLCS 302 Ecology and Culture

★3 (fi 6) (either term, 3-0-0). Exploration of how the notion of ecology is articulated in terms of both cultural and natural environments and represented in a variety of texts. This course is taught in English. Prerequisites: ★6 in a language other than English and ★6 at the 200-level in any subject.

O MLCS 311 Russia and its Neighbours: Nations in Dialogue and Conflict

★3 (fi 6) (either term, 3-0-0). Cultural and political relations between Russia and the West, with emphasis on the Soviet period since 1945 and after perestroika.

O MLCS 312 Russian and Non-Russian Cultural and Political Space

★3 (fi 6) (either term, 3-0-0). Cultural and political relations between Russian and non-Russian components of the Imperial and Soviet empires, and between their equivalents in the successor states. Identity, cultural formation, metahistory.

MLCS 371 Cultural Studies and Applied Linguistics

★3 (fi 6) (either term, 3-0-0). Basic concepts in cultural studies and linguistics applied to the analysis of a specific text genre in different cultures. Prerequisite: ★6 at the 200-level or above in any language other than English.

O MLCS 400 The History of Translation

★3 (fi 6) (either term, 3-0-0). A broad historical perspective on the contributions made by translators to the intellectual and cultural history of the world through consideration of the Germanic, Romance and Slavic traditions. The role of the translator and basic principles governing the various traditions are examined to gain insight into different types of translation (religious, literary, technical) and significant moments in the history of translation. Prerequisite: ★6 in a Language Other than English at the 200-level or above or consent of Department.

MLCS 471 Minority Languages

★3 (fi 6) (either term, 3-0-0). Sociolinguistic problems of the maintenance and loss of minority languages and cultures in Europe and the diaspora. Prerequisite: ★6 at the 200-level or above in language courses offered by the Department of Modern Languages and Cultural Studies.

MLCS 472 Language Use and Cross-Cultural Relations

★3 (fi 6) (either term, 0-3s-0). Study of social phenomena from a cross-cultural perspective through discourse analysis. Prerequisite: ★6 at the 300-level, of which ★3 must be in a language taught in Modern Languages and Cultural Studies, or consent of Department.

MLCS 473 Cultural Representations, World Media and Ethics

★3 (fi 6) (either term, 0-3s-0). A discursive approach to the study of cultural representations and ethical issues in world media. Prerequisite: ★6 at the 300-level, of which ★3 must be in a language taught in Modern Languages and Cultural Studies, or consent of Department.

MLCS 495 Honors Thesis

★3 (fi 6) (either term, 0-3s-0).

MLCS 499 Special Topics

★3 (fi 6) (either term, 3-0-0).

Graduate Courses

MLCS 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 EASIA 507.

MLCS 555 Teaching Strategies for Postsecondary Language Instructors

★3 (fi 6) (either term, 3-0-0). Designed to help graduate teaching assistants to develop practical expertise in language instruction at the college and university levels. Prerequisite: consent of Department.

MLCS 561 The Cultures of the Avant-Garde

★3 (fi 6) (either term, 3-0-0). The literary and artistic avant-garde in Germanic, Romance and Slavic countries, circa 1900 to 1930. Prerequisite: consent of Department.

MLCS 570 Applied Linguistics

★3 (fi 6) (either term, 3-0-0). Applied linguistics, including second language

acquisition, sociolinguistics, discourse analysis, second language pedagogy, and bilingualism.

MLCS 571 Minority Languages in Europe and the Diaspora

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

MLCS 572 Language Use and Cross-Cultural Relations

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

MLCS 573 Cultural Representations, World Media and Ethics

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

MLCS 581 Applied Linguistics: Second Language Research

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

MLCS 582 Applied Linguistics: Sociolinguistics

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

MLCS 583 Applied Linguistics: Discourse Analysis

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

MLCS 599 Directed Reading

★3 (fi 6) (either term, 3-0-0).

MLCS 600 Translation Theories

★3 (fi 6) (either term, 3-0-0). The multiple ways in which linguistics, literary criticism, philosophy, cultural theories and feminist theories have informed the practice of translation and contributed to the production of different translation theories. In their presentations and papers, students are encouraged to use examples taken from languages with which they are familiar.

MLCS 601 Special Topics in Translation

★3 (fi 6) (either term, 3-0-0).

MLCS 698 Topics in Applied Linguistics

★3 (fi 6) (either term, 3-0-0).

MLCS 699 Topics in Literary and Cultural Studies

★3 (fi 6) (either term, 3-0-0).

MLCS 900 Directed Research Project

★6 (fi 12) (variable, unassigned).

MLCS 901 MA Research Project

★3 (fi 6) (either term, 3-0-0).

221.153 Music, MUSIC

Department of Music
Faculty of Arts

Note: The ability to read music is required for all courses numbered 170 and greater, except MUSIC 201.

Undergraduate Courses

MUSIC 100 Rudiments of Music

★3 (fi 6) (either term, 3-0-0). Fundamentals of music theory approached through aural and written training. Note: Not available for degree credit to students enrolled in a BMus (all routes) degree program.

L MUSIC 101 Introduction to Western Art Music

★3 (fi 6) (either term, 3-0-0). A study of music literature with an emphasis on listening and analytical tools. A brief survey of the history of Western music will be included. Note: Not open to BMus (all routes) students.

O MUSIC 102 Introduction to World Music

★3 (fi 6) (either term, 3-0-0). Not available to students with credit in MUSIC 165.

MUSIC 103 Introduction to Popular Music

★3 (fi 6) (either term, 3-0-0). A survey of popular music's development as a category of musical and cultural practice, an industry and an object of study, during the twentieth century.

MUSIC 122 Second Practical Subject

★3 (fi 9) (two term, 0.5-0-0). Restricted to BMus (all routes), BMus/ BE, and BE students majoring in secondary music education. Twenty-six half-hour lessons for two terms. Prerequisite: consent of Department.

MUSIC 124 Applied Music

★3 (fi 9) (either term, 1-0-0). For non-BMus students. Thirteen one-hour lessons for one term. Prerequisite: consent of Department, based on audition.

MUSIC 125 Applied Music

★6 (fi 15) (two term, 2-0-0). Restricted to BMus (all routes) and BMus/BE students.

MUSIC 126 Applied Music

★3 (fi 9) (two term, 0.5-0-0). For non-BMus students. Twenty-six half-hour lessons for two terms. Prerequisite: consent of Department, based on audition.

MUSIC 127 Applied Music

★6 (*fi 15*) (two term, 1-0-0). For non-BMus students. Twenty-six one-hour lessons for two terms. Prerequisite: consent of Department, based on audition.

MUSIC 129 Fundamental Keyboard Skills

★3 (*fi 6*) (two term, 0-2L-0). Prerequisite: consent of Department. Restricted to BMus (all routes), BMus/BEd, and BA (Honors) Music Major students.

MUSIC 132 Second Practical Subject

★3 (*fi 9*) (either term, 1-0-0). Restricted to BMus (all routes), BMus/BEd, and BEd students majoring in secondary music education. Thirteen one-hour lessons for one term. Prerequisite: consent of Department.

MUSIC 140 Choral Ensemble

★3 (*fi 6*) (two term, 0-4L-0). Concert Choir or Madrigal Singers. Prerequisite: consent of Department, based on audition.

MUSIC 141 Instrumental Ensemble

★3 (*fi 6*) (two term, 0-4L-0). Concert Band, Wind Ensemble, Academy Strings, Orchestral Winds, or Jazz Band I or II. Prerequisite: consent of Department based on audition.

MUSIC 143 Indian Music Ensemble I

★3 (*fi 6*) (two term, 0-4L-0). The classical music of India, through group instruction in singing, tabla (drums), sitar (plucked lute), sarangi (bowed lute), bansuri (flute), harmonium, and ensemble performance. A set of instruments will be available. The ability to read music is not required. Prerequisite: consent of Department.

MUSIC 144 West African Music Ensemble I

★3 (*fi 6*) (two term, 0-4L-0). Polyphonic and polyrhythmic music of West Africa, primarily through ensemble performance of the percussion and vocal music of the Ewe people of Ghana. A set of Ewe percussion instruments will be available. The ability to read music is not required. Prerequisite: consent of Department.

MUSIC 151 Aural and Keyboard Skills I

★3 (*fi 6*) (two term, 0-3L-0). The development of basic musicianship skills through dictation and performance of pitch, rhythmic, and keyboard exercises. Prerequisite: MUSIC 100 or satisfactory completion of Dept. of Music Theory Placement Exam and Aural Skills Exam for other than BMus students. Corequisite: MUSIC 155 or 156. Restricted to BMus (all routes), BMus/BEd, BEd Music Major/Minor, BA (Honors) Music Major, and BA Music Major/Minor students.

MUSIC 155 Music Theory I

★3 (*fi 6*) (either term, 3-0-0). A study of common-practice harmony, including elementary analysis with preliminary discussion of elements of formal contrapuntal writing and chorale texture. Prerequisite: MUSIC 100 or satisfactory completion of Department of Music Theory Placement Examination. Registration priority given to BMus (all routes), BMus/BEd, BEd Music Major/Minor, BA (Honors) Music Major, and BA Music Major/Minor students.

MUSIC 156 Music Theory II

★3 (*fi 6*) (either term, 3-0-0). Continuing the study of common-practice harmony and elementary formal analysis. Prerequisite: MUSIC 155. Registration priority given to BMus (all routes), BMus/BEd, BEd Music Major/Minor, BA (Honors) Music Major, and BA Music Major/Minor students.

MUSIC 201 Western Music and Contexts

★3 (*fi 6*) (either term, 3-0-0). Study of selected works and their significance in a variety of musical, social, and historical contexts. Prerequisite: MUSIC 101 or equivalent. Not open to BMus (all routes) students. Not applicable to BA Music Major students.

MUSIC 207 Instruments for Children

★3 (*fi 6*) (either term, 3-0-0). Laboratory experience with recorder ensemble, small winds, chording and percussion instruments. Prerequisites: MUSIC 150 or 156, and 151.

MUSIC 209 Woodwind Techniques I

★3 (*fi 6*) (first term, 3-0-0). Practical and theoretical instruction on single-reed instruments. Prerequisites: MUSIC 150 or 156, and 151. Corequisite or prerequisite: MUSIC 121 or 125, 124, or equivalent. Restricted to BMus (all routes), BMus/BEd, BEd Music Major/Minor, and BA (Honors) Music Major students.

MUSIC 211 Woodwind Techniques II

★3 (*fi 6*) (second term, 3-0-0). Practical and theoretical instruction on flute, oboe and bassoon. Prerequisite: MUSIC 209. Note: Restricted to BMus (all routes), BMus/BEd, BEd Music Major/Minor, and BA (Honors) Music Major students.

MUSIC 216 Brass Techniques I

★3 (*fi 6*) (first term, 3-0-0). Practical and theoretical instruction on trumpet. Prerequisite: MUSIC 150 or 156, and 151. Corequisite or prerequisite: MUSIC 121 or 125, or 124 or equivalent. Note: Restricted to BMus (all routes), BMus/BEd, BEd Music Major/Minor, and BA (Honors) Music Major students.

MUSIC 217 Brass Techniques II

★3 (*fi 6*) (second term, 3-0-0). Practical and theoretical instruction on brass instruments. Prerequisite: MUSIC 216 or proficiency examination. Note: Restricted to BMus (all routes), BMus/BEd, BEd Music Major/Minor, and BA (Honors) Music Major students.

MUSIC 220 Percussion Techniques

★3 (*fi 6*) (first term, 3-0-0). Practical and theoretical instruction on percussion instruments. Prerequisites: Music 150 or 156, and 151, or equivalent. Corequisite or prerequisite: MUSIC 121 or 125, or 124, or equivalent. Restricted to BMus (all routes), BMus/BEd, BEd Music Major/Minor, and BA (Honors) Music Major students.

MUSIC 222 Second Practical Subject

★3 (*fi 9*) (two term, 0.5-0-0). Restricted to BMus (all routes), BMus/BEd, and BEd students majoring in secondary music education. Twenty-six half-hour lessons for two terms. Prerequisite: consent of Department.

MUSIC 224 Applied Music

★3 (*fi 9*) (either term, 1-0-0). For non-BMus students. Thirteen one-hour lessons for one term. Prerequisites: MUSIC 121 or 125, or 124 or equivalent and consent of Department.

MUSIC 225 Applied Music

★6 (*fi 15*) (two term, 2-0-0). Restricted to BMus (all routes) and BMus/BEd students. Prerequisite: MUSIC 121 or 125, or 124 or equivalent.

MUSIC 226 Applied Music

★3 (*fi 9*) (two term, 0.5-0-0). For non-BMus students. Twenty-six half-hour lessons for two terms. Prerequisite: consent of Department, based on audition.

MUSIC 227 Applied Music

★6 (*fi 15*) (two term, 1-0-0). For non-BMus students. Twenty-six one-hour lessons for two terms. Prerequisite: consent of Department, based on audition.

MUSIC 230 Choral Techniques and Pedagogy

★3 (*fi 6*) (first term, 3-0-0). Prerequisites: MUSIC 150 or 156, and 151, or equivalent. Note: Restricted to BMus (all routes), BMus/BEd, BEd Music Major/Minor, and BA (Honors) Music Major students.

MUSIC 232 Second Practical Subject

★3 (*fi 9*) (either term, 1-0-0). Restricted to BMus (all routes), BMus/BEd, and BEd students majoring in secondary music education. Thirteen one-hour lessons for one term. Prerequisite: consent of Department.

MUSIC 239 Vocal and Instrumental Chamber Ensemble

★3 (*fi 6*) (two term, 0-2L-0). Prerequisite: consent of Department, based on audition.

MUSIC 240 Choral Ensemble

★3 (*fi 6*) (two term, 0-4L-0). Concert Choir or Madrigal Singers. Prerequisite: consent of Department, based on audition.

MUSIC 241 Instrumental Ensemble

★3 (*fi 6*) (two term, 0-4L-0). Concert Band, Wind Ensemble, Academy Strings, Orchestral Winds, or Jazz Band I or II. Prerequisite: consent of Department, based on audition.

MUSIC 243 Indian Music Ensemble II

★3 (*fi 6*) (two term, 0-4L-0). For description see MUSIC 143. Prerequisite: consent of Department.

MUSIC 244 West African Music Ensemble II

★3 (*fi 6*) (two term, 0-4L-0). For description see MUSIC 144. Prerequisite: consent of Department.

MUSIC 245 Introduction to Music Technologies

★3 (*fi 6*) (either term, 0-3L-0). Computer technology with a focus on MIDI, synthesis, and software programs for sequencing, music notation, audio recording and transformation, and music on the Internet. Prerequisites: MUSIC 151 and 156, or consent of Department. Registration priority will be given to BMus (all routes), BMus/BEd, BEd Music Major/Minor and BA (Honors) Music Major students.

MUSIC 246 Opera Workshop

★3 (*fi 6*) (two term, 0-4L-0). The coaching and staging of opera literature. Prerequisite: consent of Department, based on audition.

MUSIC 247 Conducting Ensembles

★3 (*fi 6*) (two term, 0-4L-0). Graduate Choral Conductors' Ensemble (Vocal), Graduate Choral Conductors' Ensemble (Instrumental), or Graduate Recital Choir. Prerequisite: Consent of Department, based on audition. Note: Does not fulfill large-ensemble requirements in BMus (all routes) and BMus/BEd programs.

MUSIC 251 Aural and Keyboard Skills II

★3 (*fi 6*) (two term, 0-3L-0). A continuation of MUSIC 151. Prerequisite: MUSIC 151. Corequisite: MUSIC 255 or 256 or consent of Department.

MUSIC 255 Music Theory III

★3 (*fi 6*) (either term, 3-0-0). A continuation of the study of common-practice music with an emphasis on form and contrapuntal principles. Prerequisites: MUSIC 150 or 155 and 156.

MUSIC 256 Music Theory IV

★3 (*fi 6*) (either term, 3-0-0). Theories of art music composed between 1900 and 1950. Prerequisite: MUSIC 255.

MUSIC 259 Introduction to Composition

★3 (*fi 6*) (first term, 3-0-0). Prerequisites: MUSIC 150 or 156, and 151 or equivalent.

Note: Public performance of works completed in the course will be expected. Registration priority given to BMus (all routes), BMus/BE, BA (Honors) Music Major, BEd Music Major/Minor, and BA Music Major students.

MUSIC 260 Composition

★3 (*fi 6*) (second term, 3-0-0). Prerequisite: MUSIC 259. Registration priority given to BMus, BA (Honors) Music Major, BEd Music Major/Minor, and BA Music Major students.

MUSIC 263 Instrumentation and Arranging

★3 (*fi 6*) (first term, 3-0-0). A study of the technical and expressive characteristics of the standard orchestral instruments. An introduction to historical developments in orchestration is included. Prerequisites: MUSIC 150 or 156 or equivalent. Formerly MUSIC 462.

MUSIC 281 Early European Music History

★3 (*fi 6*) (second term, 3-0-0). Middle Ages to 1750. Prerequisite: MUSIC 155. Not open to students with credit in MUSIC 271.

MUSIC 282 History of Western Art Music

★3 (*fi 6*) (first term, 3-0-0). 1750 to present. Prerequisite: Music 156. Not open to students with credit in MUSIC 272 or 273.

MUSIC 303 Piano Pedagogy I

★3 (*fi 6*) (first term, 3-0-0). Prerequisites: MUSIC 221, 224, 225, or equivalent.

MUSIC 304 Piano Pedagogy II

★3 (*fi 6*) (second term, 3-0-0). Prerequisite: MUSIC 303.

MUSIC 311 Latin America and the Cultures of Popular Music

★3 (*fi 6*) (either term, 3-0-0). Popular music and its role in the formation of regional and national identities, with a focus on concepts such as high and low cultures, mass culture and mass media, cultural hybridity, diaspora, and creativity. Prerequisite: LA ST 205 or 210, or MUSIC 102 or 170, or consent of Department. Note: not to be taken by students with credit in LA ST 311.

MUSIC 313 History of Jazz

★3 (*fi 6*) (either term, 3-0-0). A historical survey of the main evolutionary trends in jazz through analysis of distinctive jazz styles and listening to recorded examples. Prerequisite: MUSIC 100 or satisfactory completion of the Department of Music Theory Placement Examination for other than BMus (all routes) and BMus/BE students. Not available to students with credit in MUSIC 213.

MUSIC 314 Canadian Music

★3 (*fi 6*) (either term, 3-0-0). The history of music in Canada from colonial times to the present. Prerequisite: MUSIC 101 or equivalent. Not available to students with credit in MUSIC 215.

MUSIC 315 Introduction to Conducting

★3 (*fi 6*) (first term, 3-0-0). Development of basic conducting techniques and score reading. Prerequisites: MUSIC 150 or 156, and 151, or equivalent

MUSIC 320 Diction for Singers

★3 (*fi 6*) (two term, 0-2L-0). The application of the International Phonetic Alphabet (IPA) to singing in English, Italian, German and French. Prerequisite: MUSIC 125 (Voice), or consent of Department.

MUSIC 342 Specialized Ensemble I

★3 (*fi 6*) (two term, 0-4L-0). Prerequisite: consent of Department, based on audition.

☐ MUSIC 343 Indian Music Ensemble III

★3 (*fi 6*) (two term, 0-4L-0). For description see MUSIC 143. Prerequisite: consent of Department.

☐ MUSIC 344 West African Music Ensemble III

★3 (*fi 6*) (two term, 0-4L-0). For description see MUSIC 144. Prerequisite: consent of Department.

MUSIC 347 Conducting Ensembles

★3 (*fi 6*) (two term, 0-4L-0). Graduate Choral Conductors' Ensemble (Vocal), Graduate Choral Conductors' Ensemble (Instrumental), or Graduate Recital Choir. Prerequisite: Consent of Department, based on audition. Note: Does not fulfill large-ensemble requirements in BMus (all routes) and BMus/BE programs.

☐ MUSIC 365 Introduction to Ethnomusicology

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: MUSIC 101 or 102 or consent of Department for students not in the BMus (all routes) or BMus/BE program. Not available to students with credit in MUSIC 265.

MUSIC 403 Piano Literature I

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

MUSIC 404 Piano Literature II

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

MUSIC 413 Studies in the History of Jazz

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: MUSIC 313.

MUSIC 416 Instrumental Conducting

★3 (*fi 6*) (second term, 3-0-0). Prerequisite: MUSIC 315.

MUSIC 417 Choral Conducting and Pedagogy

★3 (*fi 6*) (second term, 3-0-0). Prerequisite: MUSIC 315.

MUSIC 420 Applied Music

★6 (*fi 15*) (two term, 1-0-0). For non-BMus students. Twenty-six one-hour lessons for two terms. Prerequisite: consent of Department, based on audition.

MUSIC 422 Second Practical Subject

★3 (*fi 9*) (two term, 0.5-0-0). Restricted to BMus (all routes), BMus/BE and BEd students majoring in secondary music education. Twenty-six half-hour lessons for two terms. Prerequisite: consent of Department.

MUSIC 424 Applied Music

★3 (*fi 9*) (either term, 1-0-0). For non-BMus students. Thirteen one-hour lessons for one term. Prerequisites: MUSIC 224 or equivalent and consent of Department.

MUSIC 425 Applied Music

★6 (*fi 15*) (two term, 2-0-0). Restricted to BMus (all routes) and BMus/BE students. Note: Students intending to enrol in MUSIC 526 are required to have successfully presented a public recital while enrolled in MUSIC 425. Prerequisite: MUSIC 225.

MUSIC 426 Applied Music

★3 (*fi 9*) (two term, 0.5-0-0). For non-BMus students. Twenty-six half-hour lessons for two terms. Prerequisite: consent of Department, based on audition.

MUSIC 431 Band Techniques

★3 (*fi 6*) (either term, 0-3L-0). Musical and practical aspects of band conducting. Prerequisite: A conducting course or substantial conducting experience.

MUSIC 432 Second Practical Subject

★3 (*fi 9*) (either term, 1-0-0). Restricted to BMus (all routes), BMus/BE, and BEd students majoring in secondary music education. Thirteen one-hour lessons for one term. Prerequisite: consent of Department.

MUSIC 433 The Organ and Its Literature I

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

MUSIC 434 The Organ and Its Literature II

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

MUSIC 435 Vocal Pedagogy

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: MUSIC 221 or 225, or 224, or equivalent.

MUSIC 439 Vocal and Instrumental Chamber Ensemble

★3 (*fi 6*) (two term, 0-2L-0). Prerequisite: consent of Department, based on audition.

☐ MUSIC 440 Choral Ensemble

★3 (*fi 6*) (two term, 0-4L-0). Concert Choir or Madrigal Singers. Prerequisite: consent of Department, based on audition.

☐ MUSIC 441 Instrumental Ensemble

★3 (*fi 6*) (two term, 0-4L-0). Concert Band, Wind Ensemble, Academy Strings, Orchestral Winds, or Jazz Band I or II. Prerequisite: consent of Department, based on audition.

MUSIC 442 Specialized Ensemble II

★3 (*fi 6*) (two term, 0-4L-0). Prerequisite: consent of Department based upon audition.

☐ MUSIC 443 Indian Music Ensemble IV

★3 (*fi 6*) (two term, 0-4L-0). For description see MUSIC 143. Prerequisite: consent of Department.

☐ MUSIC 444 West African Music Ensemble IV

★3 (*fi 6*) (two term, 0-4L-0). For description see MUSIC 144. Prerequisite: consent of Department.

MUSIC 445 Electroacoustic Music

★3 (*fi 6*) (second term, 0-3L-0). Electroacoustic music techniques, history and repertoire. Prerequisite: consent of department. Registration priority will be given to BMus (all routes), BA (Honors) Music Major, BEd Music Major/Minor, BA Music Major and graduate students in Music.

MUSIC 446 Opera Workshop

★3 (*fi 6*) (two term, 0-4L-0). The coaching and staging of opera literature. Prerequisite: consent of Department, based on audition.

MUSIC 447 Conducting Ensembles

★3 (*fi 6*) (two term, 0-4L-0). Graduate Choral Conductors' Ensemble (Vocal), Graduate Choral Conductors' Ensemble (Instrumental), or Graduate Recital Choir. Prerequisite: Consent of Department, based on audition. Note: Does not fulfill large-ensemble requirements in BMus (all routes) and BMus/BE programs.

MUSIC 451 Aural and Keyboard Skills III

★3 (*fi 6*) (two term, 0-3L-0). The development of advanced musicianship skills. Prerequisites: MUSIC 250 or 256, and 251, or equivalent.

MUSIC 455 Music Theory V

★3 (*fi 6*) (first term, 3-0-0). Theories of art music composed since 1950. Prerequisite: MUSIC 255.

MUSIC 456 Music Theory VI

★3 (*fi 6*) (second term, 3-0-0). Analysis of popular musics. Prerequisite: MUSIC 255.

MUSIC 457 String Literature

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

MUSIC 459 String Pedagogy

★3 (fi 6) (either term, 3-0-0). Prerequisite: Music 221, 224, 225, 226, 227, or consent of Department.

MUSIC 460 Composition

★6 (fi 12) (two term, 3-0-0). Emphasis on writing in larger forms. Public performance of works completed in the course will be required. Prerequisite: MUSIC 260 or equivalent, portfolio review, and consent of Department. Corequisite or prerequisite: MUSIC 263 or equivalent. Registration priority given to BMus, BA (Honors) Music Major, BEd Music Major/Minor, and BA Music Major students.

MUSIC 462 Topics in Orchestration

★3 (fi 6) (either term, 3-0-0). Contemporary acoustic and/or electroacoustic orchestration techniques and practices. Prerequisite: MUSIC 463 or equivalent, or consent of Department.

MUSIC 463 Orchestration

★3 (fi 6) (second term, 3-0-0). A detailed study of orchestration and its historical developments. Prerequisite: MUSIC 263.

MUSIC 464 Topics in Ethnomusicology: Music and Religion

★3 (fi 6) (either term, 3-0-0). Explores music and sound as central aspects of religious concepts, meaning, and performance, with special emphasis on ritual. Prerequisite: consent of Department.

MUSIC 465 Area Studies in Ethnomusicology

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

MUSIC 466 Topics in Ethnomusicology

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

MUSIC 467 Area Studies in Ethnomusicology: India and South Asia

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

MUSIC 468 Area Studies in Ethnomusicology: The Arab World

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

MUSIC 469 Area Studies in Ethnomusicology: Music and Islam

★3 (fi 6) (either term, 3-0-0). Addresses the sonic practices of Islamic rituals, Muslim discourses about music, and the relation of both to the rich diversity of religious and musical practices in Muslim societies around the globe. Prerequisite: consent of Department.

MUSIC 480 Survey of Contemporary Repertoire

★3 (fi 6) (either term, 3-0-0). Overview of acoustic and/or electroacoustic repertoire from c. 1950. Co- or Prerequisite: MUSIC 256.

MUSIC 481 Studies in Avant-Garde Music

★3 (fi 6) (either term, 3-0-0). Prerequisite: MUSIC 256.

MUSIC 482 Studies in Music and Gender

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

MUSIC 483 Studies in Musical Genre

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

MUSIC 484 Studies in Music and Society

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

MUSIC 485 Composer Studies

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

MUSIC 487 Period Studies

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

MUSIC 501 Music History Seminar I

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

MUSIC 502 Music History Seminar II

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

MUSIC 504 Honors Essay

★3 (fi 6) (either term, 3-0-0). Restricted to BA Honors Music major students.

MUSIC 505 Bibliography and Methods of Research

★3 (fi 6) (either term, 3-0-0). Prerequisite: consent of Department. Registration priority given to MA students in music, MMus, BMus (Music History), BMus (World Music), and BA (Honors) Music Major students. If space remains, restricted to BMus (all routes) students only.

MUSIC 506 Tutorial Study

★3 (fi 6) (either term, 3-0-0). Independent research in a specific area of the student's interest. Prerequisite: consent of Department.

MUSIC 507 Writing About Music

★3 (fi 6) (either term, 3-0-0). Through lectures, assigned readings, and short written assignments, students will investigate technical aspects relevant to writing about music. Uses of grammar, rhetoric, and the graphic design of musical illustrations will be addressed in order to develop facility, as well as a clear and personal style of paper writing. The course will be team taught to cover conventional modes of written expression in music history, theory, and ethnomusicology. Prerequisite: MUSIC 505.

MUSIC 508 Seminar in Canadian Music

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

MUSIC 520 Applied Music

★3 (fi 9) (two term, 0.5-0-0). For non-BMus students. Twenty-six half-hour lessons for two terms. Prerequisite: consent of Department, based on audition.

MUSIC 522 Second Practical Subject

★3 (fi 9) (two term, 0.5-0-0). Restricted to BMus (all routes), BMus/BEd and BEd students majoring in secondary music education. Twenty-six half-hour lessons for two terms. Prerequisite: consent of Department.

MUSIC 524 Applied Music

★3 (fi 9) (either term, 1-0-0). For non-BMus students. Thirteen one-hour lessons for one term. Prerequisites: MUSIC 424 or equivalent and consent of Department.

MUSIC 525 Applied Music

★6 (fi 15) (two term, 2-0-0). Restricted to BMus (all routes) students.

MUSIC 527 Applied Music

★6 (fi 15) (two term, 1-0-0). For non-BMus students. Twenty-six one-hour lessons for two terms. Prerequisite: consent of Department, based on audition.

MUSIC 532 Second Practical Subject

★3 (fi 9) (either term, 1-0-0). Restricted to BMus (all routes), BMus/BEd, and BEd students majoring in secondary music education. Thirteen one-hour lessons for one term. Prerequisite: consent of Department.

MUSIC 533 Hymnody and Service Playing I

★3 (fi 6) (either term, 0-3L-0). Prerequisite: consent of Department. Not available to students with credit in MUSIC 406.

MUSIC 534 Hymnody and Service Playing II

★3 (fi 6) (either term, 0-3L-0). Prerequisite: Music 533 or consent of Department. Not available to students with credit in MUSIC 406.

MUSIC 535 Organ Construction, Tonal Design and the Art of Registration

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

MUSIC 539 Vocal and Instrumental Chamber Ensemble

★3 (fi 6) (two term, 0-2L-0). Prerequisite: consent of Department, based on audition.

MUSIC 540 Choral Ensemble

★3 (fi 6) (two term, 0-4L-0). Concert Choir or Madrigal Singers. Prerequisite: consent of Department, based on audition.

MUSIC 541 Instrumental Ensemble

★3 (fi 6) (two term, 0-4L-0). Concert Band Wind Ensemble, Academy Strings, Orchestral Winds, or Jazz Band I or II. Prerequisite: consent of Department, based on audition.

MUSIC 542 Specialized Ensemble III

★3 (fi 6) (two term, 0-4L-0). Prerequisite: consent of Department based on audition.

MUSIC 545 Seminar in Computer Applications to Music

★3 (fi 6) (either term, 0-3s-0). Computer applications used in various genres, including acoustic and algorithmic composition, music notation, analysis, live electronics, electroacoustic/acousmatic music, and sound ecology. Prerequisites: Music 445 or equivalent or consent of Department.

MUSIC 546 Opera Workshop

★3 (fi 6) (two term, 0-4L-0). The coaching and staging of opera literature. Prerequisite: consent of Department, based on audition.

MUSIC 555 Issues in Theory and Analysis

★3 (fi 6) (either term, 3-0-0). Prerequisite: MUSIC 456.

MUSIC 556 Seminar in Music Theory

★3 (fi 6) (either term, 0-3s-0). Prerequisites: MUSIC 256 and consent of Department.

MUSIC 560 Composition

★6 (fi 12) (two term, 3-0-0). Public performance of works completed in the course will be required. Registration priority given to BMus, BA (Honors) Music Major, BEd Music Major/Minor, and BA Music Major students. Prerequisite: MUSIC 460 or equivalent, portfolio review, and consent of Department. Co- or prerequisite: MUSIC 263.

Graduate Courses

Note: The following undergraduate courses may be taken for credit by graduate students: MUSIC 320, 413, 433, 434, 436, 445, 501, 502, 505, 507, 508, 525, 533, 534, 535, 542, 545, 555, 556, 560.

MUSIC 543 Indian Music Ensemble V

★3 (fi 6) (two term, 0-4L-0). For description see MUSIC 143. Prerequisite: consent of Department.

Q MUSIC 544 West African Music Ensemble V

★3 (*fi 6*) (two term, 0-4L-0). For description see MUSIC 144. Prerequisite: consent of Department.

MUSIC 547 Conducting Ensembles

★3 (*fi 6*) (two term, 0-4L-0). Graduate Choral Conductors' Ensemble (Vocal), Graduate Choral Conductors' Ensemble (Instrumental), or Graduate Recital Choir. Prerequisite: Consent of Department, based on audition.

MUSIC 557 Advanced Studies in String Literature

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

MUSIC 559 Advanced Studies in String Pedagogy

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

MUSIC 562 Advanced Topics in Orchestration

★3 (*fi 6*) (either term, 3-0-0). Contemporary acoustic and/or electroacoustic orchestration techniques and practices. Prerequisite: MUSIC 463 or equivalent, or consent of Department.

MUSIC 564 Advanced Topics in Ethnomusicology: Music and Religion

★3 (*fi 6*) (either term, 3-0-0). Explores music and sound as central aspects of religious concepts, meaning, and performance, with special emphasis on ritual. Prerequisite: consent of Department.

MUSIC 565 Area Studies in Ethnomusicology

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: MUSIC 365 or consent of Department.

MUSIC 566 Topics in Ethnomusicology

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: MUSIC 365 or consent of Department.

MUSIC 567 Advanced Area Studies in Ethnomusicology: India and South Asia

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

MUSIC 568 Advanced Area Studies in Ethnomusicology: The Arab World

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

MUSIC 569 Advanced Area Studies in Ethnomusicology: Music and Islam

★3 (*fi 6*) (either term, 3-0-0). Addresses the sonic practices of Islamic rituals, Muslim discourses about music, and the relation of both to the rich diversity of religious and musical practices in Muslim societies around the globe. Prerequisite: consent of Department.

MUSIC 580 Advanced Contemporary Repertoire

★3 (*fi 6*) (either term, 3-0-0). Overview of acoustic and/or electroacoustic repertoire from c. 1950. Co- or Prerequisite: MUSIC 256.

MUSIC 581 Advanced Studies in Avant-Garde

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: MUSIC 256.

MUSIC 582 Advanced Studies in Music and Gender

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

MUSIC 583 Advanced Studies in Musical Genre

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

MUSIC 584 Advanced Studies in Music and Society

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

MUSIC 585 Advanced Composer Studies

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

MUSIC 587 Advanced Period Studies

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

MUSIC 601 Tutorial Study

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

MUSIC 602 Tutorial Study

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

MUSIC 603 Practicum in Piano Teaching

★3 (*fi 6*) (either term, 2-0-3). Prerequisite: MUSIC 304 or consent of Department.

MUSIC 604 Piano Pedagogy

★3 (*fi 6*) (either term, 0-3s-0). Prerequisite: MUSIC 304 or consent of Department.

MUSIC 608 Seminar in 20th-Century Music

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 613 Seminar in Romantic Music

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 614 Proseminar in Musicology

★3 (*fi 6*) (either term, 0-3s-0). An overview of history, methodologies, and current issues in musicology. Prerequisite: MUSIC 505.

MUSIC 615 Seminar in Musicology I

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 616 Seminar in Musicology II

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 621 Applied Music

★6 (*fi 15*) (two term, 2-0-0).

MUSIC 623 Supplementary Applied Music

★3 (*fi 9*) (two term, 1-0-0). Prerequisite: consent of Department.

MUSIC 625 Applied Music

★3 (*fi 9*) (variable, 2-0-0). Thirteen hours of lessons over either the fall term or over two terms, plus attendance at weekly repertoire class.

MUSIC 630 Choral Conducting

★6 (*fi 12*) (two term, 3-0-0).

MUSIC 631 Advanced Band Techniques

★3 (*fi 6*) (either term, 3-0-0). Advanced musical and practical aspects of band conducting. Prerequisite: MUSIC 431 or equivalent, or substantial conducting experience, and consent of the Department.

MUSIC 632 Advanced Wind Band Conducting

★6 (*fi 12*) (two term, 2-0-0). Prerequisite: MUSIC 431 or equivalent, or substantial conducting experience, and consent of the Department.

MUSIC 633 Seminar in Choral Literature I

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 634 Seminar in Choral Literature II

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 637 Vocal and Instrumental Chamber Ensemble

★3 (*fi 6*) (either term, 0-2L-0). Prerequisite: consent of Department, based upon audition.

MUSIC 639 Vocal and Instrumental Chamber Ensemble

★3 (*fi 6*) (two term, 0-2L-0). Prerequisite: consent of Department, based upon audition.

Q MUSIC 640 Choral Ensemble

★3 (*fi 6*) (two term, 0-4L-0). Concert Choir or Madrigal Singers. Prerequisite: consent of Department, based upon audition.

Q MUSIC 641 Instrumental Ensemble

★3 (*fi 6*) (two term, 0-4L-0). Concert Band Wind-Ensemble, Academy Strings, Orchestral Winds, or Jazz Band I or II. Prerequisite: consent of Department, based upon audition.

MUSIC 645 Seminar in Computer Music Composition

★3 (*fi 6*) (either term, 0-3s-0). Application and programming of computer music software. Prerequisites: MUSIC 445 or equivalent, or consent of Department.

MUSIC 646 Opera Workshop

★3 (*fi 6*) (two term, 0-4L-0). The coaching and staging of opera literature. Prerequisite: consent of Department, based on audition.

MUSIC 650 Proseminar in Music Theory

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 651 Seminar in Music Analysis

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 653 Seminar in History of Theory

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 654 Seminar in Theory and Music

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 660 Advanced Composition I

★6 (*fi 12*) (two term, 3-0-0).

MUSIC 661 Advanced Composition II

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: MUSIC 660.

MUSIC 665 Issues in Ethnomusicology

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 666 Field Methods in Ethnomusicology

★3 (*fi 6*) (either term, 0-3s-0).

MUSIC 685 Graduate Keyboard Seminar

★3 (*fi 6*) (two term, 0-1.5s-0). Topics in performance-practice issues. Restricted to pianists and organists in the MMus and DMus programs.

MUSIC 699 Directed Research

★3 (*fi 6*) (either term, 3-0-0).

MUSIC 721 Applied Music

★6 (*fi 15*) (two term, 2-0-0).

MUSIC 725 Applied Music

★6 (*fi 15*) (two term, 2-0-0). Twenty-six hours of lessons over two terms, plus one hour of repertoire class per week.

MUSIC 737 Special Projects in Chamber Music

★3 (*fi 6*) (either term, 0-2L-0). Restricted to Doctor of Music students.

MUSIC 739 Special Projects in Chamber Music

★3 (fi 6) (two term, 0-2L-0). Restricted to Doctor of Music students.

MUSIC 760 Advanced Composition III

★6 (fi 12) (two term, 3-0-0). Restricted to DMus Composition students.

MUSIC 761 Advanced Composition IV

★3 (fi 6) (either term, 3-0-0). Prerequisite: MUSIC 760. Restricted to DMus Composition students.

MUSIC 903 Directed Research Project

★3 (fi 6) (either term, unassigned). This is a pass/fail course.

MUSIC 906 Directed Research Project

★6 (fi 12) (either term, unassigned). This is a pass/fail course.

MUSIC 909 Directed Research Project

★9 (fi 18) (either term, unassigned). This is a pass/fail course.

221.154 Musique, MUSIQ

Faculté Saint-Jean

Cours de 1er cycle

MUSIQ 100 Les rudiments de la musique

★3 (fi 6) (premier semestre, 3-0-0). L'étude de la notation musicale et des rudiments de la musique. Introduction à la lecture élémentaire. Note: Les étudiants en BMus ne peuvent pas suivre ce cours. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 100.

MUSIQ 101 Introduction à la musique occidentale

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Une étude de la littérature musicale en insistant sur l'audition et les moyens analytiques. Un bref survol historique de la musique occidentale. Note : Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 101.

MUSIQ 103 Fondements de la musique

★3 (fi 6) (l'un ou l'autre semestre, 0-3L-0). L'acquisition et le développement de connaissances et d'habiletés musicales fondamentales nécessaires à l'enseignement élémentaire. Préalable(s): MUSIQ 100 ou l'équivalent mesurable par un test sur les rudiments de la musique.

MUSIQ 124 Musique appliquée

★3 (fi 6) (l'un ou l'autre semestre, 1-0-0). Leçons de chant individuelles pour les étudiants non inscrits au BMus. Préalable(s): l'approbation du professeur après audition. Note : Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 124.

MUSIQ 140 Ensemble choral

★3 (fi 6) (aux deux semestres, 0-4L-0). Cours de chant choral. Préalable(s): l'approbation du professeur après audition. Note : Un demi-cours qui s'étale sur les deux semestres. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 140.

MUSIQ 151 Culture de l'oreille et facilité au clavier I

★3 (fi 6) (aux deux semestres, 0-3L-0). Perception auditive de matières couvertes en MUSIQ 155 et 156, par la mise en pratique de la lecture à vue, de la dictée et de l'harmonie au clavier. Préalable(s): MUSIQ 100 ou l'équivalent mesurable par un test de placement en théorie musicale de la Faculté et un examen sur les habiletés auditives sauf pour les étudiants du BMus. Note: un demi-cours qui s'étale sur les deux semestres. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 151.

MUSIQ 155 Théorie musicale I

★3 (fi 6) (premier semestre, 3-0-0). Une étude de l'harmonie classique (c.-à-d. des XVIIe et XVIIIe siècles) qui inclut l'analyse élémentaire et une discussion préliminaire des éléments relatifs à l'écriture du contrepoint et à la texture chorale. Préalable(s): MUSIQ 100 ou l'équivalent mesurable par un test de placement en théorie musicale de la Faculté. Note : Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 155.

MUSIQ 156 Théorie musicale II

★3 (fi 6) (deuxième semestre, 3-0-0). La continuation de l'étude de l'harmonie classique et de l'analyse formelle élémentaire. Préalable(s): MUSIQ 155. Note : Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 156.

MUSIQ 201 Les chefs-d'oeuvre de la musique

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Une étude des plus grands chefs-d'oeuvre musicaux choisis pour représenter divers moyens d'expression et divers styles historiques. Préalable(s): MUSIQ 101 ou l'équivalent. Note : Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 201.

MUSIQ 224 Musique appliquée

★3 (fi 6) (l'un ou l'autre semestre, 1-0-0). Leçons de chant individuelles pour les étudiants non inscrits au BMus. Préalable(s): MUSIQ 124 ou l'équivalent et l'approbation du professeur. Note : Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 224.

MUSIQ 240 Ensemble choral

★3 (fi 6) (aux deux semestres, 0-4L-0). Cours de chant choral. Préalable(s): l'approbation du professeur après audition. Note : Un demi-cours qui s'étale sur les deux semestres. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 240.

MUSIQ 315 Introduction à l'art de diriger

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Préalable(s): MUSIQ 151 et 156, ou l'équivalent.

MUSIQ 424 Musique appliquée

★3 (fi 6) (l'un ou l'autre semestre, 1-0-0). Leçons de chant individuelles pour les étudiants non inscrits au BMus. Préalable(s) : MUSIQ 224 ou l'équivalent et l'approbation du professeur. Note : Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 424.

MUSIQ 440 Ensemble choral

★3 (fi 6) (aux deux semestres, 0-4L-0). Cours de chant choral. Préalable(s): l'approbation du professeur après audition. Note : Un demi-cours qui s'étale sur les deux semestres. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour MUSIC 440.

221.155 Native Studies, NS

School of Native Studies

Undergraduate Courses

NS 100 Introduction to Native Studies

★3 (fi 6) (either term, 3-0-0). This course will introduce the discipline and expectations of Native Studies to the student by emphasizing research and writing skills necessary in an academic environment. The subject matter for the course will come from such areas as the cultural histories and an analysis of contemporary conditions of Native societies in Canada.

NS 105 Cree Language Challenge

★3 (fi 6) (either term, unassigned). This is an exam only course open to fluent speakers of the Cree language. Credit: Pass/Fail.

NS 152 Introductory Cree

★6 (fi 12) (two term, 4-0-1). A general introduction to Plains Cree (Y dialect) grammar and vocabulary, with practice in speaking and work in the language laboratory. No prior knowledge of Cree is assumed. Not open to students with matriculation standing in Cree. Note: Students cannot receive credit for NS 152 and NS 153.

NS 153 Introduction to the Structure of the Cree Language for Cree Speakers

★3 (fi 6) (second term, 4-0-0). A course designed specifically for fluent speakers of Cree who require an introduction to the Pentland orthography writing system and formal training and practice with Cree grammatical structure. The focus is on literacy in the Plains Cree dialect. Note: Students cannot receive credit for NS 152 and NS 153. Prerequisite: NS 105.

NS 154 Introduction to a Dene Language I

★3 (fi 6) (first term, 4-0-1). A general introduction to a Dene language, grammar and vocabulary, with practice in speaking and work in the language laboratory. No prior knowledge of the language is assumed. Not open to students with matriculation standing in a Dene language.

NS 155 Introduction to a Dene Language II

★3 (fi 6) (second term, 4-0-1). A continuation of NS 154. Prerequisite: NS 154.

NS 200 Aboriginal Canada: Looking Forward/Looking Back

★3 (fi 6) (either term, 2-1s-0). For students from faculties outside the School of Native Studies with an interest in acquiring a basic familiarity with Aboriginal/non-Aboriginal relationships. Consists of a survey of historical and contemporary relationships between Aboriginal people and newcomers, with the aim of expanding the understandings held by many Canadians about these relationships. Not available to Native Studies students.

NS 210 Native Issues and Insights I

★3 (fi 6) (either term, 3-0-0). An overview of various background issues in Native Studies that continue to have a definite impact on the contemporary Canadian Aboriginal situation. The focus of the course will be from a Native Studies perspective and deal with issues such as Aboriginal rights, conditions regarding land claims, and colonialism.

NS 211 Native Issues and Insights II

★3 (fi 6) (either term, 3-0-0). An overview of various major issues facing Canadian aboriginal peoples and governments today, including a comparison with issues for indigenous peoples elsewhere. The focus of the course will be from a Native Studies perspective and deal with issues such as land, self-government, economic development, education, and health.

NS 240 Introduction to Aboriginal Legal Issues

★3 (fi 6) (either term, 3-0-0). This course is designed to give students an

introduction to the development of Native law in Canada. It examines the Canadian legal context for Aboriginal Law, identifies sources of Aboriginal law, discusses the Treaty and Aboriginal rights and the nature of the fiduciary obligations of the Crown to Aboriginal people.

NS 252 Intermediate Cree

★6 (*fi 12*) (two term, 3-0-1). Introduction to more complex grammatical structures; translation to and from Cree; reading of selected texts; oral practice, including conversation and work on individual projects. Prerequisite: NS 152 or 153.

NS 260 Contemporary Native Art

★3 (*fi 6*) (either term, 3-0-0). An introduction to the study of contemporary North American Native artists with emphasis on the philosophical and cultural statements made through their artistic expression. Special attention will be placed on living Canadian Native artists.

NS 280 Selected Topics in Native Studies

★3 (*fi 6*) (either term, 3-0-0).

NS 300 Traditional Cultural Foundations I

★3 (*fi 6*) (either term, 3-0-0). Introduces students to the diversity of North American Native peoples. Native traditions are treated as aspects of dynamic cultural systems that have enabled Native peoples to survive and thrive in the centuries prior to European arrival, to resist assimilation efforts, and to persist as culturally distinct peoples. Prerequisites: NS 210 and 211 or consent of the School.

NS 314 History of Indians of Western Canada

★3 (*fi 6*) (either term, 3-0-0). A survey of the evolution of Indian/European and Canadian relations in western Canada. Emphasis is on Indian historical perspectives and analyzing events and issues relevant to the various Indian groups of western Canada, including treaties and the history and development of reserves. Prerequisites: NS 210 and 211 or consent of the School.

NS 320 Aboriginal Governments and Politics

★3 (*fi 6*) (either term, 3-0-0). The description, analysis, and principles of various aboriginal governments will be examined. The relative merits of constitutional, legislative, and administrative options for realizing aboriginal self-government will be compared. A study of the international and Canadian examples of local and regional Aboriginal governments in practice will be an important focus of this course. Prerequisites: NS 210 and 211 or consent of the School.

NS 330 Native Economic Development

★3 (*fi 6*) (either term, 3-0-0). This course will review underlying factors which affect the economies of Native communities and examine different approaches to Native Economic development, including community, corporate and entrepreneurial business approaches. The Native perspective to Native Economic Development will be a principal theme. The objective of the course will be to assess approaches to the identification, planning, and implementation of economic development strategies for Native communities. Prerequisites: NS 210 and 211 or consent of the School.

NS 335 Native People and the Fur Trade

★3 (*fi 6*) (either term, 1-2s-0). Perspectives on the economic, cultural and geographical aspects of the Native fur trade, with an emphasis on the subarctic fur trade between 1670 and 1870, will be explored and examined critically. The influence of the changing relationships between Aboriginal peoples and mercantile trading interests will be assessed through lectures and seminars. Prerequisites: Any ★6 from NS 210, 211, 314, HIST 368 and 369, or consent of the School.

NS 340 Aboriginal Legal Issues

★3 (*fi 6*) (either term, 3-0-0). A general and critical overview of the legal issues affecting Native people, with particular reference to Alberta and the NWT. Special attention is given to the Constitutional Act of Canada, selected federal and provincial legislation, treaties, and major court cases to introduce current application of Native law. Prerequisites: NS 210 or 211, and NS 240 or consent of the School.

NS 345 Management Issues in Native Communities

★3 (*fi 6*) (either term, 3-0-0). The course introduces the major management issues commonly faced by contemporary Native community, public administration, and business organizations as a result of their unique cultural, social, economic, demographic, and political environment. Students will acquire an orientation to the management process and to modern management theory and practices. In addition, opportunities will be made to develop and practice the managerial skills involved in diagnosis, analysis and resolution of management issues frequently encountered in Native organizations. Prerequisites: NS 210 and 211 or consent of the School.

NS 352 Advanced Cree

★6 (*fi 12*) (two term, 3-0-1). An intensive course designed to enable students to acquire considerable facility both in oral communication and in writing, employing both Roman and syllabic orthography. Prerequisite: NS 252.

NS 355 Native Oral Traditions and Indigenous Knowledge

★3 (*fi 6*) (either term, 3-0-0). This course considers oral traditions as aspects of broader, culturally-defined systems of knowledge, in which stories are vehicles for encoding and transmitting knowledge about the people, their culture, and

their history. It focuses on new academic and community-based approaches, as well as the complementarity of oral traditions/indigenous knowledge and Western science. Students will explore the evolving roles of oral traditions for contemporary Native peoples. Prerequisites: NS 210 and 211 or consent of the School.

NS 370 The Métis: The Emergence of a People

★3 (*fi 6*) (either term, 3-0-0). An examination of the factors responsible for the emergence of Métis communities in different areas at different times, with the emphasis on Canada. The development of Métis people together with lifestyles that serve to distinguish them from others will receive much attention. Where applicable, comparisons with similar experiences elsewhere in the world will be made. Prerequisites: NS 210 and 211 or consent of the School.

NS 372 Metis Politics

★3 (*fi 6*) (either term, 0-3s-0). An examination of various Metis political debates: identity, recognition, nationalism, political organizing, self governance structures, constitutionalization of rights, and theories of Indigenous politics. Prerequisite: NS 210 and 211 or consent of the School.

NS 375 Native Health Issues

★3 (*fi 6*) (either term, 3-0-0). This course is designed to introduce students to selected contemporary health care issues in Alberta Métis and Indian communities. A description of the existing health status of these populations will facilitate exploration of socio-economic issues of disease prevention, illness treatment and health promotion. Concepts of health, illness and disease from several points of view will provide a foundation for discussion of issues associated with Native control of health care planning delivery. Prerequisites: NS 210 and 211 or consent of the School.

NS 380 Selected Topics in Native Studies

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: NS 210 and 211 or consent of the School.

NS 381 Selected Topics in International Indigenous Studies

★3 (*fi 6*) (either term, 3-0-0). Prerequisites: NS 210 and 211 or consent of the School.

NS 390 Community Research Methods

★3 (*fi 6*) (either term, 3-0-0). An introduction to the basic concepts, principles, and issues in the area of community research. The objective of the course is to both apply and critique a range of research methods and to describe different facets of a community. Research methods, particularly in relation to the oral traditions of Indigenous peoples, will be a focus of the course. Prerequisites: NS 210 and 211 and one other 300-level NS course.

NS 400 Traditional Cultural Foundations II

★3 (*fi 6*) (either term, 3-0-0). Uses case studies to examine the dynamic qualities of North American Native cultures and societies. Some have maintained their unique identities over time, while experiencing often-considerable culture change as they have coped with new circumstances, both positive and negative. Others have emerged as new socio-cultural entities. These dynamics operate at multiple levels, from that of the individual to those of larger cultural and social entities. Students will consider ways in which Native peoples are drawing upon earlier cultural forms in creative ways to meet modern needs. Prerequisite: NS 300 or consent of the School.

NS 403 Selected Topics in Native Studies

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: One 300-level course or consent of the School.

NS 404 Selected Topics in Native Studies

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: One 300-level course or consent of the School.

NS 405 Selected Topics in International Indigenous Studies

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: One 300-level course or consent of the School.

NS 420 Negotiation Strategies

★3 (*fi 6*) (either term, 3-0-0). An exploration of the theory and practice of negotiation and mediation from different perspectives, including perspectives from the dominant society and indigenous peoples. The strategies of litigation, and coercion to overcome conflict and achieve settlements of disputes will also be examined. These negotiation theories will then be applied to concrete dispute situations in Canada, including multi-party disputes over land, governance, development of resources and the environment. This course will be taught in a seminar format. Prerequisite: NS 320 or 340 or consent of the School.

NS 430 Native Land Use Research and Planning

★3 (*fi 6*) (either term, 3-0-0). This course will approach land use research and planning as it applies specifically to traditional Native land use. Two perspectives will be considered. Native land use research will be examined to demonstrate land use and occupancy to support Native land claims. Planning the use of Native lands and resources by incorporating traditional and contemporary usage and management methods into land use plans will be the second thrust. Included in the course are the land claims process; control of land and management of resources; land use planning in the context of Native self-government; and the roles of resource development and the traditional sector of Native economies.

Issues such as Native participation in the co-management of resources affecting traditional Native lands and economies, the cultural applications of land use research and indigenous values, and practices of land use will also be covered. Prerequisite: One 300-level course or consent of the School.

NS 435 Management of Aboriginal Natural Resources

★3 (fi 6) (either term, 3-0-0). The application of knowledge of resource management to the traditional Native economic activities, especially hunting, fishing and trapping. Conservation problems which developed with the spread of the commercial economy will be analyzed by examining Aboriginal and European approaches to resource management. The use of conservation to rationalize the re-allocation of traditional resources are examined. Prerequisite: Any ★6 in EAS 290, 291, ENCS 201 or 260, and one 300-level NS course or consent of the School.

NS 440 Indigenous Treaties and Agreements

★3 (fi 6) (either term, 0-3s-0). An exploration of the historical and contemporary issues associated with treaties. Pre- and post-1867 Indian treaties and modern agreements in Canada will be examined. Prerequisite: One 300-level NS course or consent of the School.

NS 441 Indigenous Land Claims and Agreements

★3 (fi 6) (either term, 0-3s-0). An exploration of the historical and contemporary issues associated with indigenous land claims agreements. The background negotiations, and implementation of modern agreements in Canada will be the focus of this course. Recommend that NS 440 be taken. Prerequisite: One 300-level NS course or consent of the School.

NS 442 The Criminal Justice System and Aboriginal People

★3 (fi 6) (either term, 0-3s-0). Focuses on pertinent aspects of the Canadian criminal justice process as it relates to the experiences of Aboriginal people. In particular, issues pertaining to historical and emerging trends such as restorative justice and 'native prisons' are explored and critically analyzed, both in terms of how the justice process functioned historically, as well as its links to contemporary social relations such as the state, the media and the military, but also the powerful role played by racism and discrimination in shaping Aboriginal experiences with the criminal justice process. Prerequisites: ★3 at the 300-level, as well as NS 210 and 211 (or consent of the School).

NS 445 Community Development Processes

★3 (fi 6) (either term, 3-0-0). In a seminar, students will identify, analyze and integrate community development philosophy, principles and practice. The relevance of traditional community development models to Native communities will be critically examined in light of the recent experiences of Native communities themselves. Prerequisite: one 300-level course (NS 330 or NS 345 recommended).

NS 450 Practicum in Native Studies

★3 (fi 6) (either term, unassigned). A supervised work-based experience that will permit students to apply Native Studies knowledge in a professional context thereby gaining an appreciation of the work environment. Prerequisites: NS 390 and permission of the School.

NS 485 Urban Aboriginal Issues and Identities

★3 (fi 6) (either term, 0-3s-0). Critically examines some of the core issues facing Aboriginal people living in Canada's cities, with a particular emphasis on how these issues affect the ways that urban Aboriginal communities are governed municipally, provincially and federally, as well as how they form their own self government institutions in urban areas. Prerequisites: ★3 at the 300-level, as well as NS 210 and 211 (or consent of the School).

NS 490 Community-Based Research

★3 (fi 6) (either term, 0-3s-0). A seminar exploring the issues in the area of community-based research. The course will be organized primarily around the examination of case studies. Methodological concerns will focus on the political, cultural, ethical, and practical aspects of conducting community-based research in conjunction with Native groups and communities. Prerequisite: NS 390.

NS 499 Research Project

★3 (fi 6) (either term, 0-0-3). The research project is designed to provide students with a variety of options for carrying out their own research. The specific route taken will depend upon the resources of the School, opportunities available in the community, and the skills of the student. While the program is intended to be flexible, the main route around which students may design their projects will be research conducted in conjunction with a local native organization. Prerequisite: consent of the School of Native Studies. Normally consent will not be given without credit in NS 390.

NS 520 Honors Paper (or Project)

★6 (fi 12) (two term, 0-3s-0). For students in the Honors program in Native Studies in their final year.

Graduate Courses

NS 503 Directed Readings in Native Studies

★3 (fi 6) (either term, 0-3s-0).

NS 504 Directed Advanced Readings in Native Studies

★3 (fi 6) (either term, 0-3s-0). Prerequisite: NS 503 or consent of the School.

NS 599 Selected Research Topics in Native Studies

★3 (fi 6) (either term, 0-3s-0).

221.156 Neuroscience, NEURO

Faculty of Medicine and Dentistry

Note: Additional courses in Neuroscience are offered by members of the Centre for Neuroscience through individual departments such as Cell Biology, Pharmacology, Physiology, Psychiatry, Psychology, Surgery, and Zoology.

Undergraduate Courses

NEURO 410 Neurobiology of Aging and Neurodegenerative Disorders

★3 (fi 6) (second term, 3-0-0). Designed to provide senior undergraduate and graduate students in the Neuroscience program a comprehensive overview of the neurobiology of normal aging and neurodegenerative disorders. Both clinical and basic science aspects of major neurodegenerative disorders such as Alzheimer's disease, Parkinson's disease, Huntington disease, Prion disease and Motor neuron disease (ALS) will be covered. Video presentations of patients with neurodegenerative disorders will be presented to add clinical and psychological dimensions. Additionally, recent papers reporting new developments in each of the above disorders will be discussed. Invited lectures will be given by national/international experts on aspects of neurodegenerative disorders to amplify topics covered in the course. Prerequisites: PMCOL 371.

NEURO 443 Neuroendocrine Concepts

★3 (fi 6) (first term, 3-0-0). Regulation within the neuroendocrine system. Conceptual consideration of the diffuse neuroendocrine system, hypothalamopituitary interactions, neural integration, signal inactivation, feedback control, differential regulation, neurosteroids and hormones and behavior. Prerequisite: PHYSL 210 or equivalent, or PHYSL 371 or consent of instructor.

NEURO 450 Readings on Selected Topics in Neuroscience

★3 (fi 6) (either term, 3-0-0). An individual study course involving detailed reading on a selected topic in cellular, molecular, systems, or cognitive neuroscience. Students will select a member of the Centre for Neuroscience who will guide them through a course of reading on a specialized topic at an advanced level. Completion of this course requires an oral presentation to an examining committee. Restricted to students in the Honors program in Neuroscience. Prerequisites: PMCOL 371, PHYSL 372.

NEURO 451 Honors Research Project in Neuroscience

★3 (fi 6) (first term, 0-0-3). Research project involving laboratory experimentation done under the supervision of a member of the Centre for Neuroscience. Laboratory projects may involve current topics and methodologies encountered in specific areas of cellular, molecular, systems, or cognitive neuroscience. Completion of this course requires a written report of the project and an oral presentation to an examining committee. Restricted to students in the Honors program in Neuroscience. Prerequisites: PMCOL 371, PHYSL 372.

NEURO 452 Honors Research Project in Neuroscience

★3 (fi 6) (second term, 0-0-3). Research project involving laboratory experimentation done under the supervision of a member of the Centre for Neuroscience. Laboratory projects may involve current topics and methodologies encountered in specific areas of cellular, molecular, systems, or cognitive neuroscience. Completion of this course requires a written report of the project and an oral presentation to an examining committee at the end of the course. Restricted to students in the Honors program in Neuroscience. Prerequisites: PMCOL 371, PHYSL 372.

NEURO 472 Autonomic Nervous System

★3 (fi 6) (either term, 3-0-0). Lectures presented by members of the Centre for Neuroscience on neurophysiological, anatomical, clinical, pharmacological and cellular aspects of the autonomic nervous system. Topics include neural regulation of homeostasis and reproduction, disorders of autonomic function, sympathetically maintained pain, effects of spinal cord injury and current research issues. Prerequisites: PHYSL 210 or 211 or ZOOL 241 or equivalent and PMCOL 371 or 342 and/or consent of the course coordinator.

Graduate Courses

NEURO 500 Research in Neuroscience

★6 (fi 12) (two term, 0-0-6). A practical course in the neurosciences where students spend two months in each of at least three research laboratories approved by the Centre for Neuroscience Graduate Committee. Students are expected to complete a small research project, supervised by a member of the Centre, in each of the research areas chosen. Students are evaluated on both their performance in the laboratory and reports written. Prerequisite: consent of the Centre for Neuroscience. Credit may be obtained for only one of either NEURO 500 or NEURO 501.

NEURO 501 Graduate Research Project

★3 (fi 6) (either term, 0-0-6). Individual study. Restricted to students in the

Neuroscience Graduate Program. Students will spend one term in the laboratory of a faculty member (other than the supervisor) and carry out a laboratory research project. Successful completion of a written report and an oral presentation is required at the conclusion of the project. Prerequisite: consent of the Centre for Neuroscience. Credit may be obtained for only one of either NEURO 500 or NEURO 501.

NEURO 572 Current Topics in Autonomic Neuroscience

★3 (fi 6) (either term, 3-0-0). The neurophysiological, anatomical, clinical, pharmacological and cellular aspects of the autonomic nervous system will be studied. Students will also be expected to deliver a lecture-type presentation and an extensive written report on one aspect of autonomic function such as neural regulation of homeostasis, disorders of autonomic function, sympathetically maintained pain, autonomic consequences of spinal cord injury and current research issues. Note that credit is given for either NEURO 472 or 572, not for both. Prerequisite: Consent of the Centre for Neuroscience.

NEURO 603 Graduate Colloquium in Neuroscience

★3 (fi 6) (second term, 0-2s-0). Graduate students present review seminars or lead discussions based on required readings in the neurosciences. Coordinated by a member of the Centre for Neuroscience. Centre members are invited to attend. Graded on a pass/fail basis.

221.157 Norwegian, NORW

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 Norwegian language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course more suitable to their level of ability. 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 Scandinavian (SCAND) listings.

Undergraduate Courses

📄 NORW 111 Beginners' Norwegian I

★3 (fi 6) (either term, 5-0-0). Designed to give basic practical skill in everyday spoken and written Norwegian. The oral approach, using the laboratory, is followed. Note: not to be taken by students with credit in NORW 100, or with native or near native proficiency, or with Norwegian 30 or its equivalents in Canada and other countries.

📄 NORW 112 Beginners' Norwegian II

★3 (fi 6) (either term, 5-0-0). Prerequisite: NORW 111 or consent of Department. Note: not to be taken by students with credit in NORW 100, or with native or near native proficiency, or with Norwegian 30 or its equivalents in Canada and other countries.

📄 NORW 211 Second-Year Norwegian I

★3 (fi 6) (either term, 4-0-0). Reading and study of selected texts in Norwegian literature and culture. Conversation and composition. Prerequisite: Norwegian 30 (or equivalent) or NORW 112 or consent of Department. Note: not to be taken by students with credit in NORW 200.

📄 NORW 212 Second-Year Norwegian II

★3 (fi 6) (either term, 4-0-0). Prerequisite: NORW 211 or consent of Department. Note: not to be taken by students with credit in NORW 200.

221.158 Nursing, NURS

Faculty of Nursing

Undergraduate Courses

NURS 111 Anatomy

★3 (fi 6) (first term, 3-0-0). Introduction to the structure of the human body. Must be completed prior to the second term of studies. Note: NURS 140 and NURS 111 may not both be taken for credit. Course is for After Degree Nursing Program students only.

NURS 112 Physiology

★3 (fi 6) (first term, 3-0-0). Introduction to human physiology. Must be completed prior to the second term of the first year of studies. Note: NURS 150 and NURS 112 may not both be taken for credit. Course is for After Degree Nursing Program students only.

NURS 113 Physiology

★3 (fi 6) (second term, 3-0-0). Continuation of the study of human physiology. Must be completed prior to Spring/Summer of the first year of studies. Prerequisites: NURS 111 and 112. Note: NURS 151 and NURS 113 may not both be taken for credit. Course is for After Degree Nursing Program students only.

NURS 140 Anatomy

★3 (fi 6) (first term, 3-0-0). Introduction to the structure of the human body. Must be completed prior to year 2 of the Nursing program.

NURS 150 Physiology

★4 (fi 8) (first term, 4-0-0). An introduction to human physiology. Available only to Nursing students. Must be completed prior to year 2 of the Nursing program.

NURS 151 Physiology

★2 (fi 4) (two term, 1-0-0). Continuation of the study of human physiology. Available only to Nursing students. Must be completed prior to year 3 of the Nursing program.

NURS 190 Nursing in Context A

★5 (fi 10) (first term, 1.5-6s-3 in 6 weeks). Introduction to the professional discipline of nursing, communication theory, and context-based learning. The primary health care emphasis is on health promotion and disease prevention across the life span. Restoration and rehabilitation are introduced. Health assessment and basic nursing skills are introduced.

NURS 191 Nursing Practice I

★5 (fi 10) (second term, 0-4s-21c in 7 weeks). Beginning nursing practice with a focus on health promotion and interaction with clients across the life span in a variety of non-traditional settings. Prerequisites: NURS 190 and 194.

NURS 192 Transition to Professional Nursing I

★5 (fi 10) (first term, 1.5-6s-3 in 6 weeks). Introduction to the professional discipline of nursing, context based learning and selected nursing skills. Primary health care and a focus on health promotion and injury/disease prevention for individuals and families across the lifespan will be included. Note: available to students in the LPN Stream of the BScN Collaborative Program only.

NURS 193 Transition to Professional Practice

★6 (fi 12) (first term, 0-3s-24c in 7 weeks). Practice focuses on health promotion and injury/disease prevention of individual clients across the lifespan within the context of their families and occurs in non-traditional settings. Medication administration experience will be available as required. Pre-requisite: NURS 192. Note: Available to students in the LPN Stream of the BScN Collaborative Program only.

NURS 194 Nursing in Context A1

★5 (fi 10) (first term, 1.5-6s-3 in 6 weeks). A continuation of the study of concepts introduced in NURS 190 with a focus on teaching and learning principles and increased health assessment and basic nursing skills. Prerequisite: NURS 190.

NURS 195 Nursing Practice II

★6 (fi 12) (second term, 0-3s-24c in 7 weeks). Practice includes health status assessment of clients and appropriate health promotion and disease prevention interventions. Practice occurs in settings where clients live or in community agencies (non-acute) where services to clients are offered. Prerequisites: NURS 190 and 194.

NURS 215 Pharmacotherapeutics in Nursing

★3 (fi 6) (second term, 3-0-0). Focuses on the mechanisms of action of drugs, their therapeutic uses and side effect profile. General principles related to drug absorption, distribution, metabolism and excretion will be addressed. The nursing role in promoting optimal therapeutic regimens and in the management of side/adverse effects will be included. Course is for After Degree Nursing Program, Post-RPN Program, LPN Stream of the BScN - Collaborative Program, and for Bilingual Nursing Program Students only. Co-requisites for students in the LPN Stream of the BScN - Collaborative Program: NURS 292 and 295.

NURS 290 Nursing in Context B

★5 (fi 10) (first term, 1.5-6s-3 in 6 weeks). Within the context of primary health care, the focus shifts to restoration, rehabilitation and support of clients experiencing chronic and less acute variances in health. Discussion related to health promotion and disease prevention continues. Intermediate health assessment and nursing skills are introduced. Prerequisites: NURS 140, 150, 190, 191, 194, 195, and MMI 133.

NURS 291 Nursing Practice III

★7 (fi 14) (either term, 0-3s-28c in 7 weeks). Practice focuses on restoration, rehabilitation and support (including health promotion and disease prevention) of clients with chronic and less acute variances in health across the life span. Practice occurs primarily in primary-level acute care centres and continuing care agencies. (See Note at end of section.) Prerequisites: NURS 140, 150, 190, 191, 194, 195, and MMI 133. Pre- or corequisite: NURS 290.

NURS 292 Transition to Professional Nursing II

★5 (*fi 10*) (second term, 1.5-6s-3 in 6 weeks). A continuation of the study of concepts introduced in NURS 192. Scenarios will focus on community, the expectant family, the well child, and mental health. Selected laboratory skills will be included. Pre-requisites: NURS 193 and MMI 133. Note: Available to students in the LPN Stream of the BScN Collaborative Program only.

NURS 294 Nursing in Context B1

★5 (*fi 10*) (second term, 1.5-6s-3 in 6 weeks). Continuation of NURS 290 with increasing situational complexity. Prerequisites: NURS 290, (NURS 291 or 295).

NURS 295 Nursing Practice IV

★7 (*fi 14*) (either term, 0-3s-28c in 7 weeks; 0-1.5s-15c). Practice focuses on restoration, rehabilitation and support (including health promotion and disease prevention) of clients with chronic and less acute variances in health across the life span. Practice occurs in homes or in community-based settings. Prerequisites: NURS 140, 150, 190, 191, 194, 195 and MMI 133. Pre- or corequisite: NURS 290.

NURS 301 Nursing Research

★3 (*fi 6*) (either term, 3-0-0 ; 6-0-0 in 7 weeks). Introduction to the process of research through a comparative analysis of selected studies exemplifying different theoretical, methodological, and analytical approaches. Emphasis is on the communicability of research, the needs of the research consumer, and the development of skills of critical appraisal. Prerequisite: Statistics elective. Note: (NURS 301 and STAT [★3]) and (NURS 397 and 497) may not both be taken for credit.

NURS 306 Nursing and Health Assessment

★6 (*fi 12*) (first term, 3-2s-3). Focus is on nursing as a discipline and the health assessment of the well adult, with modifications for age across the lifespan. The course provides a beginning foundation of assessment skills and techniques necessary for determining client health status including the principles of communication and of teaching and learning. Course content will be addressed within the context of a nursing framework and primary health care. Lifestyle, personal health practices, and health promotion are included. Pre or Corequisites for After Degree students NURS 111 and NURS 112. Corequisites for Bilingual Program students: NURS 217, 218 and MICRE 133. Prerequisites Bilingual Program students: ANATE 140, PHYSE 152, Note: Course is for After Degree Nursing Program and Bilingual Nursing Program students only.

NURS 307 Acute Care Nursing I

★6 (*fi 12*) (second term, 2-4s-2). The primary focus is the theoretical foundation for the client-centred care of adults and elderly clients and their families experiencing variations in health (acute and chronic illnesses). Comprehensive assessment and best practice

interventions are addressed within the context of a primary health care framework and a nursing model. Corequisites for After Degree students: NURS 113, 215 and 308. Prerequisites for After Degree students: NURS 111, 112, 306. Corequisites for Post-RPN students: NURS 215, 308 and MMI 133. Prerequisites for Post-RPN students: NURS 468. Corequisites for Bilingual Program students: NURS 215 and 308. Prerequisites for Bilingual Program students: SC INF 217, 218, NURS 306, and MICRE 133. Note: Course is for After Degree Nursing Program, Post-RPN Program, and Bilingual Nursing Program students only.

NURS 308 Acute Care Nursing Practice I

★6 (*fi 12*) (second term, 0-0-16c). The primary focus is the application of theory in the client-centred care of hospitalised adults and elderly clients and their families experiencing variations in health (acute and chronic illnesses). Practice occurs primarily in primary, secondary and tertiary acute care settings. Corequisites for After Degree students: NURS 113, 215 and 307. Prerequisites for After Degree students: NURS 111, 112, and 306 and MMI 133. Corequisites for Post-RPN students: NURS 215 and 307. Prerequisites for Post-RPN students: NURS 468. Corequisites for Bilingual Program students: NURS 215 and 307. Prerequisites for Bilingual Program students: SC INF 217, 218, NURS 306, and MICRE 133. Note: Course is for After Degree Nursing Program, Post RPN Program, and for Bilingual Nursing Program students only.

NURS 309 Mental Health Nursing

★6 (*fi 12*) (first term or Spring/Summer, 2-4s-2; 5-10s-5 in 4 weeks). Focus is on theory related to the promotion of mental health and the nursing care of people with acute and chronic alterations in mental health. Corequisite: NURS 310. Prerequisites for After Degree students: NURS 113, 215, 307, and 308. Prerequisites for Bilingual Program students: NURS 407 and 408. Note: Course is for After Degree Nursing Program and Bilingual Nursing Program students only.

NURS 310 Mental Health Nursing Practice

★6 (*fi 12*) (first term or Spring/Summer, 0-0-16c; 0-0-35c in 4 weeks). Students will have opportunity to apply concepts of mental health nursing to the care of individuals experiencing acute and chronic alterations in mental health in hospital or community settings. Corequisite: NURS 309. Prerequisites for After Degree students: NURS 113, 215, 307, and 308. Prerequisites for Bilingual Program students: NURS 407 and 408. Note: Course is for After Degree Nursing Program and Bilingual Nursing Program students only.

NURS 390 Nursing in Context C

★5 (*fi 10*) (first term, 1.5-6s-3 in 6 weeks). Within the context of primary health care focus is on restoration, rehabilitation and support of clients experiencing

more acute variances in health. Discussion related to health promotion and disease prevention continues. Advanced health assessment and nursing skills are introduced. Prerequisites: NURS 151, 291, 294, 295.

NURS 391 Nursing Practice V

★7 (*fi 14*) (either term, 0-3s-28c in 7 weeks). Practice focuses on restoration, rehabilitation, and support (including health promotion and disease prevention) of clients experiencing more acute variances in health across the life-span. Practice occurs in primary-, secondary-, and tertiary-level acute care settings. Prerequisites: NURS 151, 291, 294, 295. Pre- or corequisite: NURS 390.

NURS 394 Nursing in Context C1

★5 (*fi 10*) (either term, 1.5-6s-3 in 6 weeks). Continuation of NURS 390 with increasing situational complexity. Prerequisites: NURS 151, 390, (391 or 395).

NURS 395 Nursing Practice VI

★7 (*fi 14*) (either term, 0-3s-28c in 7 weeks). Practice focuses on restoration, rehabilitation and support (including health promotion and disease prevention) of clients across the life-span who are experiencing more acute variances in health. Practice occurs in homes, acute care settings, or in community-based settings. Prerequisites: NURS 151, 291, 294, 295. Pre- or corequisite: NURS 390.

NURS 397 Nursing Research and Statistics I

★2 (*fi 4*) (first term, 2-1.5s-0.5 in 7 weeks). Introduction to the process of research through critical appraisals of selected quantitative and qualitative studies. Emphasis is on understanding the research process and knowing how to critically read, analyze, and begin to apply the knowledge gained from research in practice. Focus is on the planning phase of the research process and descriptive statistics. Corequisite: NURS 390. Note: (NURS 397 and 497), and (NURS 301 and STAT [★3]) may not both be taken for credit.

NURS 405 Community Nursing Theory

★6 (*fi 12*) (first term, 2-4s-2). Focus is on the philosophical and theoretical domains of nursing individuals, families and groups in the community across the lifespan. Students will also specifically explore theory related to the nursing care of the child-bearing family. Community nursing management and intervention consistent with the principles of primary health care will be explored and fostered. Corequisite: NURS 406 or SC INF 406. Prerequisites for After Degree students: NURS 309 and 310. Prerequisites for Post-RPN and for Bilingual Nursing Program students: NURS 215, 307 and 308. Note: Course is for After Degree Nursing Program, Post-RPN Program and Bilingual Nursing Program students only.

NURS 406 Community Nursing Practice

★6 (*fi 12*) (first term, 0-0-16c). Students will have the opportunity to apply concepts of community health nursing. Nursing practice will include health assessment and interventions with child-bearing families. Students will develop competence in both family and community assessments, the use of therapeutic communication skills and the planning, implementation and evaluation of community nursing interventions. Corequisite: NURS 405. Prerequisites for After Degree students: NURS 309 and 310. Prerequisite for Post-RPN students: NURS 215, 307 and 308. Note: Course is for After Degree Nursing Program and Post- RPN Program students only.

NURS 407 Acute Care Theory II

★6 (*fi 12*) (second term, 2-4s-2). A comprehensive approach to primary health care components in the care of clients in complex situations locally, nationally, and internationally. High acuity health assessments and interventions are introduced. Case management, interdisciplinary collaboration, community development, and sociopolitical action are emphasized. Corequisite: NURS 408. Prerequisites: NURS 405 and 406. Note: Course is for After Degree Nursing Program, Post-RPN Program, and Bilingual Nursing Program students only.

NURS 408 Acute Care Practice II

★6 (*fi 12*) (second term, 0-0-16c). Professional nursing practice focuses on a comprehensive application of primary health care principles to clients experiencing acute variances in health across the life span. Practice occurs in primary, secondary and tertiary level acute care settings. Corequisite: NURS 407. Prerequisites for After Degree and Post-RPN students: NURS 405 and 406. Prerequisites for Bilingual Nursing Program students: NURS 405 and SC INF 406. Note: Course is for After Degree Nursing Program, Post-RPN Program, and Bilingual Nursing Program students only.

NURS 409 Leadership and Issues in Nursing

★3 (*fi 6*) (either term, 0-3s-0). Using the primary health care framework, a variety of current professional, social, political and global issues affecting the nursing profession and the Canadian health care system will be addressed. Key principles of leadership and management will also be addressed within the context of these issues. Corequisites for After Degree, Post RPN, and Bilingual Program students: NURS 407. Prerequisites for After Degree, Post RPN students: NURS 405 and 406. Prerequisites for Bilingual Nursing Program students: NURS 405 and SC INF 406.

NURS 415 Community Nursing for Post-RN Students

★5 (*fi 10*) (either term, 0-6s-3 in 7 weeks; 0-3s-3/2). Focus is on concepts related to family and community health. Community nursing management and interventions consistent with the principles of primary health care will be examined. Note: Formerly NURS 315. Not open to students with credit in NURS 315.

NURS 440 Nursing in the Global Community

★3 (fi 6) (first term, 0-3s-0). An exploration of health, primary health care, health systems, healthcare policy, and the role of nurses in a global context. Normally, this course is a prerequisite for students selecting International Nursing for NURS 494 and NURS 495.

NURS 461 Nursing Practice VII, Internship Route

★7 (fi 14) (Spring/Summer, 0-1s-34c in 10 weeks). During a Spring/Summer placement of 10 weeks in a sponsoring agency, the student will manage and care for clients in ambiguous, complex situations. Prerequisites: NURS 390, 391, 394, 395 and 397 or 301. Consent of the Faculty is also required.

NURS 468 Health Assessment

★4 (fi 8) (either term, 3-0-3). Focus is on the health assessment of the well adult, with normal aging modifications. The course provides a beginning foundation of assessment skills and technologies necessary for determining client health status within the context of a nursing framework. Factors influencing lifestyles and personal health practices are included. For Post-RN Program and Post RPN Program, students only. Note: Formerly NURS 368. Not open to students with credit in NURS 368.

NURS 470 Nursing in Complex Situations

★5 (fi 10) (either term, 0-6s-3 in 7 weeks; 0-3s-3/2). Nursing of aggregates and communities within the context of primary health care and international/intercultural care are discussed. Concepts of case management, interprofessional teamwork and the role of the nurse as manager are also addressed. Course is for Post RN program students only. Pre- or Co-requisite: NURS 415.

NURS 475 Community Practice for Post-RNs

★7 (fi 14) (either term, 0-3s-28c in 7 weeks; 0-1.5s-15c). Nursing practice focuses on health promotion and disease prevention of clients across the life-span. Practice occurs in homes or community-based settings. Pre- or corequisite: NURS 415. Note: Formerly NURS 385. Not open to students with credit in NURS 385.

NURS 490 Nursing in Context D

★5 (fi 10) (either term, 1.5-6s-3 in 6 weeks; 1-3s-3/2). A comprehensive approach to primary health care components in the care of clients in complex, ambiguous situations. Case management and multidisciplinary leadership skills are emphasized. Students may have the opportunity to lead a multidisciplinary student group. Prerequisites: NURS 391, 394, 395.

NURS 491 Nursing Practice VII

★7 (fi 14) (either term, 0-3s-28c in 7 weeks). Management and care of clients in ambiguous, complex, situations occurring over a variety of settings. Pre- or corequisite: NURS 490. Prerequisite, NURS 391, 394 and 395.

NURS 492 Nursing Practice VII for Post RN Students

★7 (fi 14) (either term, 0-3s-28c in 7 weeks; 0-1.5s-15c). Comprehensive approach to professional practice of nursing in an area of special interest to the student. Pre- or corequisite: NURS 415. Note: Course is for Post RN students only.

NURS 494 Nursing in Context D1

★3 (fi 6) (either term, 0-7s-3 in 4 weeks). Synthesis and focus of nursing knowledge and application of nursing research in a specified area of practice. To be permitted to enroll in this course, students must have passed all courses of their nursing program, except the co-requisite NURS 495, or SC INF 495.

NURS 495 Nursing Practice VIII

★9 (fi 18) (either term, 0-1s-34c in 10 weeks). Comprehensive and consolidated approach to professional practice of nursing. Co-requisite: NURS 494. Note: Course is for Collaborative Program, After Degree Program and Post-RPN Program students only.

NURS 497 Nursing Research and Statistics II

★4 (fi 8) (either term, 2-5s-1 in 6 weeks). Students continue to develop their skills to critically read, analyze, and begin to use knowledge gained from research in their practice. Building on the knowledge from NURS 397, this course focuses on understanding the implementation phase of research and inferential statistics. Students also examine trends and issues in developing evidenced-based practice for the profession of nursing. Prerequisite: NURS 397. Corequisite: NURS 490. Note: (NURS 397 and 497), and (NURS 301 and STAT ★3I) may not both be taken for credit.

NURS 498 Special Study Nursing

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

Graduate Courses**NURS 502 Nature and Development of Nursing Knowledge**

★3 (fi 6) (either term, 0-3s-0). Enquiry into the nature, scope, and object of nursing knowledge; the distinct contribution of nursing art, philosophy, history, and science. Includes exploration of nursing theories/frameworks. Prerequisite: consent of Instructor.

NURS 503 Design and Conduct of Nursing Research

★3 (fi 6) (either term, 0-3s-1). Overview of research approaches to the investigation of nursing phenomena. The principles and process of quantitative and qualitative methods are emphasized. Opportunities are provided for critique and application

of the research process. Pre- or corequisite: graduate-level Statistics course (★3) and consent of Instructor.

NURS 504 Statistics in Nursing Research

★3 (fi 6) (either term, 0-3s-2). Focus is on the nature and characteristics of the most commonly used statistical techniques, their applicability to specific health care problems within the context of nursing, and the interpretation of results. Students will be given an opportunity to develop skills and knowledge in the use of computing software (SPSS) and to reinforce learning through assignments, including the analysis of data sets and discussion/critique of published nursing research.

NURS 510 Advanced Health Assessment and Applied Pathophysiology (Adult)

★4 (fi 8) (either term, 0-3s-6c). The focus of this course is on developing advanced assessment skills for diagnostic reasoning and clinical decision making in relation to common variations in the health status of adults. Students will focus on specialized assessment and applied pathophysiology in relation to specific adult populations. Opportunities to apply diagnostic reasoning skills and formulate clinical decisions required for the development of specific health care management strategies is provided through seminars, laboratory practice, and a clinical practicum in a range of health care settings.

NURS 512 Assessment for Community and Population Health

★4 (fi 8) (either term, 0-3s-6c). The focus of this course is nursing assessment of communities and other populations as a foundation for program planning in health promotion and disease prevention. The content includes use of data about community capacity, health status characteristics, and the causes and distribution of disease. Emphasis will be placed on a socio-environmental approach to health, including the social determinants of health and disease.

NURS 513 Advanced Health Assessment and Applied Pathophysiology (Child)

★4 (fi 8) (either term, 0-3s-6c). The focus of this course is to develop advanced assessment skills for diagnostic reasoning and clinical decision making in relation to health promotion and common variations in the health status of children from infancy to 16 years of age. Students will focus on specialized assessment and applied pathophysiology in relation to specific pediatric populations. The opportunity to apply diagnostic reasoning skills and formulate clinical decisions required for the development of specific health care management strategies is provided in a range of health care settings in which children and their families are the primary focus.

NURS 521 Advanced Perinatal Physiology and Physical Assessment

★4 (fi 8) (either term, 0-3s-6c). The focus of this course is to develop perinatal physiology knowledge and advanced assessment skills for applied diagnostic reasoning and clinical decision-making in relation to an in-depth understanding of neonatal physiology and common variations in the health status of neonates. Students will focus on specialised assessment, applied pathophysiology, and current therapeutics in relation to the critically ill neonate. In selected environments where neonates and their families are the primary focus, the opportunity is provided to develop and apply diagnostic reasoning skills then formulate clinical decisions required for the development of specific healthcare management strategies. Prerequisite: Consent of program director.

NURS 524 Advanced Neonatal Intensive Care Nursing

★4 (fi 8) (either term, 0-3s-6c). Students will have the opportunity to integrate theory from physiological and psychological perspectives and to learn advanced clinical skills through case-management of high-risk infants and their families. This will take place through a series of hands-on labs and seminars focusing on patient scenarios. Clinical placement will be in a Level III nursery with follow-up after discharge of the infant. Prerequisites: NURS 521 and pre- or co-requisite NURS 545 (preferably focused on child/neonate).

NURS 529 Advanced Neonatal Intensive Care Nursing Practicum

★6 (fi 12) (either term, 0-47c-0). During this practicum the students will acquire skill and experience in functioning in an advanced role under the preceptorship of selected nurses working in an expanded role and neonatologists. Prerequisite: NURS 521 and NURS 524.

NURS 531 Community Health: Practice and Research Perspectives

★3-4 (variable) (either term, variable). Concepts and research in health promotion and disease prevention in community settings will be addressed. Emphasis will be given to implications for multidisciplinary practice related to community development, program planning and evaluation, and knowledge utilization. Only MN students are eligible to register in the clinical practicum. Prerequisite for MN students: NURS 512.

NURS 532 Family Health and Wellness

★3 (fi 6) (either term, 0-3s-0). This course is focused on models of family health and related research. Both the health of families and the family's influence on health will be examined. Measurement and assessment issues will be discussed. Applications to nursing and other health-related disciplines will be explored. Co-taught by Faculty of Nursing and Department of Human Ecology.

NURS 535 Promoting Health-enhancing Public Policy

★3-4 (variable) (either term, variable). The policy process, including context,

strategies, and impact of policies on health. Emphasis on public policy related to the broad social determinants of health and approaches such as intersectoral collaboration, partnerships, coalitions, and public participation. Prerequisite: consent of Instructor.

NURS 542 Living with Chronicity: Issues and Concepts

★3 (fi 6) (either term, 0-3s-0). Students explore how persons with a chronic disease or disability and their families adapt to live with this disease or disability, how society influences that adaptation, and how that adaptation affects the integration of persons with a chronic disease or disability into society. Frameworks consistent with a health promotion perspective will also be examined.

NURS 545 Pharmacotherapeutics in Advanced Nursing Practice

★3 (fi 6) (either term, 0-3s-0). Graduate seminar on the principles of clinical pharmacology and their relevance to the promotion of health across the lifespan through advanced nursing practice. The psychotropics will be used as a model for the clinical application of these principles. Focus will be on the selection, prescription, and management of pharmacotherapy as adjunct to advanced nursing practice. Simulated and actual patient situations will be used to stimulate discussion and provide students with an opportunity to apply the basic principles of clinical pharmacology.

NURS 550 Professional Issues in Advanced Nursing Practice

★3 (fi 6) (either term, 0-3s-0). Advanced analysis of trends, problems and issues of the nursing profession, with emphasis on interdisciplinary and intersectoral components of the health care system and society. Prerequisite: consent of Instructor.

NURS 554 Leadership in Health and Nursing Services

★3 (fi 6) (either term, 0-3s-0). Theoretical concepts and research issues relative to leadership behavior in the health care system will be addressed as a basis for practice in senior position responsible for nursing services. Relevant leadership and administrative topics will be examined, including organization design, health services, integration, information and project management, fiscal accountability, consumer and stakeholder relations, and health policy development. Prerequisite: Undergraduate course in management or consent of Instructor.

NURS 556 Teaching in Nursing Practice

★3 (fi 6) (either term, 0-3s-0). The teaching and learning roles assumed by nurses and their learners in all nursing practice contexts are examined in this course. Utilizing reflection and critical thinking skills, students explore the theoretical dimensions of effective teaching and learning processes that are both deductive and inductive in nature. Regardless of the context or theoretical approach assumed for teaching and learning activities in nursing practice, the nature of the pedagogical relationship between the teacher and the learner is a featured focus in the course. Each student ultimately examines the evidence for how to best facilitate learning in an area of nursing practice that is personally and professionally relevant.

NURS 560 Topics in Advanced Study in Nursing

★1-12 (variable) (either term, variable). An elective course aimed at developing in-depth knowledge regarding a topic(s) related to advanced-level nursing. Learning experiences may include clinical experience. Prerequisite: consent of Instructor.

NURS 561 Guided Individual Study in Nursing

★1-12 (variable) (either term, variable). A course designed for in-depth, individual study of a topic related to advanced-level nursing. Learning experiences may include clinical experience.

NURS 562 Special Topics in Nursing

★1-12 (variable) (two term, variable). An elective course aimed at developing in-depth knowledge regarding a special topic related to advanced-level nursing. Learning experiences may include clinical experience. Prerequisite: consent of Instructor.

NURS 565 Selected Topics in Individual Family Health Nursing (Adult)

★1-12 (variable) (either term, variable). Selected topics in a variety of advanced nursing practice specialty areas for case management of adults and their family in complex health care situations are emphasized. The role of the advanced practice nurse is examined from the perspective of assessing, managing, monitoring, coordinating, and evaluating health status over time. Sections with a practicum component provide opportunities to assist adults and their family within the context of the health care team. Prerequisite: consent of Instructor.

NURS 567 Selected Topics in Individual Family Health Nursing (Child)

★1-12 (variable) (either term, variable). Selected topics in a variety of advanced nursing practice specialty areas for case management of infants, children, and their family in complex health care situations are emphasized. The role of the advanced practice nurse is examined from the perspective of assessing, managing, monitoring, coordinating, and evaluating health status over time. Sections with a practicum component provide opportunities to assist infants, children, and their family within the context of the health care team. Prerequisite: consent of Instructor.

NURS 570 Advanced Therapeutics and Applied Pathophysiology - Adult

★4 (fi 8) (either term, 0-3s-6c). The focus of this course is acquisition of knowledge and skills essential for clinical decision making for management of the individual and their family in various health care situations. Opportunities are provided to implement and evaluate preventative and therapeutic interventions, as well as

health promotion strategies. Appropriate community, agency, and treatment resources that may assist in managing emergent to chronic health care situations are utilized. Prerequisite: NURS 510; pre- or corequisite NURS 545.

NURS 571 Advanced Therapeutics and Applied Pathophysiology - Child

★4 (fi 8) (either term, 0-3s-6c). The focus of this course is acquisition of the knowledge and skills essential for clinical decision making for the management of infants to children 16 years of age and their families in various health care situations. Opportunities are provided to implement and evaluate preventative and therapeutic interventions, as well as health promotion strategies. Appropriate community, agency, and treatment resources that may assist in managing emergent to chronic health care situations will be utilized. Prerequisite: NURS 513.

NURS 573 Advanced Practice in Mental Health/Psychiatric Nursing

★8 (fi 16) (either term, 0-6s-12c). The focus of this course is advanced practice in PMH nursing domains: helping role, diagnostic and monitoring function, administering and monitoring therapeutic interventions, management of rapidly changing situations, teaching-coaching functions, monitoring and ensuring the quality of health care practices, and organizational and work role competencies.

NURS 580 Advanced Theory and Practicum in Individual/Family Health Nursing (Adult)

★6 (fi 12) (either term, 0-2s-20c). The focus of this course is to provide a culminating practicum experience in the role of the advanced practice nurse in the student's selected specialty area. Integration of theory and research in relation to practice is facilitated by course seminars. Opportunity is provided to discuss issues relevant to the advanced nursing practice role. Prerequisite: NURS 570.

NURS 582 Advanced Theory and Practicum in Community/Public Health Nursing

★4 (fi 8) (either term, 0-2s-10c). The focus of this course is practice of advanced nursing skills in community/public health nursing with a selected population related to program and policy development, program evaluation, and/or knowledge utilization. Prerequisite: NURS 531.

NURS 583 Advanced Theory and Practicum in Mental Health/Psychiatric Nursing

★6 (fi 12) (either term, 0-2s-20c). In this course the student is supervised in assuming an advanced practice role in psychiatric and mental health nursing. Settings for practice may include mental health clinics, outpatient departments, psychiatric practices, specialized treatment programs, health centres, crisis teams. Prerequisite: NURS 573.

NURS 584 Advanced Theory and Practicum in Management

★6 (fi 12) (either term, 0-2s-20c). This practicum is designed to enhance contextual knowledge and skills relevant to leadership roles in the health system. Each student will be matched with a mentor who occupies a senior position in a health policy or delivery organization. Seminars will provide a forum for application of theory. Prerequisite: NURS 554 or equivalent.

NURS 586 Advanced Theory and Practicum for Teaching in Nursing Practice

★4 (fi 8) (either term, 0-2s-10c). This practicum is designed to enhance contextual knowledge and skills relevant to teaching roles in nursing practice which may focus on basic and continuing nursing education, patient education in particular, or health education in general. Based on what is both personally and professionally relevant, each student develops an individualized learning plan and is paired with a teaching preceptor in the area of nursing practice appropriate for the student learning goals. Seminars provide a forum to critically reflect about how teaching and learning can be effectively practiced in the various teaching practicum interests the students bring to the course.

NURS 599 Thesis Seminar

★1 (fi 2) (either term, 0-2s-0). Required for one academic year (two terms) of the Master of Nursing program. Prerequisite: consent of Instructor.

NURS 600 Theory Development in Nursing

★3 (fi 6) (either term, 0-3s-0). Exploration of influence and implications of various nursing models, paradigms, and conceptualizations of nursing practice on the development and structure of the discipline of nursing. Prerequisite: consent of Instructor.

NURS 610 Contemporary Views of Nursing Science

★3 (fi 6) (either term, 0-3s-0). Enquiry into contemporary philosophic views of the nature of nursing science including natural science, human science, practical science, interpretive, and postmodern views. Prerequisite: consent of Instructor.

NURS 660 Topics in PhD Studies in Nursing

★1-12 (variable) (either term, variable). A course aimed at developing in-depth knowledge regarding a topic(s) related to PhD-level nursing. Learning experiences may include clinical experience.

NURS 661 Guided Individual Study in Nursing

★1-12 (variable) (either term, variable). A course designed for in-depth, individual study of a topic related to PhD-level nursing. Learning experiences may include clinical experience.

NURS 683 Design Problems in Nursing Research

★3 (fi 6) (either term, 0-3s-0). Appraisal of laws of scientific inquiry and designs used in nursing research. Prerequisite: consent of Instructor.

NURS 684 History and Politics of Nursing

★3 (fi 6) (either term, 0-3s-0). Exploration of the roots of nursing through analysis of the development of the profession within the larger social context. Examines developments at individual and collective levels including selected organizations, events, and individuals central to the evolution of the profession. Prerequisite: consent of Instructor.

NURS 699 Dissertation Seminar

★1 (fi 2) (either term, 0-1s-0). For PhD in Nursing students, registration required for two terms. Opportunity for discussion of proposed and ongoing research.

NURS 900 Guided Scholarly Project

★3 (fi 6) (either term, unassigned). A guided scholarly project which will focus on such areas as clinical outcomes, evidence-based practice, quality improvement, or knowledge diffusion.

221.159 Nutrition, NUTR

Department of Agricultural, Food and Nutritional Science
Faculty of Agriculture, Forestry, and Home Economics

Note: See also Agricultural, Food and Nutritional Science (AFNS), Animal Science (AN SC), Interdisciplinary (INT D), Nutrition and Food Sciences (NU FS) and Plant Science (PL SC) listings for related courses.

The following courses were renumbered effective 1995/96.

Old	New	Old	New
NU FS 301	NUTR 301	NU FS 302	NUTR 302

Undergraduate Courses**□ NUTR 100 Nutrition and Wellbeing**

★3 (fi 6) (first term, 3-0-0). Principles of nutrition. The need for and functions of the major nutrients for humans. Cannot be taken by students with credit in any Biochemistry or other Nutrition course. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

NUTR 301 Fundamentals of Nutritional Biochemistry and Metabolism I

★3 (fi 6) (first term, 3-0-3). Fundamentals of nutrition, emphasizing energy, carbohydrates, lipids and proteins. The lab will use common techniques to illustrate principles of human nutrition. Only open to students in the BSc in Nutrition and Food Science, Nutrition major. Given concurrently with NUTR 303. Students cannot obtain credit in NUTR 301 and either of NUTR 303 or NU FS 305. Prerequisites: BIOCH (203, 205) or (200 and 310 as a corequisite.)

□ NUTR 302 Fundamentals of Nutritional Biochemistry and Metabolism II

★3 (fi 6) (second term, 3-0-3). Fundamentals of nutrition with emphasis on vitamins and inorganic elements. The lab will use common techniques to illustrate principles of human nutrition. Only open to students in the BSc in Nutrition and Food Science Nutrition major. Given concurrently with NUTR 304. Students cannot obtain credit in NUTR 302 and either of NUTR 304 or NU FS 305. Prerequisites: BIOCH (203, 205) or (200, 310).

□ NUTR 303 Fundamentals of Nutritional Biochemistry and Metabolism I

★3 (fi 6) (first term, 3-0-0). Fundamentals of nutrition, emphasizing energy, carbohydrates, lipids, and proteins. Given concurrently with NUTR 301. Students cannot obtain credit in NUTR 301 and either of NUTR 303 or NU FS 305. Prerequisites: BIOCH (203, 205) or (200 and 310 as a corequisite).

NUTR 304 Fundamentals of Nutritional Biochemistry and Metabolism II

★3 (fi 6) (second term, 3-0-0). Fundamentals of nutrition with emphasis on vitamins and inorganic elements. Given concurrently with NUTR 302. Students cannot obtain credit in NUTR 302 and either NUTR 304 or NU FS 305. Prerequisites: BIOCH (203, 205) or (200,310).

NUTR 400 Research Methods in Nutritional Science

★3 (fi 6) (first term, 3-3s-0). Familiarizes students with skills required for the formation of a research problem, and for the execution and presentation of empirical research. Lectures incorporate key concepts of experimental design, logistics of data collection and basic analysis and are complemented by work with a faculty advisor to develop a research proposal. Students will present their proposal in a seminar. Prerequisites: NUTR 301, 302, and ★90.

NUTR 401 Undergraduate Nutritional Science Independent Project

★3 (fi 6) (either term, 0-1s-5). An independent research project on an approved topic, supervised by a faculty member. Normally this is a continuation of work begun in NUTR 400. It includes implementation of a research project, data analysis and presentation of results orally and in writing. Prerequisite: NUTR 400.

NUTR 440 Current Topics in Nutritional Science

★3 (fi 6) (second term, 0-3s-3). Integrated exploration of issues pertaining to nutritional science. Open to fourth-year students in the Nutrition major only. Prerequisites: NUTR 301 and 302, and ★90.

□ NUTR 452 Nutritional Aspects of Chronic Human Diseases

★3 (fi 6) (second term, 3-0-0). A lecture and reading course for senior undergraduate students which will address the scientific basis for nutritional intervention in chronic human disease. Graduate students may not register for credit (see AFNS 552). Credit will only be given for one of AFNS 552, NUTR 452 and NU FS 452. Prerequisites: NUTR 301 or 303, and 302 or 304, or consent of instructor.

□ NUTR 468 Clinical Nutrition

★3 (fi 6) (second term, 3-0-3). Basic principles of nutrition in clinical situations. The role of diet in the management of various diseases. The laboratory sessions include practical experience in providing individualized nutritional care for clients from various cultural backgrounds. Graduate students may not register for credit (see AFNS 568). Credit will only be given for one of AFNS 568, NUTR 468, and NU FS 468. Prerequisite: NUTR 301 or 303. Corequisite: NUTR 302 or 304.

NUTR 469 Introductory Professional Practice in Clinical Dietetics

★0 (fi 1) (either term or Spring/Summer, 4 weeks). Practical experience in provision of nutrition care, focusing on basic skills of assessment, planning, implementation and evaluation. Continuing care agencies, rural health centres and acute care hospitals. Students may take this course simultaneously with INT D 411. Open only to students accepted into the integrated internship program. Prerequisites: NU FS 223 or 323, and NUTR 468 or NU FS 468. Requires payment of additional miscellaneous fees (see §22.2.3).

NUTR 470 Professional Practice in Community Nutrition

★0 (fi 1) (either term or Spring/Summer, 13 weeks). Practical experience in assessing needs and planning, implementing and evaluating nutrition programs in a variety of community settings. Open only to students accepted into the integrated internship program. Prerequisite: NU FS 223 or 323, and NU FS 477 or NUTR 477. Requires payment of additional miscellaneous fees (see §22.2.3).

NUTR 471 Professional Practice in Food Service Management

★0 (fi 1) (either term or Spring/Summer, 13 weeks). Practical experience in assessment, planning implementation and evaluation of food service systems. Institutional, community and commercial settings. Open only to students accepted into the integrated internship program. Prerequisites: NU FS 363 (or 361) and 461, and AREC 323 or AG EC 323 or alternate business course. Requires payment of additional miscellaneous fees (see §22.2.3).

NUTR 472 Professional Practice in Clinical Dietetics

★0 (fi 1) (either term or Spring/Summer, 13 weeks). Practical experience in a variety of acute, continuing care and ambulatory care settings. The student is expected to demonstrate professional competencies in assessment, planning, development and monitoring of nutrition care plans for patients and clients. Students cannot obtain credit in both NU FS 472 and NUTR 472. Open only to students accepted into the integrated internship program. Prerequisites: NUTR 469, 470, 471 and 476. Requires payment of additional miscellaneous fees (see §22.2.3).

□ NUTR 476 Advanced Clinical Nutrition

★3 (fi 6) (either term, 3-0-3). The principles of diet therapy in selected areas of current interest. Emphasis on case studies, research, and practical problems in clinical dietetics. Graduate students may not register for credit (see AFNS 578). Credit will only be given for one of AFNS 578, NUTR 476, and NU FS 476. Prerequisites: NUTR 468 or NU FS 468 and NUTR 302 or 303.

NUTR 477 Advanced Community Nutrition

★3 (fi 6) (either term, 3-0-3). Builds on concepts learned in introductory community nutrition that relate to health promotion, food security, policy, program planning and community nutrition throughout the lifecycle. Students will develop the skills to write a community grant application. Field trips to places and events that relate to community nutrition. Offered in alternate years commencing 2005/2006. Graduate students may not register for credit (see AFNS 577). Credit will only be given for one of AFNS 577, NUTR 477 and NU FS 477. Prerequisites: NUTR 302 or 304 and NU FS 377.

□ NUTR 478 Advanced Nutrition: Energy, Carbohydrates, Lipids, and Proteins

★3 (fi 6) (either term, 3-0-0). Scientific literature and current issues in the areas of carbohydrates, lipids, and proteins. A major integrative group project is also required. Students cannot obtain credit in both NU FS 478 and NUTR 478. Prerequisites: NUTR 301 or 303, and NUTR 302 or 304.

□ NUTR 479 Advanced Nutrition: Vitamins and Inorganic Elements

★3 (fi 6) (first term, 3-0-0). A lecture and reading course in vitamins and inorganic elements. Introduction to seminar presentation and critical evaluation of current literature. Students will learn how to write a scientific paper. Graduate students may not register for credit (see AFNS 579). Credit will only be given for one of AFNS 579, NUTR 479 and NU FS 479. Prerequisites: NUTR 301 or 303 and NUTR 302 or 304.

NUTR 480 Sports Nutrition

★3 (fi 6) (either term, 3-0-0). Basic theory related to nutritional requirements for all levels of athletic performance. Application of sports nutrition concepts for recreational to elite level athletes. Course content includes energy systems, hydration, pre-and post-event nutrition, weight management and body composition issues of athletes and ergogenic aids. Prerequisite: NU FS 305 or (NUTR 301 or 303 and 302 or 304) and ★90.

Graduate Courses

Notes

- (1) 400-level courses in NUTR may be taken for credit by graduate students with approval of the student's supervisor or supervisory committee. A 300-level course may be taken for credit by graduate students with approval of the AFNS Graduate Program Committee. (See §174.1.1(1))
- (2) See Agricultural, Food and Nutritional Science (AFNS) listing for related courses.

221.160 Nutrition and Food Sciences, NU FS

Department of Agricultural, Food and Nutritional Science
Faculty of Agriculture, Forestry, and Home Economics

Note: See also Agricultural, Food and Nutritional Science (AFNS), Animal Science (AN SC), Interdisciplinary (INT D), Nutrition (NUTR) and Plant Science (PL SC) listings for related courses.

Undergraduate Courses

01 NU FS 100 Introduction to Food Science and Technology

★3 (fi 6) (first term, 3-0-0). An introduction to the nature of food, food technology, food safety. Not open to third- and fourth-year students in the Faculty of Agriculture, Forestry, and Home Economics.

01 NU FS 200 Introduction to Functional Foods and Nutraceuticals

★3 (fi 6) (second term, 3-0-0). Principles of functional food concepts, health claims, regulations, consumer trends, value added food production, and processing technology, and marketing strategies in the food industry. Prerequisite: NU FS 100 or NUTR 100 or consent of Instructor.

NU FS 201 Physical Principles of Food Structure and Functionality

★3 (fi 6) (first term, 3-1s-0). Theory and application of physical principles important to understanding agri-food structure and physical functionality. Topics include food materials science, flow, and mechanical properties of foods. Physical concepts examined include mechanics, temperature, heat and thermodynamics. Prerequisite: CHEM 102 (or ★3 CHEM and MATH 113/114).

NU FS 223 Cultural Ecology of Food

★3 (fi 6) (second term, 3-0-0). Examines contemporary food habits as influenced by historical, geographical, cultural and economic factors. The complexities of directed and non-directed dietary change will be explored. Credit will only be given for one of NU FS 223 and 323. Prerequisite: NUTR 100. ★3 social sciences recommended.

01 NU FS 283 Introduction to Food Engineering

★3 (fi 6) (second term, 3-0-3). Mass and heat balances, thermodynamics. Fluid mechanics, heat and mass transfer in food systems. Prerequisites: (MATH 113 or 114) and (NUFS 201 or ★6 of chemistry or physics) or consent of Instructor.

01 NU FS 300 Fundamentals of Dairy Science

★3 (fi 6) (second term, 3-2s-0). Physiology of lactation, Biosynthesis and properties of milk components. Physical, chemical, microbiological, technological and nutritional aspects of milk. Prerequisite: ★3 in Biochemistry. Credit cannot be obtained for NU FS 300 and DAIRY 300.

NU FS 305 Introduction to the Principles of Nutrition

★3 (fi 6) (first term, 3-0-0). Basic principles of nutrition and metabolism of macronutrients and micronutrients. Students cannot obtain credit in NU FS 305 and NUTR 301, 302, 303, or 304. Prerequisites: NUTR 100 or NU FS 100, and ★6 in the sciences (recommended that ★3 be BIOCH).

NU FS 311 Introduction to Food Processing

★3 (fi 6) (first term, 3-0-0). An introduction to unit operations involved in food processing. Topics include moisture control and dehydration, high and low temperature operations, separation processes and other novel food processing techniques. Not open to students in the Food Science and Technology major. Prerequisites: NU FS 201, and NU FS 372 or 373.

01 NU FS 312 Quality Assurance

★3 (fi 6) (second term, 3-0-1.5). Statistical methods in quality assurance, sampling plans, control charts, sensory evaluation and risk management in the food industry, HACCP, good manufacturing practices, food regulations, labelling requirements and ISO 9000 standards. Prerequisite: (NU FS 361 or 363) and introductory statistics.

NU FS 352 Current Topics and Controversies in Nutrition

★3 (fi 6) (either term, 3-0-0). An advanced course that explores current nutritional recommendations and topical areas of nutrition. Cannot be taken for credit by students in the Nutrition major. Prerequisite: NU FS 305.

01 NU FS 353 Unit Operations in Food Processing

★3 (fi 6) (first term, 3-0-3). Processes used in food manufacturing. Refrigeration, evaporation, sedimentation, centrifugation, filtration, and contact-equilibrium separation methods. Prerequisite: NU FS 283.

11 NU FS 356 Nutrition Across the Lifespan

★3 (fi 6) (second term, 3-0-0). A lecture course that examines the understanding of how nutrients act on a cellular, tissue and whole organism level to influence human growth, development and aging. Students cannot obtain credit in both NU FS 356 and 456. Prerequisite: ★3 of NUTR 301, 303 or NU FS 305.

NU FS 361 Food Microbiology

★3 (fi 6) (first term, 3-0-3). Environmental factors affecting the growth, activity and destruction of microorganisms in food and their application to control foodborne illness and spoilage in the food processing and food service industries. Given concurrently with NU FS 363, not open to students with credit in NU FS 363. Limited registration. Preference will be given to students in the Food Science and Technology major. Prerequisite: (BIOL 107 or 108) and ★3 Microbiology or consent of instructor.

01 NU FS 363 Food Microbiology

★3 (fi 6) (first term, 3-0-0). Environmental factors affecting the growth, activity, and destruction of microorganisms in food and their application to control foodborne illness and spoilage in the food processing and food service industries. Given concurrently with NU FS 361, not open to students with credit in NU FS 361. Prerequisite: BIOL 107 or 108 or ★3 in Microbiology.

01 NU FS 372 Food Chemistry

★3 (fi 6) (first term, 3-0-3). Chemistry of food constituents. Laboratory emphasizes analytical techniques. Given concurrently with NU FS 373. Not open to students with credit in NU FS 373. Prerequisites: CHEM 161 and 263.

01 NU FS 373 Food Chemistry

★3 (fi 6) (first term, 3-0-0). Chemistry of food constituents. Prerequisite: CHEM 161/263. Given concurrently with NU FS 372. Not open to students with credit in NU FS 372.

11 NU FS 374 Food Fundamentals and Quality

★3 (fi 6) (either term, 3-0-3). Chemical, physical, and sensory properties of food products and factors affecting food quality in relation to preparation, processing, and storage of foods in the home and institution. Prerequisite or Corequisite: NU FS 372 or 373.

NU FS 377 Introduction to Nutrition in the Community

★3 (fi 6) (second term, 3-0-0). Examination of nutritional problems in contemporary communities. Community nutrition seeks to improve diets and nutritional status of whole populations by working at the community, provincial, national and international levels. Discussion of nutrition programs and resources. Credit will only be given for one of NU FS 377 and 477. Prerequisite: NU FS 223 or 323.

01 NU FS 400 Undergraduate Reading Project

★3 (fi 6) (either term, 3-0-0). Individual study. Critical reviews of selected literature under the direction of a staff member. Note: For third- and fourth-year students only. Students must obtain approval from Department before registration. May be taken more than once provided topic is different.

01 NU FS 401 Undergraduate Research Project

★3 (fi 6) (either term, 0-0-6). Directed laboratory study under supervision of a staff member. Note: For third- and fourth-year students only. Students must obtain approval from Department before registration. May be taken more than once provided that topic is different.

01 NU FS 402 Brewing, Enology, and Food Fermentations

★3 (fi 6) (second term, 3-1s-0). Biological, biochemical, and technical aspects of microbial and fungal fermentations used in the food and beverage industries, especially the lactic acid and alcohol fermentations. Graduate students may not register for credit (see AFNS 502). Credit will only be given for one of AFNS 502 and NU FS 402. Prerequisite: MICRB 265 or NU FS 361 or 363.

01 NU FS 403 Processing of Milk and Dairy Products

★3 (fi 6) (first term, 3-1s-0). Technological principles of milk treatment and processes for fluid milk products; concentrated, dried, sterilized, and fermented dairy products; cheese, butter and ice cream. Graduate students may not register for credit (see AFNS 503). Credit will only be given for one of AFNS 503 and NU FS 403. Prerequisite: NU FS 374.

01 NU FS 406 Processing and Storage of Cereals and Oilseeds

★3 (fi 6) (first term, 3-0-3/2). Biological, biochemical, chemical, and technological aspects of the processing of cereals and oilseeds. Prerequisite: ★3 in introductory Biochemistry or Biological Science or NU FS 374 or consent of Instructor.

01 NU FS 427 Nutritional Toxicology and Food Safety

★3 (fi 6) (first term, 3-0-0). Provides students with an understanding of the principles of risk: benefit evaluations related to the metabolic consequences of exposure to foodborne chemicals and therapeutic agents, and to microbiological concerns about foods. Graduate students may not register for credit (see AFNS 527). Credit will only be given for one of AFNS 527 and NU FS 427. Prerequisites: ★3 Biochemistry and ★3 Microbiology or consent of instructor.

11 NU FS 428 Recent Advances in Nutraceuticals

★3 (fi 6) (second term, 0-3s-0). A seminar course involving critical evaluations of the current literature on food components, including functional foods and nutraceuticals. Students learn to interrelate the chemistry, health potential and toxicological implications of the components. Graduate students may not register

for credit (see AFNS 528). Credit will only be given for one of AFNS 528 and NU FS 428. Prerequisite: NU FS 200 or consent of instructor.

NU FS 430 Principles of Sensory Evaluation of Foods

★3 (fi 6) (either term, 3-0-3). Principles and methods of analysis of the sensory properties of foods; appearance, texture, aroma, and taste. Physiology of sensory receptors. Applications, advantages, and limitations of sensory methods. Prerequisites: Introductory statistics and NU FS 372 or 373.

NU FS 450 Food Product Development

★3 (fi 6) (either term, 3-0-3). Design of concept, formulation, processing, packaging and labeling of a new food product and development of quality assurance and marketing strategies. Prototype development in the laboratory and testing of consumer acceptability. Open to fourth-year students in the Nutrition and Food Science, Food Processing Business Management and Food Service Business Management Programs.

NU FS 454 Unit Operations in Food Preservation

★3 (fi 6) (second term, 3-0-3). Processes used in food preservation. Dehydration, refrigeration and freezing, sterilization and canning, irradiation. Effect of processing on food properties. Graduate students may not register for credit (see AFNS 554). Credit will only be given for one of AFNS 554 and NU FS 454. Pre- or corequisites: (NU FS 201 or 283) and (NU FS 361 or 363) and (NU FS 372 or 373) or consent of instructor.

NU FS 461 Foodservice Systems Management

★3 (fi 6) (either term, 3-0-3). Operational techniques and special problems encountered during the preparation and service of food in quantity, in both commercial operations and foodservice establishments. The laboratory sessions will provide experience in quantity food production. Prerequisites: NU FS 374 and (NU FS 223 or 323). AREC 323 or AG EC 323 recommended.

NU FS 463 Foodservice and Hospitality Project

★3 (fi 6) (second term, 0-1s-3). Directed foodservice research project or critical reviews of selected literature, under supervision of a staff member. Prerequisite: NU FS 461.

NU FS 480 Foodborne Pathogens

★3 (fi 6) (second term, 3-1s-0). Established and emerging causative agents of microbial foodborne illness, their significance and control in the food chain. Rationale for regulatory intervention to enhance the microbiological safety of foods. Graduate students may not register for credit (see AFNS 580). Credit will only be given for one of AFNS 580 and NU FS 480. Prerequisite: MICRB 265 or NU FS 361 or 363.

NU FS 481 Advanced Foods

★3 (fi 6) (second term, 3-0-0). Critical evaluation of current literature on the effects of ingredients and processing on quality characteristics of foods. Graduate students may not register for credit (see AFNS 581). Credit will only be given for one of AFNS 581 and NU FS 481. Prerequisites: NU FS 374 and ★3 Biochemistry or consent of instructor.

Graduate Courses

Notes

- 400-level courses in NU FS may be taken for credit by graduate students with approval of the student's supervisor or supervisory committee. 300-level courses may be taken for credit by graduate students with approval of the AFNS Graduate Program Committee. (See §174.1.1(1))
- See Agricultural, Food and Nutritional Science (AFNS) listing for related courses.

221.161 Obstetrics and Gynaecology, OB GY

Department of Obstetrics and Gynecology
Faculty of Medicine and Dentistry

Undergraduate Courses

OB GY 546 Obstetrics and Gynaecology Student Internship

★6 (fi 12) (either term, 6 weeks). Student internship in obstetrics and gynaecology for students registered in the MD program.

221.162 Occupational Therapy, OCCTH

Department of Occupational Therapy
Faculty of Rehabilitation Medicine

Note: All OCCTH courses are open to Occupational Therapy students only except OCCTH 106 and 107 which are open to all students.

Undergraduate Courses

OCCTH 206 Applied Interpersonal Communication

★3 (fi 6) (either term, 3-0-0). Interpersonal communication theory and application

to health care. Integration and application of values and attitudes as they affect professional/client relationships. Students with credit in OCCTH 106 will not be permitted to take OCCTH 206.

OCCTH 307 Core I: Occupational Therapy Practice Delivery

★3 (fi 6) (either term, 39 hours in 9 weeks). Fundamental concepts of occupational therapy and their applications in health care delivery. Students will be oriented to specific conceptual models and theoretical approaches used in the practice of occupational therapy. Corequisites: OCCTH 309, 362.

OCCTH 308 Psychosocial Assessment and Intervention in Occupational Therapy

★4 (fi 8) (either term, 4-0-0). Introduction to the assessment of clinical disorders in psychiatry and the impact of psychosocial issues on mental health. Taught from an applied holistic approach through case studies, it links clinical conditions to assessment and intervention in the practice of occupational therapy. Prerequisites: OCCTH 307, 309. Corequisite: OCCTH 310.

OCCTH 309 Core 2: Therapeutic Occupation, Assessment and Intervention

★3 (fi 6) (either term, 39 hours in 9 weeks). Theory and practical classes in assessment and intervention. Practical experience in the therapeutic use of activities with emphasis on task analysis. Corequisites: OCCTH 307, 362.

OCCTH 310 Core 3: Application of Occupational Therapy Principles

★2 (fi 4) (either term, 0-2s-0). Application of occupational therapy principles through the use of intervention media and modalities for various physical and psychosocial domains. Prerequisites: OCCTH 307, 309. Corequisites: OCCTH 308, REHAB 383.

OCCTH 311 Selected Health, Social and Policy Topics in Occupational Therapy

★3 (fi 6) (either term, 39 hours in 9 weeks). An introduction to critical issues impacting the profession and its practice. Co-requisite: OCCTH 307. Students with credit in REHAB 311 will not be permitted to take OCCTH 311.

OCCTH 323 Professionalism in Practice

★1 (fi 2) (two term, 13 hours). This practical course, underpinned by theoretical perspectives, provides the information that students need to meet the professional requirements as an occupational therapist.

OCCTH 324 Fieldwork Project

★1.5 (fi 3) (either term, 4 weeks). Credit. Practical application of Fall term courses. Students will be expected to complete specific projects designed to integrate the core knowledge of occupational therapy theory. Prerequisites: OCCTH 323 and attendance at Fieldwork Orientation. Corequisites: All Year 3 Fall Term OCCTH courses.

OCCTH 328 Fieldwork

★4.5 (fi 9) (either term, 8 weeks). Credit. Practical experience in approved facilities and community agencies. Prerequisites: consent of Department; OCCTH 324 and completion of all Year 3 academic courses; attendance at Professional Development Seminar.

OCCTH 362 Introduction to Research and Clinical Reasoning

★3 (fi 6) (either term). Introduction to research for the critical evaluation of the occupational therapy and related literature to facilitate the learning of specific strategies of clinical reasoning used in occupational therapy practice. Corequisites: OCCTH 307, 309.

OCCTH 408 Occupational Therapy Theory

★3 (fi 6) (either term, 0-3s-0). Selected conceptual models of occupational therapy are examined in terms of their philosophical base, conceptualization, and application to practice. Open only to post-diploma degree completion students unless department consent is granted.

OCCTH 413 Special Fieldwork

★3 (fi 6) (either term, 0-3s-3c). A course designed to allow undergraduates to pursue the practical application of occupational therapy techniques in a specialized setting. These settings depend on the student's stated objectives for pursuing an area of interest, as well as the consent of the agency where the fieldwork is to be done. Enrolment is limited. Prerequisite: consent of Department after completion of OCCTH 328. Note: May not be used for credit as an elective or to replace OCCTH 328, 428, 431, 432. This course is extra to the requirements for the BScOT degree.

OCCTH 414 Core 4: Advanced Application of Occupational Therapy Principles Across the Lifespan

★6 (fi 12) (either term). Application of occupational therapy principles and evidence-based practice, focusing on children and older adults using a lifespan approach, current theories, and complex integrated case studies. Prerequisites: OCCTH 310, 328. Corequisite: REHAB 455.

OCCTH 415 Core 5: Integration in Specialty Practice Areas

★6 (fi 12) (either term). Application of assessment and intervention strategies in the areas of psychiatry, neurology and work evaluation. Prerequisites: all clinical and completion of academic course work in Year 3 and Fall Term of Year 4. Corequisites: REHAB 454, INT D 410.

OCCTH 428 Fieldwork

★3 (*fi 6*) (either term, 5 weeks). Credit. Practical experience in approved facilities and community agencies. Prerequisites: consent of Department; attendance at Professional Development Seminar; OCCTH 328 and completion of Year 4 Fall Term academic courses.

OCCTH 433 Fieldwork

★3 (*fi 6*) (either term, 5 weeks). Credit. Practical experience in approved facilities and community agencies. Prerequisites: consent of Department, OCCTH 428 and completion of Year 4 academic courses.

OCCTH 434 Fieldwork

★3 (*fi 6*) (either term, 5 weeks). Credit. Practical experience in approved facilities and community agencies. Prerequisites: consent of Department, OCCTH 433 and completion of Year 4 academic courses.

OCCTH 486 Student Selected Modules

★1 (*fi 2*) (either term, 13 hours). Students must successfully complete a minimum of five modules in different topics. Note: Course title is variable; course may be repeated. This is a CR/NC course.

OCCTH 498 Special Seminars

★3 (*fi 6*) (either term, 0-3s-0). Content varies from year to year. Topics will be announced prior to registration period. Prerequisite: consent of Department.

OCCTH 499 Individual Study

★3 (*fi 6*) (either term, 0-3s-0). A course intended to allow the senior undergraduate student to pursue a topic of interest in more depth than the classroom structure permits. This may take the form of directed reading, laboratory or clinical experience. Prerequisite: Departmental consent.

Graduate Courses

Note: Open only to graduate students in Occupational Therapy program unless departmental consent is granted.

OCCTH 505 Theory and Instrumentation in Occupational Therapy Practice

★3 (*fi 6*) (either term, 0-3s-0). The theory of occupational therapy and its relationship to client assessment. Pre- or corequisite: EDPY 500 or equivalent.

OCCTH 506 Instrumentation Theory in Occupational Therapy

★2 (*fi 4*) (either term, 0-2s-0). Measurement principles and their application to occupational therapy. Restricted to students registered in the MSc in OT course-based route. Corequisite: EDPY 500.

OCCTH 512 Core 5: Integration in Speciality Practice Areas

★6 (*fi 12*) (either term). Application of assessment and intervention strategies in the areas of psychiatry, neurology and work evaluation. Corequisites: REHAB 454, INT D 410.

OCCTH 521 Program Evaluation in Occupational Therapy

★3 (*fi 6*) (either term, 0-3s-0). Designed to equip the student with the resources and skills to evaluate occupational therapy program delivery.

OCCTH 531 Fieldwork

★3 (*fi 6*) (either term, 5 weeks). Credit. Practical experience in approved facilities and community agencies. Prerequisites: consent of Department and completion of EDPY 500; INT D 410; OCCTH 506, 512, 521; and REHAB 454 and 500.

OCCTH 536 Fieldwork

★3 (*fi 6*) (either term, 5 weeks). Credit. Practical experience in approved facilities and community agencies. Prerequisite: consent of Department and completion of OCCTH 531.

OCCTH 570 Evaluation of Occupational Performance

★3 (*fi 6*) (either term, 0-3s-3). Presentation of resources and techniques necessary for work evaluation, work adjustment and work samples used in rehabilitation.

OCCTH 586 Student Selected Modules

★1 (*fi 2*) (either term, 13 hours). Students must complete a minimum of three modules in different topics. Topics completed as undergraduate students in OCCTH 486 cannot be repeated. Note: Course title is variable; course may be repeated. This is a CR/NC course.

OCCTH 596 Project Design

★3 (*fi 6*) (either term, 0-1s-2). Preparation of directed research project. Open to students in the course-based Master's route only.

OCCTH 597 Research and Directed Studies

★3 (*fi 6*) (either term, 0-0-3). Work on a specific project under the supervision of a faculty member. Prior approval of the supervisor and the student's advisor required.

OCCTH 598 Special Seminars

★3 (*fi 6*) (either term, 0-3s-0). Content varies from year to year. Topics will be announced prior to registration period. Prerequisite: consent of Department. May be repeated.

OCCTH 599 Individual Study

★3 (*fi 6*) (either term, 0-3s-0). Designed to allow a student to pursue a topic of

interest in more depth than permitted by existing courses. Prerequisite: Departmental approval of plan of study. May be repeated.

OCCTH 900 Directed Research Project

★6 (*fi 12*) (variable, unassigned). Open to students in the course-based Master's route only.

221.163 Oncology, ONCOL

Department of Oncology
Faculty of Medicine and Dentistry

Graduate Courses

Note: See also PMCOL 505, MED 573, PHYS 475 and PHYS 477.

ONCOL 510 Issues in Psychosocial Oncology

★3 (*fi 6*) (first term, 3-0-0). The general objective of the course is to explore specific clinical and research issues in psychosocial oncology. The course is primarily designed to fit into masters and doctoral programs in a range of disciplines including psychology, educational psychology, social work, family studies, nursing, and pastoral care. It is also open to students in other disciplines who are considering a career in oncology. Issues in psychosocial oncology such as the mind-body connection, children with cancer, cancer and its impact on the family, grief and loss issues, and many other related topics will be explored. Course assignments will allow students from different disciplines to investigate their own areas of particular interest. Prerequisite: consent of Department.

ONCOL 520 Tumor Biology

★3 (*fi 6*) (second term, 3-0-0). The course will provide an introduction to the basic science of oncology. Topics to be covered comprise: the genetic basis of cancer, including the role of proto-oncogenes and tumor suppressor genes; mechanisms of carcinogenesis and radiation-sensitivity, including DNA repair and cell cycle control; the molecular basis of tumor metastasis, including cell motility, tumor cell invasion, and extravasation; tumor immunology and angiogenesis. Course offered in alternate years. Prerequisites: BIOCH 203 and 205 or equivalent.

ONCOL 521 Structural Organization of the Cell and Cancer

★3 (*fi 6*) (second term, 0-3s-0). This course explores the relationship between the structural organization of the cell and neoplastic behavior through in-depth evaluation of both original and review literature. The objective of the course is to make students aware of how concepts in structural organization affect understanding of cancer and to show students how to critically evaluate, organize and present scientific information. Students are evaluated through seminar presentations, intensive discussion, and a term paper. Course offered in alternate years. Prerequisite: BIOCH 203 and 205 or equivalent.

ONCOL 535 Clinical Radiobiology

★1.5 (*fi 3*) (either term, 1.5-0-0). An introduction to the physics, chemistry, and biology of radiation effects on cells and tissues. Concepts discussed are focused on those of relevance to the treatment of cancer with ionizing radiation. Prerequisite: consent of Department.

ONCOL 550 Medical Radiation Physics

★3 (*fi 6*) (first term, 3-0-0). Fundamentals of radiation physics, production and properties of ionizing radiation and their interactions with matter and tissue. Interactions of photons and of charged particles with matter. Concepts of radiation dosimetry (theoretical and experimental, cavity theory and ionization chambers). Consent of Department required.

ONCOL 552 Fundamentals of Applied Dosimetry

★3 (*fi 6*) (second term, 3-0-0). Theory and practical techniques of external beam radiotherapy and brachytherapy. Topics include single and multiple external beams, scatter analysis, inhomogeneity corrections, fundamentals of brachytherapy, and brachytherapy dosimetry systems. Prerequisite: ONCOL 550.

ONCOL 554 Laboratory in Medical Radiation Physics

★2 (*fi 4*) (Spring/Summer, 0-0-4). Practical aspects of medical physics as applied to radiation therapy. Exposure to the operation of various therapy units and dose measuring devices. Application of techniques to measure physical parameters of radiation beams. Introduction to radiation treatment planning with techniques for specific tumor sites. Prerequisite: ONCOL 550. Corequisite: ONCOL 552.

ONCOL 556 Laboratory in Imaging

★2 (*fi 4*) (Spring/Summer, 0-0-4). Provides clinical and practical experience with diagnostic imaging equipment, to adequately provide consultative support required of a clinical medical physicist in imaging. Perform calibration and quality assurance procedures on medical imaging modalities. Prerequisites: ONCOL 550 and 562. Corequisites: ONCOL 568 and 564.

ONCOL 558 Health Physics

★2 (*fi 4*) (first term, 2-0-0). Sources of radiation, basic dosimetry, and hazards of ionizing radiation. Basics of radiation safety. Techniques for the detection, use, and safe handling of radiation sources. Radiation safety codes, laws and regulations. Consent of Department required.

ONCOL 560 Technology in Radiation Oncology

★2 (fi 4) (first term, 2-0-0). Explore the use of computers and electronics in the diagnosis, tumour and normal tissue localization, treatment planning, treatment delivery, and treatment verification as applied to cancer patients. Computing tools for the Medical Physicist. Consent of Department required.

ONCOL 562 Theory of Medical Imaging

★3 (fi 6) (first term, 3-0-0). A system theory approach to the production, analysis, processing and reconstruction of medical images. An extensive use of Fourier techniques is used to describe the processes involved with conventional radiographic detectors, digital and computed radiography. Review and application of image processing techniques used in diagnostic and therapeutic medicine. Consent of Department required.

ONCOL 564 Physics of Nuclear Medicine

★3 (fi 6) (second term, 3-0-0). Discussion of the fundamental physics of radioactivity, the use of unsealed sources in medical diagnosis and treatment. Unsealed source dosimetry, nuclear measurement instrumentation, spectrometry. Design and function of gamma cameras, single photon emission tomography, and positron emission tomography. Prerequisites: ONCOL 550 and 562.

ONCOL 566 Radiation Biophysics

★3 (fi 6) (first term, 3-0-0). Theories and models of cell survival, survival and curve and its significance, modification of radiation response. Radiobiology of normal and neoplastic tissue systems. Late effects of radiation on normal tissue and radiation carcinogenesis, genetic effects of ionizing radiation. Consent of Department required.

ONCOL 568 Physics of Diagnostic Radiology

★3 (fi 6) (second term, 3-0-0). Rigorous development of the physics of x-ray production, interaction and detection in diagnostic radiology, including mammography. In-depth analysis of analog and digital systems in radiography and fluoroscopy is given. The description and design of computed tomographic systems as well as the associated reconstruction algorithms from single to multislice helical systems are studied. Prerequisites: ONCOL 550, 562.

ONCOL 570 Directed Reading in Experimental Oncology

★3 (fi 6) (either term, 0-3s-0). Reading and discussion of current research literature on selected topics in experimental oncology under the direction of one or more faculty members. Topics presently available include cell adhesion mechanisms, cell cycle regulation, DNA repair, radiotherapy and susceptibility and resistance, oncogenes/tumor suppressor genes, and tumor cell metastasis. Notes: (1) Grades will be based on participation in group discussions and/or written reports from assigned readings with emphasis on critical evaluation of the subject matter. (2) Students in other graduate programs may register with the consent of Instructors. Prerequisite: consent of Department.

ONCOL 600 Graduate Medical Physics Seminar

★2 (fi 4) (two term, 0-1s-0). Weekly seminars given by faculty on topics of interest to the medical physics community that are not formally included with the other didactic courses. Includes medical statistics, anatomy/physiology for medical physics, site-specific cancer, experience in clinic, inverse treatment planning optimization, photodynamic therapy, proton and neutron therapy, and image fusion. No prerequisite.

ONCOL 620 Recent Advances in Cancer Research

★3 (fi 6) (first term, 0-3s-0). A directed reading and seminar course based on recent developments in the cellular and molecular biology of cancer. The students will critically review papers selected from the recent literature and give oral presentations. Prerequisites: ONCOL 520 and consent of Department. Offered in alternate years.

ONCOL 660 Current Topics in Cancer Research

★3 (fi 6) (two term, 0-1.5s-0). A general seminar/discussion course on recent advances in a wide range of topics related to cancer development and management. Selected topics include experimental therapeutics, molecular oncogenetics, tumour immunobiology, DNA repair, and cell cycle regulation. Notes: (1) All graduate students in the Division of Experimental Oncology are expected to attend the seminars whether or not they are registered in the course. Students in their second year and beyond are expected to give a seminar each year whether or not they are registered in the course. (2) All graduate students in the Division of Experimental Oncology must register in the course in their second year (MSc or PhD), or their third year (PhD students) and present a seminar based upon their research project. (3) All graduate students registered in ONCOL 660 will write a paper on a selected topic. Consent of Department required.

ONCOL 661 Current Topics in Cancer Research II

★1 (fi 2) (second term, 0-1s-0). A general seminar course based on recent advances in a wide range of topics related to cancer. Note: For Department of Oncology PhD students or prospective PhD students in their 2nd, 3rd, or 4th year of graduate studies who are not taking ONCOL 660 for credit. ONCOL 661 will be held concurrently with ONCOL 660. PhD students must obtain two credits from ONCOL 661 in order to meet the minimum requirements for the PhD program in the Department of Oncology. These two credits are in addition to the minimum 12 credits required for the PhD program in Medical Sciences/Oncology.

221.164 Ophthalmology, OPHTH

Department of Ophthalmology
Faculty of Medicine and Dentistry

Graduate Courses**OPHTH 600 Seminar in Ophthalmology**

★6 (fi 12) (two term, 0-3s-0). Open to graduate students, particularly those in the Medical Sciences (Ophthalmology) program. Seminars are given by Residents in the Postgraduate Medical Education program in Ophthalmology. Tutorials are presented by staff or by visiting speakers. Topics covered include: pediatric ophthalmology/strabismus, contact lens/cornea/external eye disease, neuro-ophthalmology, orbit/oculoplastics, retina, principles of ocular surgery, glaucoma, ocular genetics. Specific topics will not be repeated more often than once each four years so that four consecutive enrolments are possible. Prerequisite: consent of Department.

OPHTH 601 Ocular Genetics

★3 (fi 6) (either term, 3-0-0). This course provides a comprehensive overview of various aspects of eye genetics including both basic science studies and clinical conditions. Clinical case studies and their investigation will form part of the course. Offered in alternate years. Format includes didactic lectures supplemented by brief student presentations and guest speakers. Grades are assigned according to participation and a final exam. Prerequisite: Familiarity with medical genetics and ophthalmology and the consent of the Department.

221.165 Oral Biology, OBIOL

Department of Dentistry
Faculty of Medicine and Dentistry

Undergraduate Courses**OBIOL 202 Oral Biology I**

★4 (fi 8) (two term, 60 hours). Basic microscopic anatomy pertinent to the main body systems and a more detailed treatment of the structure and development of oral tissues, with special reference to the teeth and their supporting structures. Clinical examples and a demonstration lab will be used to enhance the teaching of basic anatomy.

OBIOL 302 Oral Biology II

★3 (fi 6) (first term, 45 hours). A multidisciplinary course that examines the unique physiology, biochemistry and nutrition of oral structures. Topics will include functions of the periodontal tissues, the temporomandibular joint, mastication, deglutition, speech, special reflexes involving cranial nerves, receptors of the stomatognathic system, and salivary glands and relevance of saliva to caries. Oral manifestations of metabolic disease, the physiology of pain, and the role of nutrition in the development of oral tissues and the maintenance of oral health will also be discussed.

OBIOL 305 Pathology

★3 (fi 6) (two term, 42 hours). Introduction to the principles of pathology with consideration of the more common diseases affecting the human body. Visual differentiation between normal and abnormal tissues; the physiological and pathological changes which affect the teeth, their supporting structures and the oral mucosa, including oral manifestations of selected systemic disturbances.

Graduate Courses**OBIOL 500 Oral Biology I**

★3 (fi 6) (first term, 3-0-0). Functional anatomy of head and neck. Development, structure, function and biochemistry of connective tissues associated with the jaws.

OBIOL 501 Oral Biology II

★3 (fi 6) (second term, 3-0-0). A continuation of Oral Biology I. Growth and development of skull. Anthropology. Selected topics in physiology.

OBIOL 503 Advanced Oral Pathology

★3 (fi 6) (first term, 3-0-0). A review of diseases that affect the oral tissues and an exploration of recently acquired knowledge pertaining to them.

OBIOL 504 Oral Medicine

★3 (fi 6) (second term, 3-0-0). A study of the mechanisms of oral disease as a basis for rationale of treatment.

OBIOL 601 Seminars in Oral Biology

★2 (fi 4) (two term, 0-1s-0). Seminars will focus on the major areas of research of Oral Biology staff and students. Students must present one seminar on topics related to their field of research. Required for all MSc and PHD students.

OBIO 607 Conference Seminars in Oral Biology I

★3 (fi 6) (first term, 0-3s-0). This course will include seminars and conferences on selected aspects of oral biology. Continuous evaluation of student preparation and participation throughout the course will be used for assessment. This is an optional course open to students outside the Faculty of Medicine and Dentistry by consent of the Chair, Department of Dentistry.

OBIO 608 Conference Seminars in Oral Biology II

★3 (fi 6) (second term, 0-3s-0). This is a continuation of DENT 607.

OBIO 609 Connective Tissue Research

★2 (fi 4) (two term, 0-1s-0). This course will critically survey recent research on connective tissues and will aim to provide students practice in communicating research data.

OBIO 900 Directed Research Project

★6 (fi 12) (variable, unassigned).

221.166 Organizational Analysis, ORG A

Department of Strategic Management and Organization
Faculty of Business

Note: Enrolment in all ORG A 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

Note: The following course, normally offered in Spring/Summer is available to students in other faculties. It is not available for credit in the BCom or in Business Minor programs.

ORG A 200 Introduction to Management for Non-Business Students

★3 (fi 6) (either term, 3-0-0). Provides an understanding of the behavior of individuals and groups within the context of the business organization. Topics covered include organizational structure, culture, individual differences, personality, motivation, leadership, groups, decision making, power, politics, conflict, careers, stress, and organizational change. Not for credit in the Bachelor of Commerce program. Not to be taken by students with credit in ORG A 101.

ORG A 201 Introduction to Management

★3 (fi 6) (either term, 3-0-0). Introduces students to the behavioral, political and organizational dynamics of managerial practice. Topics include management theory, social responsibility, ethics, motivation, decision making, leadership, organizational structure, and strategy.

ORG A 301 Behavior in Organizations

★3 (fi 6) (either term, 3-0-0). Provides an understanding of the behavior of individuals in organizations. Draws from psychology, sociology, organization theory and covers topics such as personality, motivation, leadership, communication, conflict, and group dynamics. Prerequisite: Not open to students in the Faculty of Business. Open only to students from other faculties where the course is a requirement.

ORG A 311 HRM: Managing the Work Force in Canada

★3 (fi 6) (either term, 3-0-0). This course is a general overview of human resource management issues in organizations. It focuses on reward systems, the design of work, legal issues, union-management relationships, staffing, and training and development. Prerequisite: Open to third- and fourth-year students.

ORG A 321 Introduction to Strategic Management and Organization Design

★3 (fi 6) (either term, 3-0-0). Explores why organizations such as McDonalds, Northern Telecom, Benetton, Wal-Mart and the University of Alberta use different patterns of organization. Examines the political and behavioral dynamics of management decision making. Prerequisite: Open to third- and fourth-year students.

ORG A 322 Perspectives on Organizations

★3 (fi 6) (either term, 3-0-0). This course emphasizes the multiple ways of viewing organizations and that these different perspectives have important implications for the description and evaluation of organizational action. An understanding of alternative approaches will help students develop more comprehensive organizational analyses, while enabling them to work with others with differing views. After learning about prominent perspectives, their strengths and weaknesses, and their implications for managerial action, students then have the opportunity to practically apply these perspectives to diagnose an organization and its challenges.

ORG A 402 Management Skills for Supervisors and Leaders

★3 (fi 6) (either term, 3-0-0). The purpose of this course is to increase understanding of leadership roles and skill in exercising those roles. These include team building, mentoring, managing conflict, delegating, managing participative decision making, creative problem solving, and time and stress management. Prerequisite: Open to third- and fourth-year students.

ORG A 404 Interpersonal Communication and Team Management

★3 (fi 6) (either term, 3-0-0). This course provides an understanding of interpersonal (or face-to-face) communication process and presents opportunities for personal skill development. Students should expect to engage in role play and to receive feedback on their personal style of communication. Topics include team communication, supervisory-subordinate relationships, influence and persuasion, conflict management, and performance appraisal. Prerequisite: Open to third- and fourth-year students.

ORG A 405 Gender Issues in Organizations

★3 (fi 6) (either term, 3-0-0). This course examines the ways in which gender, personal characteristics and organizational practices interact in influencing women's and men's experiences in work settings. Among the issues discussed are gender differences in career motivation and commitment, leadership skills and ability, and conflicts between professional and personal responsibilities. Prerequisite: Open to third- and fourth-year students.

ORG A 406 Ethical Issues in Business

★3 (fi 6) (either term, 3-0-0). This course assists students in developing and refining their personal ethical frameworks by examining issues commonly facing members of business and government organizations. A wide range of issues will be explored including discrimination, product and worker safety, environmental impacts, insider trading, and employee privacy and rights. Prerequisite: Open to third- and fourth-year students.

ORG A 411 Alternative Dispute Resolution

★3 (fi 6) (either term, 3-0-0). Conflict is a part of life which we all encounter. Disagreements occur naturally between friends, co-workers, spouses, employer and employees, organizations, and nations. Conflict is both natural and positive if handled well, but can be destructive if handled badly. This course provides detailed hands-on practical experience with various methods of conflict resolution, especially mediation (third-party assistance) and negotiation. The course concentrates as well on the interpersonal communication skills, including assertiveness, which make effective conflict resolution possible.

ORG A 412 Effective Negotiations

★3 (fi 6) (either term, 3-0-0). This is a comprehensive study of negotiation theory and practice. A negotiation simulation is conducted to provide an understanding of how theory translates into practice. Prerequisite: Open to third- and fourth-year students.

ORG A 413 Rights in the Work Place

★3 (fi 6) (either term, 3-0-0). This is a comprehensive study of rights in the work place. It examines principles of human resource management as guided by statutes and case law by courts and administrative tribunals. Prerequisite: Open to third- and fourth-year students.

ORG A 414 Work Force Planning

★3 (fi 6) (either term, 3-0-0). This Human Resource Management course examines how a company interacts with the labor market to ensure that it has the right number and skill mix of employees. Part of the course involves a field research project in which students critique the work force plan of a local company. Pre- or corequisite: ORG A 311. Open to third- and fourth-year students.

ORG A 415 Staffing

★3 (fi 6) (either term, 3-0-0). This Human Resource Management course is focused on the philosophy and procedures used in obtaining and maintaining an efficient work force. Topics include recruitment, selection and training. Pre- or corequisite: ORG A 311. Open to third- and fourth-year students.

ORG A 416 Performance Management and Rewards

★3 (fi 6) (either term, 3-0-0). This Human Resource Management course focuses on how organizations create and operate a performance management system. It presents an overview of current issues in the field, such as performance evaluation, compensation planning, internal consistency, external competitiveness, individual equity, and benefits. Pre- or corequisite: ORG A 311. Open to third- and fourth-year students.

ORG A 417 Managing the Work Force: International Perspectives

★3 (fi 6) (either term, 3-0-0). This course comparatively explores different techniques of human resource management (HRM) used in Canada, the USA, Japan, Sweden, Germany, and France. Prerequisite: Open to third- and fourth-year students.

ORG A 418 Public Sector Employee Relations

★3 (fi 6) (either term, 3-0-0). This Human Resource Management course examines public sector employee relations in the context of governments, public service commissions, trade unions, and administrative tribunals. It highlights public sector/private sector differences and includes a simulation of public sector labor contract negotiations. Prerequisite: Open to third- and fourth-year students.

ORG A 423 Power and Organization

★3 (fi 6) (either term, 3-0-0). An introduction to aspects of organizational life often omitted in business courses - the role of humor, gossip, emotion and sex; the organization of time and space; the nature of the body and the construction of organizational identities - and consider their significance for understanding contemporary organizational and human resources practices. Prerequisite: Open to third- and fourth-year students only.

ORG A 428 Managing Family Enterprise

★3 (fi 6) (either term, 3-0-0). Designed to improve managerial knowledge and practice through improved recognition and understanding of the significance of family firms and of the unique challenges they face. The course is designed primarily for individuals who a) are members of a family with established business interests; b) might find themselves working for family controlled firms; c) might find themselves working in a professional capacity with family controlled firms in roles such as accountant, lawyer, banker or consultant.

ORG A 430 Introduction to Small Business Management

★3 (fi 6) (either term, 3-0-0). Focus is specifically on issues related to the establishment of small business enterprises and particular issues related to managing them. This course employs the knowledge already acquired in the Undergraduate Program disciplines (OA, Marketing, Finance, Accounting, etc.) and applies it to case analysis and to the study of existing small businesses in Alberta. Students should be prepared to visit small business sites and to prepare case analyses of their management systems. Prerequisites: Open to third- and fourth-year students.

ORG A 431 New Venture Creation and Organization

★3 (fi 6) (either term, 3-0-0). This course explores how small businesses are created and operated. Topics include the entrepreneurial process, opportunity recognition, business planning, mobilizing resources and organization creation. Prerequisite: FIN 301.

ORG A 432 Managing for Quality

★3 (fi 6) (either term, 3-0-0). This course examines what quality management is, how it is used to improve performance, and how an organization can transform itself to a quality management orientation. In addition the history of management thought related to quality management including that of prominent figures such as Taylor, Deming, and Juran is explored. Prerequisite: Open to third- and fourth-year students.

ORG A 433 Managing Organizational Change

★3 (fi 6) (either term, 3-0-0). This course examines organization change, e.g. how organizations make transitions from one state to another. There is also a focus on understanding how management goes about changing corporate culture, organization structure and management systems. Prerequisite: Open to third- and fourth-year students.

ORG A 434 Managing Professional Service Firms

★3 (fi 6) (either term, 3-0-0). The course examines the managerial practices of professional service firms, with particular reference to accounting, law, engineering, and management consultancy firms. The course explores the distinctive tasks and governance structures of professional service firms and how these influence the strategic and functional (e.g. marketing, human resource management, quality control) areas of management behavior. Particular attention is given to the problem of innovation and creativity of management practice. Prerequisite: Open to third- and fourth-year students.

ORG A 435 Managing International Business

★3 (fi 6) (either term, 3-0-0). This course explores issues related to managing businesses that operate in an international content. Prerequisite: Open to third- and fourth-year students.

ORG A 436 Management and the Natural Environment

★3 (fi 6) (either term, 3-0-0). This course is an introduction to global environment issues and their impact on managers and organizations. It explores the key issues of the day including atmospheric issues, biodiversity, hazardous waste, and energy consumption. It also explores solution spaces including the concept of sustainable development, economic instruments, regulatory systems, full cost accounting, and international governance. Prerequisite: Open to third- and fourth-year students.

ORG A 437 Managing Culture

★3 (fi 6) (either term, 3-0-0). This course has two aims: 1) to explore how organizational and work group cultures affect the management of an organization; and 2) to explore how national culture impacts management practice and 'doing business' in foreign settings. Prerequisite: Open to third- and fourth-year students.

ORG A 438 Managing Public, Not-for-Profit Organizations

★3 (fi 6) (either term, 3-0-0). Many management ideas and practices are derived from private, for-profit organizations. This course examines some of the issues confronting management in the public, voluntary and not-for-profit sectors, for example, health, education, charities, churches, cultural organization and the arts, community groups, aid agencies, etc. It addresses the issues of to what extent and how management in these types of organizations is different from the dominant private sector view of management; the extent to which practices from one sector may be adopted by another, and pressures which lead in this direction, through, for example, funding agencies. Specific issues such as the management of volunteers will also be considered.

ORG A 441 Business Strategy

★3 (fi 6) (either term, 3-0-0). This course examines top management decisions and emphasizes the development of business and corporate strategy. It integrates the management principles studied in the business core using a series of business cases. Guest Faculty members and executives will participate. Prerequisites: FIN 301; MARK 301; and ORG A 201.

ORG A 450 Internet Strategy for Small Business

★3 (fi 6) (either term, 3-0-0). This course focuses on how consultants prepare client organizations (especially small businesses and not-for-profit, volunteer organizations) for a decision as to how to include the Internet as part of their business strategy. In the initial part of the course students will familiarize themselves with the Internet as it pertains to e-business and not-for-profit uses. In the second part, students will prepare advisory reports for a real business or a not-for-profit organization. Basic Internet skills (e-mail, browsers, using search engines, creating simple web pages) are important although tutorials will be offered for students lacking these skills. Prerequisite: MIS 311 or permission of Instructor.

ORG A 488 Selected Topics in Organization Theory

★3 (fi 6) (either term, 3-0-0). Normally restricted to third- and fourth-year Business students. Prerequisites: ORG A 201, 301 or consent of Department. Additional prerequisites may be required.

ORG A 490 Organizational Analysis Competition Part I

★1.5 (fi 3) (either term, 0-1.5s-0). Preparation for Student Competition in Organizational Analysis. Prerequisite: consent of Instructor.

ORG A 491 Organizational Analysis Competition Part II

★1.5 (fi 3) (either term, 0-1.5s-0). Completion of Student Competition in Organizational Analysis. Prerequisite: ORG A 490 and consent of Instructor.

ORG A 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.

ORG A 496 Individual Research Project II

★3 (fi 6) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: ORG A 495, consent of the Instructor and Assistant Dean, Undergraduate Program.

ORG A 497 Individual Research Project III

★3 (fi 6) (either term, 3-0-0). Special Study for advanced undergraduates. Prerequisites: ORG A 496, consent of the Instructor and Assistant Dean, Undergraduate Program.

Graduate Courses**ORG A 500 Managing People**

★3 (fi 6) (either term, 3-0-0). Introduces students to organizational behavior (OB) and human resource management (HRM), and how to generate energy and commitment in employees. Examines options relevant to staffing, performance management, reward systems, leadership, motivation, decision making, communication, labor relations, and current issues in the field of management. Credit will not be given for ORG A 500 when either ORG A 503 or 504 have been completed.

ORG A 501 Organization Strategy

★1.5 (fi 3) (either term, 18 hours). The first part of this course examines the formation of business strategy. It recognizes the complexities and messiness of strategy formation and explores how organizations actually develop strategies. The second part examines the evolution, determinants, and relevance of alternative ways of organizing. Contemporary ideas (e.g. reengineering, the learning organization, virtual organizations) are critically reviewed. Offered in a six-week period.

ORG A 515 Fundamentals of Technological Innovation and Commercialization

★1.5 (fi 3) (either term, 18 hours). This course examines the nature of technological innovation within different industrial settings. Early sessions focus upon theories of technological discontinuities and patterns of industry transformation. Later sessions examine the different stages of technology commercialization in selected industries.

ORG A 520 Introduction to Management Consulting

★1.5 (fi 3) (either term, 18 hours). This course introduces students to the industry of management consulting. Particular attention is given to the regulatory context and changing dynamics of the industry, the distinctive characteristics and challenges of consulting firms, and the skills and characteristics of the successful consultant. Registration in this course must be approved by the Instructor.

ORG A 543 Business Ethics

★1.5 (fi 3) (either term, 18 hours). This course will address ethical aspects of business situations and relationships. It will be emphasized that virtually all business decisions have significant ethical content.

ORG A 560 New Ventures Management

★1.5 (fi 3) (either term, 18 hours). This course will address problems commonly associated with the commercialization of knowledge-based Research and Development.

ORG A 586 Selected Topics in Organizational Analysis

★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.

ORG A 611 Current Issues in Human Resource Management

★3 (fi 6) (either term, 3-0-0). This course is relevant to managers who want to learn about current critical issues and the questions with which they will have to deal in designing HRM systems in the 1990s and beyond.

ORG A 612 Effective Negotiations

★3 (fi 6) (either term, 3-0-0). This Human Resource Management course is a comprehensive study of negotiation theory and practice. A negotiation simulation is conducted to provide an understanding of how theory translates into practice.

ORG A 616 Performance Management and Rewards

★3 (fi 6) (either term, 3-0-0). This Human Resource Management course focuses on how organizations design and manage a performance management system. It presents an overview of current issues in the field, such as performance evaluation, compensation planning, internal consistency, external competitiveness, individual equity and benefits.

ORG A 617 Managing the Work Force: International Perspectives

★3 (fi 6) (either term, 3-0-0). This Human Resource Management course comparatively explores different systems of human resources management (HRM) that are used in Canada, the USA, Japan, Sweden, Germany, and France, and their implications for firm competitiveness. Throughout the course, the North American experience serves as the backdrop or frame of reference for analytical discussions.

ORG A 618 Strategic Human Resource Management in the Public Sector

★3 (fi 6) (either term, 3-0-0). The ability to recruit, motivate, develop, learn with and from people, and hold them accountable is critical to organizational success. Public sector organizations operate in a unique environment characterized by formalized employee relations, ambiguous and frequently conflicting goals, real and perceived constraints on risk-taking, and difficulties in clearly defining success and measuring performance. Addresses options for successful human resource management in the public sector in relation to the organization's strategy.

ORG A 628 Managing Family Enterprise

★3 (fi 6) (either term, 3-0-0). Designed to improve managerial knowledge and practice through improved recognition and understanding of the significance of family firms and of the unique challenges they face. Designed primarily for individuals who a) are members of a family with established business interests; b) might find themselves working for family controlled firms; c) might find themselves working in a professional capacity with family controlled firms in roles such as accountant, lawyer, banker or consultant.

ORG A 631 New Venture Creation and Organization

★3 (fi 6) (either term, 3-0-0). This course concentrates on the development of a new enterprise and the management of an existing small business. Casework and projects enable students to assess the opportunities, risks, and capabilities necessary for entrepreneurial success. The course emphasizes managerial and strategic problems during the early years of business formation and growth, including business planning. The course emphasizes the interface between theory and practice.

ORG A 632 Managing for Quality

★3 (fi 6) (either term, 3-0-0). This course examines what quality management is, how it is used to improve performance, and how an organization can transform itself to a quality management orientation. In addition, the history of management thought related to quality management including that of prominent figures such as Taylor, Deming, and Juran is explored.

ORG A 633 Managing Organizational Change

★3 (fi 6) (either term, 3-0-0). This course examines organization change, e.g. how organizations make transitions from one state to another. There is also a focus on understanding how management goes about changing corporate culture, organization structure and management systems.

ORG A 634 Managing Professional Service Firms

★3 (fi 6) (either term, 3-0-0). The course examines the managerial practices of professional service firms, with particular reference to accounting, law, engineering, and management consultancy firms. The course explores the distinctive tasks and governance structures of professional service firms and how these influence the strategic and functional (e.g. marketing; human resource management; quality control) areas of management behavior. Particular attention is given to the problem of innovation and creativity of management practice.

ORG A 635 Managing International Business

★3 (fi 6) (either term, 3-0-0). This course examines selected topics in managing an international business. It provides an overview of the primary issues. Additional selected topics will be chosen in consultation with the students.

ORG A 639 The Process of Making Public Policy

★3 (fi 6) (either term, 3-0-0). Emphasizes a systematic and comprehensive approach to the study of developing and implementing public policy within the context of Canadian society. This course explores both the decision-making process, and such factors as the separation of powers between levels of government, electoral politics, interest groups, media and government bureaucracy as they influence the making of public policy.

ORG A 640 Implementing Public Policy

★3 (fi 6) (either term, 3-0-0). Examines how public policy is implemented in organizations. Topic areas will include: using new knowledge to develop policy; influencing policy; and the role of managers in effectively implementing policy. There will be a strong focus on how public sector managers can effectively design and implement change strategies that take into consideration the organizational structure, systems, leadership, culture and politics. Combines classroom discussion of theoretical concepts with practical application in organizational settings.

ORG A 641 Business Strategy

★3 (fi 6) (either term, 3-0-0). This course examines top management decisions and emphasizes the development of business and corporate strategy. It integrates the management principles studied in the business core using a series of business cases. Guest Faculty members and executives will participate. Prerequisite: All required Year one MBA core courses.

ORG A 643 Strategic Management in the Public Sector

★3 (fi 6) (either term, 3-0-0). Strategic management in the public sector comprises defining public value, building consensus and support, making decisions, deploying organizational capacity to implement, and managing performance to achieve the desired mission and goals. Addresses the unique complexities, ambiguities and messiness of strategic management in the public sector.

ORG A 650 Internet Strategy for Small Business

★3 (fi 6) (either term, 3-0-0). Focuses on how consultants prepare client organizations (especially small businesses and not-for-profit, volunteer organizations) for a decision as to how to include the internet as part of their business strategy. In the initial part of the course students will familiarize themselves with the internet as it pertains to e-business and not-for-profit uses. In the second part, students will prepare advisory reports for a real business or a not-for-profit organization. Basic internet skills (e-mail, browsers, using search engines, creating simple web pages) are important although tutorials will be offered for students lacking these skills.

ORG A 652 Leadership Skills

★3 (fi 6) (either term, 3-0-0). The purpose of this course is to increase the student's understanding of leadership roles and skill in exercising those roles. These include team building, mentoring, managing conflict, delegating, managing participative decision making, creative problem solving, and time and stress management.

ORG A 655 Gender Issues in Organizations

★3 (fi 6) (either term, 3-0-0). This course examines the ways in which gender, personal characteristics and organizational practices interact in influencing women's and men's experiences in work settings. Among the issues discussed are gender differences in career motivation and commitment, leadership skills and ability, and conflicts between professional and personal responsibilities.

ORG A 657 Interpersonal Communication and Team Management

★3 (fi 6) (either term, 3-0-0). This course provides the understanding of interpersonal (or face-to-face) communication process and presents opportunities for personal skill development. Students should expect to engage in role plays and to receive feedback on their personal style of communication. Topics include team communication supervisory-subordinate relationships, influence and persuasion, conflict management, and performance appraisal.

ORG A 660 Introduction to Intellectual Property and New Technology Commercialization

★3 (fi 6) (either term, 3-0-0). This course provides an understanding of intellectual property in the context of technology transfer and commercialization. Key topics include intellectual property, product development, valuation of technology, capturing value, and securing the deal. It also examines how exploitation of intellectual property is a corporate strategy.

ORG A 686 Selected Topics in Behavioral Sciences

★3 (fi 6) (either term, 3-0-0).

ORG A 701 Seminar in Organization Theory

★3 (fi 6) (either term, 3-0-0). Introduces students to the major schools of thought in organization and management theory. Considers the development of the field, major and foundational works in these schools of thought, and provides a cognitive map with which to evaluate contemporary research and debates. At the end of the course the student will have an understanding of the strengths and weaknesses of each major perspective. Prerequisite: Registration in Business PhD Program or written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

ORG A 702 Seminar in Human Behavior in Organization

★3 (fi 6) (either term, 3-0-0). Examines current and classic research on human behavior as it occurs within the boundaries of organizations. Reviews pertinent theories and research findings that relate to topics such as motivation, social influence process, organization roles, leadership, change and inter- and intra-group dynamics. Issues of job design, conflict resolution, communications processes and problem solving may also be covered. Prerequisite: Registration in Business PhD Program or written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

ORG A 703 Seminar in Strategic Management

★3 (fi 6) (either term, 3-0-0). Examines the current state of knowledge in strategic management. Topics may include the sources of competitive advantage, the role of industry evolution and technology, the organization of top management, and managerial decision-making and cognition. Introduces students to alternative theoretical perspectives and available empirical evidence related to these topics. Prerequisite: Registration in Business PhD Program or written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

ORG A 704 Individual Research

★3 (fi 6) (either term, 3-0-0).

ORG A 705 Seminar in Contemporary Issues

★3 (fi 6) (two term, 3-0-0). Introduces students to the most recent research in the area of organizational analysis, examining current issues and trends. Students have an opportunity to present and discuss their own research and actively engage in the analysis and discussion of the work of others. The seminar is a single term course offered over two terms. Prerequisite: Registration in Business PhD Program or written permission of instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

ORG A 810 The Manager as Strategist

★1.5 (fi 16) (first term, 18 hours). A week-long intensive course. Identifying and developing the human resources, leadership, and strategy skills essential for today's successful executive. Restricted to Executive MBA students only.

ORG A 820 Managing Human Resources

★3 (fi 32) (first term, 3-0-0). Understanding interpersonal behavior within organizations; assessing and developing interpersonal effectiveness both as a leader and a team member. Restricted to Executive MBA students only.

ORG A 860 Management of Technology/Innovation

★3 (fi 32) (first term, 3-0-0). Understanding basic science and technology; integrating new technology into operations; managing research and development. Restricted to Executive MBA students only.

ORG A 870 Corporate Strategy

★3 (fi 32) (second term, 3-0-0). Understanding corporate strategy and processes to mobilize resources to achieve corporate objectives; industry and competitive analysis. Restricted to Executive MBA students only.

ORG A 875 Leadership

★3 (fi 32) (second term, 3-0-0). Understanding the unique perspectives, tasks, and responsibilities of the executive in providing leadership to the organization; dynamic processes of organizations; and developing leadership skills. Restricted to Executive MBA students only.

221.167 Paediatrics, PAED

Department of Paediatrics
Faculty of Medicine and Dentistry

Undergraduate Courses**PAED 546 Paediatrics Student Internship**

★6 (fi 12) (either term, 6 weeks). Student internship in paediatrics for students registered in the MD program.

PAED 556 Paediatrics Student Internship

★3 (fi 6) (either term, 3 weeks). Student internship in paediatrics for students registered in the MD Program.

221.168 Paleontology, PALEO

Departments of Biological Sciences; Earth and Atmospheric
Sciences
Faculty of Science

Undergraduate Courses**PALEO 318 Paleobiology of the Lower Vertebrates**

★3 (fi 6) (first term, 3-0-3). Evolution of fish-like vertebrates, amphibians, reptiles and birds, with emphasis on systematics, major adaptive shifts and subsequent evolutionary radiation. Prerequisite: EAS 230 or ZOOL 225.

PALEO 319 Paleobiology of the Higher Vertebrates

★3 (fi 6) (second term, 3-0-3). The Mesozoic history of mammals as illustrative of the origin and evolution of a higher taxon; adaptive radiation of Tertiary mammals, with special emphasis on insectivores, primates, carnivores, proboscidiens, and ungulates. Prerequisite: EAS 230 or ZOOL 225.

PALEO 414 Paleontology

★3 (fi 6) (second term, 3-0-3). Morphology, paleoecology and evolution, with

emphasis on both the theoretical aspects and practical techniques of paleontology. Concentration on invertebrate paleontology, but examples from vertebrate paleontology and paleobotany included. Prerequisite: EAS 230.

Graduate Courses

Note: The following undergraduate courses may be taken for credit by graduate students: PALEO 318, 319.

PALEO 512 Selected Topics in Paleontology

★3 (fi 6) (either term, 4-2s-0). Offered in alternate years.

PALEO 513 Advanced Paleontology

★3 (fi 6) (second term, 3-0-3). Morphology, paleoecology and evolution, with emphasis on both the theoretical aspects and practical techniques of paleontology. Concentration on invertebrate paleontology, but examples from vertebrate paleontology and paleobotany included. Prerequisite: EAS 230. Classes concurrent with PALEO 414. Not available to students with credit in PALEO 414.

PALEO 520 Problems in Vertebrate Paleobiology

★3 (fi 6) (either term, 0-3s-0). Prerequisites: PALEO 318 and 319.

221.169 Persian, PERS

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 background. Students with a Persian language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course 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 background makes them ineligible. For example, 100-level courses are normally restricted to students with little or no knowledge in that language. Should students with matriculation standing or those possessing 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**PERS 111 Beginners' Persian I**

★3 (fi 6) (either term, 5-0-0). Introduction to pronunciation, reading, writing and conversation. Note: not to be taken by students with native or near native proficiency, or Persian 35 or its equivalents in Canada and other countries. Not open to students with credit in PERS 100 or RELIG 299.

PERS 112 Beginners' Persian II

★3 (fi 6) (either term, 5-0-0). Continuation of PERS 111. Prerequisite: PERS 111 or consent of Department. Note: not to be taken by students with native or near native proficiency, or Persian 35 or its equivalents in Canada and other countries. Not open to students with credit in PERS 100 or RELIG 299.

PERS 211 Intermediate Persian I

★3 (fi 6) (either term, 3-0-0). Uses of Persian in various social contexts with illustrations drawn from films, classical and modern literature, including poetry. Prerequisite: PERS 112 or consent of Department. Note: not open to students with credit in PERS 301 or 302.

PERS 212 Intermediate Persian II

★3 (fi 6) (either term, 3-0-0). Continuation of PERS 211. Prerequisite: PERS 211 or consent of Department. Note: not open to students with credit in PERS 301 or 302.

PERS 499 Special Topics

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

221.170 Petroleum Engineering, PET E

School of Mining and Petroleum Engineering
Department of Civil and Environmental Engineering
Faculty of Engineering

Note: See also Materials Engineering (MATE); Mining (MIN E), and Petroleum Engineering (PET E) listings.

The following course was renumbered effective 2001/02:

Old	New
PET E 465	PET E 365

Undergraduate Courses

PET E 295 Introduction to Fundamental Petroleum Engineering

★3.8 (fi 6) (second term, 3-0-3/2). The relationships of geology, basic reservoir rock properties, surface and interfacial phenomena, the flow of fluids through porous media, classification of oil and natural gas reservoirs, and introduction to reserve estimation principles. Prerequisite: consent of Instructor.

PET E 362 Petroleum Reservoir Fluids

★3.8 (fi 6) (first term, 3-0-3/2). Qualitative and quantitative phase behavior of petroleum reservoir fluids through the algebraic and numerical application of thermodynamic theory, equations of state, and empirical correlations. Determination of engineering PVT parameters. Oilfield waters. Introduction to mass transfer. Prerequisite: CH E 243. Corequisite: CHEM 271.

PET E 364 Oil Well Drilling and Completion

★3.5 (fi 6) (first term, 3-1s-0). Elements of rock mechanics, drilling fluids, factors affecting rate of penetration, formulation evaluation and well completions. Prerequisites: CIV E 270, CH E 312 and either CHEM 271 or CH E 243, or consent of Instructor.

PET E 365 Well Logging and Formation Evaluation

★3.5 (fi 6) (first term, 3-1s-0). Theory and engineering applications of measurements of physical properties of the formation near the well bore; interpretation and use of the information in reservoir engineering. Corequisite: PET E 362 or consent of Instructor.

PET E 366 Petroleum Production Operations

★3 (fi 6) (second term, 3-0-0). Land units in Western Canada, types and characteristics of well completions, perforating, wellbore damage and simulation, combined inflow and well performance analysis, multiphase flow through conduits, oil well pumping, gas lift, surface facilities and flow measurement, applied mass transfer. Prerequisite: CH E 312 or consent of Instructor.

PET E 367 Drilling Fluids Laboratory

★1.8 (fi 6) (second term, 1-0-3/2). Functions and types of drilling fluids, drilling fluid properties and their control, equipment and test procedures used to determine drilling fluid properties, common drilling fluid additives, and drilling problems related to drilling fluids will be discussed. Laboratory experiments are designed to help students better understand the factors controlling drilling fluid properties as well as familiarize students with field testing procedures of drilling fluids.

PET E 368 Fundamentals of Well Test Analysis

★3.8 (fi 6) (second term, 3-0-3/2). A basic course in well test design and interpretation. Analysis methods for pressure drawdown, buildup, and interference tests. Principle of superposition and its application in well test analysis. Average reservoir pressure estimation. Effect of wellbore conditions on pressure behavior. An introduction to drill stem testing and gas well testing. Prerequisite: PET E 295 or consent of Instructor.

PET E 444 Natural Gas Engineering

★3 (fi 6) (first term, 3-0-0). Topics include gas properties, resources and reserves estimation, material balance equation, decline curve analysis, gas well deliverability, gas well testing, gas storage, transmission. Prerequisite: PET E 362 or consent of Instructor.

PET E 470 Heavy Oil Recovery

★3 (fi 6) (either term, 3-0-0). The objectives of this course are to introduce the student to the current heavy oil recovery technology, and to develop the practical project design techniques. Emphasis will be on thermal methods, although nonthermal methods will be covered briefly. This is designed to be suitable for both undergraduate and graduate students. Prerequisite or corequisite: PET E 473.

PET E 471 Enhanced Oil Recovery

★3 (fi 6) (either term, 3-0-0). Classification of EOR methods. Chemical oil recovery methods. Principles of polymer flooding. Principles of surfactant flooding. Oil displacement by surfactant solutions, principles of alkaline flooding, principles of micellar flooding, oil displacement by micellar solutions, design of scaled models. Heavy oil recovery by thermal methods. Other chemical oil recovery methods. Prerequisite: consent of Instructor.

PET E 473 Fundamental Reservoir Engineering

★3.8 (fi 6) (first term, 3-0-3/2). Rock properties, rock-fluid interaction, flow through porous media; material balance. Prerequisite: PET E 362 or consent of Instructor.

PET E 475 Applied Reservoir Engineering

★3.8 (fi 6) (second term, 3-0-3/2). Analysis and prediction of reservoir performance by use of material balance. Reservoir performance by use of decline curves. Fluid displacement, pressure maintenance and enhanced recovery. Prerequisite: PET E 473.

PET E 477 Modelling in Petroleum Engineering

★3 (fi 6) (second term, 3-0-0). Fundamentals of Modelling in Petroleum Engineering. Simulation methods as applied to specific problems in petroleum reservoir behavior. Examples will be drawn from primary, secondary and tertiary recovery phases of petroleum production. Prerequisites: PET E 473, ENCOMP 100 and MATH 201 or equivalent.

PET E 484 Oil and Gas Property Evaluation

★3.5 (fi 6) (first term, 2-0-3). An economic and property evaluation in petroleum engineering involving exploration, drilling, production and development fundamentals and field case histories, Canadian oil and gas regulations, unitization and equalization of investment. Prerequisite: ENGG 310 or 401 or equivalent.

PET E 488 Petroleum Field Trip

★0.5 (fi 1) (either term, 0-1s-0). Students in fifth and sixth terms of the traditional program, and students in the seventh and eighth terms of the co-op program, will be required to make several trips to selected field installations, laboratories and industrial plants.

PET E 489 Petroleum Seminar

★1 (fi 2) (second term, 1-0-0). Meeting of students and staff for discussion of topics related to petroleum engineering.

PET E 496 Petroleum Engineering Design Project

★4 (fi 6) (second term, 1-6s-0). Designed to deal with special case studies in the mining and petroleum industries; an analysis of reserves; the prediction of production and operating procedures related to the project; the application of economics in the analysis of profitability; economics and planning as tools for a management position. Prerequisite: PET E 484 or consent of Instructor.

Graduate Courses

PET E 630 Petroleum Reservoir Engineering

★3.5 (fi 6) (either term, 3-1s-0). Characteristics of reservoir materials (rock, reservoir fluids); reservoir evaluation (volumetric method, material balance method with water influx); fundamental production processes (primary recovery).

PET E 635 Numerical and Analytical Solution of Porous Media Flow Problems

★3.5 (fi 6) (either term, 3-1s-0). The goal of this course is to develop techniques for the solution of a wide variety of single phase flow problems in porous media for compressible and incompressible flow. Two dimensional flow will be considered for the greater part. Selected mathematical techniques, analytical as well as numerical, will be developed for specific problems. In a number of cases, analytical and numerical solutions will be compared.

PET E 644 Fluid Mechanics of Natural Gas Production

★3.5 (fi 6) (either term, 3-1s-0). Review of natural gas properties; reserve estimation techniques and advanced treatment of water influx in gas reservoirs; steady and transient single-phase gas flow in porous media; non-Darcy flow; deliverability tests; transient gas well testing: single and multiphase flow in circular conduits. Normally offered in alternate years.

PET E 650 Reservoir Simulator Development

★3.5 (fi 6) (either term, 3-1s-0). The principal objective of this course is the development of reservoir simulation theory to the level required for the construction of a three-phase, three-dimensional reservoir simulator. In addition to providing practice in developing a simulator, the course will also cover recent advances in simulation and history matching.

PET E 664 Advanced Drilling Engineering

★3.5 (fi 6) (either term, 3-1s-0). Recent advances and changes in drilling techniques will be discussed. The topics will include directional drilling and deviation control, design aspects of horizontal and multilateral well drilling, measurement while drilling, drillstring mechanics, bottomhole assembly design, tubular stability, drag and torque problems. Prerequisite: PET E 364 or consent of Instructor.

PET E 668 Advanced Well Test Analysis

★3.5 (fi 6) (either term, 3-1s-0). Analytical techniques employed to solve complex well test problems. Pressure derivative analysis. Production time effects on buildup analysis. Pressure transient analysis for fractured wells. Layered reservoir testing. Prerequisite: PET E 368 or consent of Instructor. Normally offered in alternate years.

PET E 679 Thermal Recovery

★3.5 (fi 6) (either term, 3-1s-0). Thermal recovery processes are mainly steam-based and can be divided into two main categories: displacement or drive processes and stimulation processes. Will cover steam displacement processes (steamflooding, steam-assisted gravity drainage), cyclic steam stimulation, in situ combustion, and briefly mention hot waterflooding. It will also cover properties of fluid and rock, wellbore heat losses, and a selection of thermal processes. Prerequisites: Permission of Instructor.

PET E 694 Advanced Topics in Petroleum Engineering

★3.5 (fi 6) (either term, 3-1s-0). An advanced treatment of selected petroleum engineering topics of current interest to staff and students.

PET E 709 Special Topics in Petroleum Engineering

★3 (fi 6) (either term, 3-0-0). Reading Course. Reading and discussion of selected topics in Petroleum Engineering.

PET E 900 Directed Research

★3 (fi 6) (variable, unassigned). An engineering project for students registered in a Masters of Engineering program.

221.171 Pharmacology, PMCOL

Department of Pharmacology
Faculty of Medicine and Dentistry

Undergraduate Courses

Note: The following courses may be used by students in the Faculty of Science as science courses: PMCOL 201, 305, 336, 337, 342, 371, 403, 407, 409, 412, 415 and 416.

[O] PMCOL 201 Introductory Pharmacology

★3 (fi 6) (either term, 3-0-0). An introduction to the discipline of pharmacology. What are drugs and how do they bring about their effects; how are drugs modified by the body; how are drugs developed and licensed for therapeutic use? These and related questions are addressed and the underlying pharmacological principles illustrated with examples drawn from an array of commonly used drugs. Prerequisites: CHEM 101 and 102, and either BIOL 107 or 108. Restricted to students in second year.

PMCOL 300 Introduction to Pharmacology

★2 (fi 4) (first term, 28 hours). Lectures are used to illustrate the principles of pharmacology including rational application of commonly used drugs to the treatment of disease. This course is available only to students registered in the Dental Hygiene Diploma program.

[O] PMCOL 305 An Introduction to the Pharmacology of Drug Abuse

★3 (fi 6) (either term, 3-0-0). An introduction to the complexities of drug abuse and the drugs of abuse. The student will be introduced to the psychological and social problems of drug abuse and their impact upon the abuser. Objectives of the course are to develop an understanding of addiction and a detailed knowledge of the nature of the commonly abused substances. Emphasis will be placed upon the pharmacology of drugs of abuse. Prerequisite: a 200-level Biological Sciences course.

PMCOL 331 General Pharmacology

★6 (fi 12) (two term, 3-0-0). The pharmacological actions of drugs selected for their physiological and clinical significance. Basic pharmacological principles are applied to representative clinically important drugs having their primary actions on various organ systems of the body. The course includes a study of chemotherapeutic agents used in the treatment of infections and neoplasia. Restricted to students in the Faculty of Pharmacy and Pharmaceutical Sciences.

PMCOL 337 Experimental Procedures in Pharmacology

★3 (fi 6) (either term, 0-0-6). A laboratory course in which the use of biochemical techniques, as well as intact animal and isolated tissue preparations, as applied to pharmacological problems are emphasized. Course includes both a theoretical consideration of the procedures under study, together with practical instruction and practice in their execution. Prerequisite or corequisite: Normally restricted to Pharmacology Specialization or Honors programs. PMCOL 342.

PMCOL 343 Scientific Basis of Pharmacology:Part I

★3 (fi 6) (first term, 3-0-0). A course designed as the first part of a two course detailed review of clinically important drugs having their actions on the vertebrate body and its systems. Will provide a sound scientific knowledge of the ways in which drugs act to produce their responses, and how these may be quantified. It will review the pharmacological intervention in physiological signaling systems, and consider aspects of neuropharmacology ranging from the autonomic nervous system to drugs useful in psychiatric illness. Prerequisite: PMCOL 201. Pre- or co requisite: BIOCH 203, 205, and PHYSL 210 or 211. In the case of over subscription, preference will be given to students in the Pharmacology Specialization or Honors Programs

PMCOL 344 Scientific Basis of Pharmacology:Part II

★3 (fi 6) (second term, 3-0-0). A continuation of PMCOL 343 with an emphasis on cardiovascular pharmacology, the pharmacology of the endocrine and immune systems and the chemotherapy of malignant and infectious diseases. Prerequisite: PMCOL 343.

PMCOL 371 Cellular Neuroscience

★3 (fi 6) (first term, 3-0-0). Lectures presented by the Faculty of Medicine and Dentistry and the Faculty of Science on nerve cell membranes, ion channels, neurotransmitters and their receptors, synaptic mechanisms and plasticity, gene regulation and development, the physiology of small neural networks and disorders involving basic mechanisms. Prerequisite: PHYSL 210, 211, 252, or ZOO 242.

PMCOL 400 Industrial Internship Practicum

★3 (fi 6) (first term, 0-3s-0). Required by all students who have just completed a Pharmacology Industrial Internship Program. Must be completed during the first academic term following return to full-time studies. Note: a grade of F - A+ will be determined, by the students job performance as evaluated by the employer, by the students performance in the completion of an internship practicum report and by the students ability demonstrated in an oral presentation.

PMCOL 401 Pharmacology Tutorial

★3 (fi 6) (first term, 3-0-0). Research and/or Reading course. This course allows

a student to study an area of pharmacology in much greater detail than is usual in most courses. The format is usually a reading/tutorial in which the student carries out directed reading and meets with the tutor at regular intervals for discussion and further guidance. Term papers are often used for evaluation purposes. A mature attitude towards learning is essential, as the course often requires independent study and research. Students who have a particular interest in any specific area of pharmacology are encouraged to meet with the faculty members to explore the possibilities of arranging a mutually satisfactory topic. Prerequisite: PMCOL 342.

PMCOL 402 Pharmacology Tutorial

★3 (fi 6) (second term, 3-0-0). Research and/or Reading course. This course allows a student to study an area of pharmacology in much greater detail than is usual in most courses. The format is usually a reading/tutorial in which the student carries out directed reading and meets with the tutor at regular intervals for discussion and further guidance. Term papers are often used for evaluation purposes. A mature attitude towards learning is essential, as the course often requires independent study and research. Students who have a particular interest in any specific area of pharmacology are encouraged to meet with faculty members to explore the possibilities of arranging a mutually satisfactory topic. Prerequisite: PMCOL 342.

PMCOL 403 Introduction to Toxicology

★3 (fi 6) (either term, 3-0-0). The adverse effects of xenobiotics on biological systems are discussed. Principles of toxicology, including dose-response relationships and toxicant metabolism, are introduced. Responses of target organs to selected toxicants are described, with emphasis on molecular mechanisms; haloalkane and hydrocarbon solvents, heavy metals, carbon monoxide, cyanide, pesticides, pulmonary irritants, ethanol, and methanol serve as examples. Special topics include chemical carcinogenesis, teratogenesis, and the toxic effects of ionizing radiation, toxins, and food additives. Prerequisites or corequisites: BIOCH 203 and 205, PHYSL 210 or 211, or consent of Department.

PMCOL 407 Neuromuscular Pharmacology

★3 (fi 6) (either term, 3-0-0). A detailed study of synaptic transmission, excitation-contraction coupling in skeletal muscle, and the drugs known to be active at these sites. Diseases of neuromuscular transmission, their etiology, and therapy will also be included. The scope of the lectures will range from molecular considerations, through structure-activity relationships, to clinical usefulness and experience. Prerequisites: PMCOL 342 or 371.

PMCOL 412 Drugs and the Nervous System

★3 (fi 6) (either term, 3-0-0). Pharmacological management of disease in the central nervous system is presented in the context of current knowledge of neuroscience and neurochemistry. Prerequisite: PMCOL 342 or 371.

PMCOL 415 Cardiovascular Pharmacology

★3 (fi 6) (either term, 3-0-0). A lecture course that examines the pharmacology of drug action on the cardiovascular system. Topics include the molecular and cellular mechanisms involved in drug action on both the vasculature and the heart, the mechanisms involved in myocardial ischemic injury, and the control of heart inotropy and rhythmicity. Also provides an overview of current therapeutic options in the treatment of cardiovascular disease. Prerequisite: PMCOL 342.

PMCOL 416 Current Topics in Endocrine Pharmacology

★3 (fi 6) (either term, 3-0-0). This course examines in detail, drugs (including natural hormones) that are used for treatment of endocrine diseases (e.g. diabetes, infertility, and growth deficiency). The focus of the course is the action of drugs on hormone receptors and on the regulation of hormone synthesis and secretion. Prerequisite: PMCOL 342.

PMCOL 424 Advanced Topics in Toxicology

★3 (fi 6) (second term, 3-0-0). A discussion of selected topics of current interest in toxicology. Content may vary from year to year, but will generally include mechanisms of cell injury and cell death, mechanisms of chemical carcinogenesis, and topics from genetic toxicology, radiation toxicology, and forensic toxicology. Intended for senior undergraduate students. Prerequisites: PMCOL 403 and consent of Department.

PMCOL 425 Problem Solving in Pharmacology and Therapeutics

★3 (fi 6) (second term, 3-0-0). Students will be presented with problem cases involving patients with conditions, possibly needing drug therapy. They will identify the issues needing resolution, work collectively to find information to resolve them, and present these and their application to each patient to the group. The group will work to resolve outstanding issues after the presentations. Intended for senior undergraduate students. Prerequisites: PMCOL 342 and consent of Instructor.

PMCOL 442 Advanced Principles of Pharmacology

★3 (fi 6) (first term, 3-0-0). Covers drug delivery, absorption and metabolism. Emphasis will be placed on pharmacokinetics and pharmacodynamics of drug action. In addition, an introduction to experimental design and the techniques and statistics needed for drug discovery will be included. Prerequisite: PMCOL 342. Restricted to fourth year honors and specialization Pharmacology students.

PMCOL 498 Pharmacology Research Program

★6 (fi 12) (two term, 0-0-6). During their fourth year all honors candidates are

required to carry out a program of directed research under the supervision of a staff member. This program will be related to the special interest of the student and will involve experimental work as well as two presentations and a written report on the part of the student. Students are encouraged to make arrangements with a supervisor of their choice before the fall term begins. Prerequisite: consent of Department. Normally available to fourth-year honors students only.

Graduate Courses

Note: Not all graduate courses are offered each year. The Chair of the Department should be consulted regarding the prerequisites for and availability of graduate courses in any academic session.

PMCOL 501 Pharmacology Tutorial, Research, and Reading Course

★3 (fi 6) (first term, 3-0-0). This course is similar to PMCOL 401 except that the course material and student performance will be at a level suitable for graduate students.

PMCOL 502 Pharmacology Tutorial, Research, and Reading Course

★3 (fi 6) (second term, 3-0-0). This course is similar to PMCOL 401 except that the course material and student performance will be at a level suitable for graduate students.

PMCOL 504 Advanced Topics in Toxicology

★3 (fi 6) (second term, 3-0-0). A discussion of selected topics of current interest in toxicology. Content may vary from year to year, but will generally include mechanisms of cell injury and cell death, mechanisms of chemical carcinogenesis, and topics from genetic toxicology, radiation toxicology, and forensic toxicology. Intended for graduate students. Prerequisites: PMCOL 403 and consent of Department.

PMCOL 505 Cancer Chemotherapy

★3 (fi 6) (either term, 3-0-0). A survey of biochemical, cellular, and clinical pharmacology of agents currently employed in chemotherapy of neoplastic disease; drug metabolism, adverse effects, mechanisms of action and of resistance will be discussed. Prerequisites: BIOCH 203 and 205 or equivalent and consent of Department.

PMCOL 508 Molecular Pharmacology

★3 (fi 6) (either term, 3-0-0). This course aims to provide an understanding of the general mechanisms of drug action at the molecular level. Theoretical aspects of drug-receptor interaction are presented in detail followed by a consideration of the mechanisms of signal transduction that have been associated with different receptor types. Prerequisite: consent of Department.

PMCOL 510 Advanced Topics

★3 (fi 6) (first term, 3-0-0).

PMCOL 511 Advanced Topics

★3 (fi 6) (second term, 3-0-0).

PMCOL 512 Pharmacology of the Synapse

★3 (fi 6) (either term, 3-0-0). Current concepts of neurotransmitters, neuromodulators and trophic factors are discussed in the context of the normal, diseased and developing nervous systems. Students should have some biological background either in physiology, pharmacology, zoology, or the neurosciences. Prerequisite: consent of Department.

PMCOL 514 Biophysical Aspects of Ion Channel Pharmacology

★3 (fi 6) (either term, 3-0-0). A comprehensive examination of ion channels and their pharmacology. Topics to be covered include: molecular pharmacology, fundamental principles of bioelectricity, ion channel recording, analysis, classification, molecular biology, structure, pathophysiology and hereditary disease. Prerequisite: consent of the Department

PMCOL 515 Advanced Topics in Cardiovascular Pharmacology

★3 (fi 6) (either term, 3-0-0). Current concepts of cardiovascular pharmacology will be discussed in the context of the normal and diseased cardiovascular system. Recent developments and use of the literature will be emphasized. Prerequisites: PMCOL 415 and consent of Department.

PMCOL 525 Problem Solving in Pharmacology and Therapeutics

★3 (fi 6) (second term, 3-0-0). Students will be presented with problem cases involving patients with conditions, possibly needing drug therapy. They will identify the issues needing resolution, work collectively to find information to resolve them, and present these and their application to each patient to the group. The group will work to resolve outstanding issues after the presentations. Intended for graduate students. Prerequisites: PMCOL 342 and consent of Instructor.

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Faculty of Pharmacy and Pharmaceutical Sciences

Undergraduate Courses

PHARM 300 Experiential Learning - Part I - Service Learning

★1 (fi 2) (two term, 60 hours). Part I of the experiential learning course is a

structured experience in which students have the opportunity to adopt a patient-centred approach to care and develop a self-awareness of one's understanding of the patient's illness and needs. The practice experience is in conjunction with a structured volunteer program in an institution or with a patient care agency. (Restricted to Pharmacy students)

PHARM 301 Principles of Drug Action and Disposition - Introduction to Medicinal Chemistry

★2.5 (fi 5) (first term, 15-0-0 in 3 weeks). Introduction to medicinal chemistry, functional group recognition and properties, drug-receptor interactions, structure-activity relationships, rational drug design, and principles of drug absorption, distribution, metabolism and excretion. (Restricted to Pharmacy students).

PHARM 304 Introduction to Core Skills Required of a Health Professional-Informatics-Part I

★0.5 (fi 1) (first term, 2-2s-1 in 2 weeks). Self-development of requisite of abilities for health professionals - Informatics. (Restricted to Pharmacy students).

PHARM 305 Experiential Learning-Part II-Community

★4 (fi 8) (Spring/Summer, 160 hours). This structured practical learning experience will allow students to integrate the knowledge and skills they have obtained in the classroom to the actual care of patients in community practice sites. Using the pharmaceutical care model and philosophy of practice, they will develop their patient interviewing skills, prepare and monitor pharmaceutical care plans, provide patient counseling on the administration of various dosage forms, answer drug information questions, participate in health promotion activities and begin to adopt the professional ethics, behaviours and attitudes of a pharmacist. Pre-requisites: PHARM 300 (Restricted to Pharmacy students)

PHARM 306 Introductory Biomedical Science

★2.5 (fi 5) (first term, 15-0-0 in 3 weeks). Introduces basic general concepts in the biomedical sciences, as a foundation for the systems blocks which follow in the undergraduate pharmacy curriculum. Integrates cell and tissue function in health and disease with basic principles of drug action and toxicity. (Restricted to Pharmacy students).

PHARM 307 Dermatology, Eye, Ear, Nose and Throat

★2.5 (fi 5) (second term). Anatomy, physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, pharmaceuticals, clinical pharmacokinetics, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to dermatology and eye, ear nose and throat disorders. (Restricted to Pharmacy students).

PHARM 311 Radiopharm and Diagnostic Imaging

★1 (fi 2) (first term, 5-0-3 in 3 weeks). A pharmacy-oriented introduction to radiopharmaceuticals and contemporary diagnostic imaging techniques. Emphasis is placed on basic radiological and radiopharmaceutical principles, instrumentation and clinical concepts. The advantages and limitations of various imaging modalities, including SPET, PET, MRI, x-ray CT and ultrasound are presented. (Restricted to Pharmacy students.)

PHARM 314 Introduction of Core Skills Required of a Health Prof-Communications-Part I

★1 (fi 2) (first term, 36 hours in 11 weeks). Self-development of requisite values and abilities for health professionals. Topics covered include: abilities such as communication, self-directed learning, and group process. (Restricted to Pharmacy students).

PHARM 315 Experiential Learning - Level 2

★2 (fi 4) (Spring/Summer, 98 hours in 2 weeks). This structured practical learning experience during April or August following second year will provide an orientation to institutional pharmacy practice and allow students to apply the knowledge and skills they have obtained in the classroom to the actual care of patients in institutional practice sites. (Restricted to Pharmacy students.)

PHARM 317 Lab Values, Fluids, and Electrolytes

★1 (fi 2) (first term, 5-2s-0 in 2 weeks). Physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to lab values, fluids and electrolytes. (Restricted to Pharmacy students.)

PHARM 321 Pharmacy Biotechnology and Immunology

★2.5 (fi 5) (first term, 15-0-0 in 3 weeks). An introduction to molecular biology and immunology from a pharmaceutical perspective. The applications of genetic manipulations, immunological approaches, and biotechnological processes for the design of drugs based on nucleic acids and proteins will be discussed. Topics include basic principles, emerging methodologies, and examples of diagnostic and therapeutic applications. (Restricted to Pharmacy students).

PHARM 322 Role of the Pharmacist in the Canadian Health Care System

★2 (fi 4) (first term, 37 hours in 10 weeks). Designed to introduce the student to the profession of pharmacy and its position in the Canadian health care system. Topics covered include: History of Pharmacy, Introduction to the Canadian Health Care System, Roles of the Pharmacist, Concepts of Pharmaceutical Care, Health, Health Promotion, and Health Behaviours. (Restricted to Pharmacy students)

PHARM 324 Introduction to Core Skills Required of a Health Professional-Informatics-Part II

★1 (fi 2) (second term, 0-5s-0 in 3 Weeks). Focuses on self-development of

requisite abilities for health professionals. Topics covered include: critical appraisal of the literature. (Restricted to Pharmacy students.)

PHARM 327 Nutrition

★2 (fi 4) (second term, 15-2s-2 in 2 weeks). Physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, pharmaceuticals, clinical pharmacokinetics, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to nutrition. (Restricted to Pharmacy students.)

PHARM 330 Comprehensive Assessment 1

★0.5 (fi 1) (second term, 0-10s-2 in 1 week). This block summarizes and provides a final integration of knowledge, skills and attitudes developed during the second year. A final comprehensive examination and clinical skills assessment examination are administered. (Restricted to Pharmacy students.)

PHARM 331 Pharmaceutics I

★4 (fi 8) (second term, 5-2s-3 in 8 weeks). Principles of pharmaceutical dosage forms. Factors affecting the physical and chemical behavior of drug products. Rationale underlying the formulation and compounding techniques of pharmaceutical preparations. Pharmacy math. (Restricted to Pharmacy students.)

PHARM 334 Introduction to Core Skills Required of a Health Professional - Communications - Part II

★1.5 (fi 3) (second term, 28 hours in 11 weeks). Self-development of requisite values and abilities for health professionals. Topics covered include: communications skills with an emphasis on interpersonal communication and time & stress management. (Restricted to Pharmacy students.)

PHARM 337 Urology and Nephrology

★1.5 (fi 3) (first term, 15-2s-2 in 2 weeks). Anatomy, physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, pharmaceuticals, clinical pharmacokinetics, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to Renal and Incontinence. (Restricted to Pharmacy students.)

PHARM 341 Pharmaceutical Analysis

★1 (fi 2) (first term, 15-0-0 in 2 weeks). Lecture and laboratory sessions will provide an overview of the methods of pharmaceutical analysis used in the pharmaceutical sciences. The laboratory exercises consist of both non-instrumental and instrumental analytical techniques that are widely employed in the analysis of pharmaceuticals. (Restricted to Pharmacy students.)

PHARM 342 Introduction to Drug Use Control Process and Patient Care

★2.5 (fi 5) (second term, 3-0-3 in 11 weeks). An introduction to the professional and technical aspects of drug use control, jurisprudence, drug information, and the provision of pharmaceutical care. Communication focuses on the development of basic interpersonal, rapport building, and patient counselling skills relating to the provision of various dosage forms. (Restricted to Pharmacy students.)

PHARM 347 Hematology

★1.5 (fi 3) (first term, 15-4s-2 in 2 weeks). Anatomy, physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, pharmaceuticals, clinical pharmacokinetics, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to Hematology. (Restricted to Pharmacy students.)

PHARM 351 Biopharmaceutics & Pharmacokinetics

★2 (fi 4) (first term, 3-0-0 in 11 weeks). Application of biopharmaceutics and pharmacokinetics to patient care and drug therapy. Therapeutic drug monitoring (TDM) of selected classes of drugs. (Restricted to Pharmacy students.)

PHARM 357 Gastrointestinal

★2.5 (fi 5) (first term, 15-6s-2 in 2 weeks). Anatomy, physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, pharmaceuticals, clinical pharmacokinetics, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to the gastrointestinal tract and liver. (Restricted to Pharmacy students.)

PHARM 361 Pharmaceutics II

★3 (fi 6) (first term, 6-1s-3 in 7 weeks). Physicochemical principles of pharmaceutical dosage forms. Factors affecting the physical and chemical behavior of drug products and dosage forms. Rationale underlying the formulation and quality control of pharmaceutical preparations. (Restricted to Pharmacy students.)

PHARM 362 Pharmacy Laws & Ethics

★1 (fi 2) (first term, 3-0-0 in 9 weeks). A study of the statutes governing the practice of Pharmacy, an understanding of the legal rights and responsibilities of the pharmacist and a practical application of these laws. Ethical theories and principles and their application in Pharmacy Practice. (Restricted to Pharmacy students.)

PHARM 367 Cardiology

★4.5 (fi 9) (second term, 11-2s-2 in 6 weeks). Anatomy, physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, pharmaceuticals, clinical pharmacokinetics, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to cardiology. (Restricted to Pharmacy students.)

PHARM 377 Immunotherapeutics & Transplant

★1.5 (fi 3) (first term, 26 hours in 2 weeks). Anatomy, physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, pharmaceuticals, clinical pharmacokinetics, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to immunology and transplant. (Restricted to Pharmacy students.)

PHARM 387 Pediatrics / Geriatrics

★1.5 (fi 3) (first term, 3-3s-0 in 6 weeks). An integrated science and therapeutics based course covering the relevant material relating to anatomy, physiology, pathophysiology, clinical biochemistry, clinical toxicology, medicinal chemistry, pharmacology, pharmacokinetics, pharmaceuticals, therapeutics, complementary/alternative medicine and new or future advances in the treatment and management of age related issues in special populations. (Restricted to Pharmacy students.)

PHARM 392 Pharmacoepidemiology & Research

★1.5 (fi 3) (second term, 6-0-0 in 5 weeks). An introduction to understanding the basic principles and concepts of pharmacoepidemiology and to research design relevant to pharmacy practice. (Restricted to Pharmacy students.)

PHARM 403 Toxicology of Drugs and Related Products

★3 (fi 6) (first term, 3-0-0). Topics discussed include poisoning and its emergency treatment; toxicity of analgesics, antidepressants, drugs of abuse, antibiotics, iron, common drugs and household products, food additives; CNS and PNS toxicity; nephrotoxicity and hepatotoxicity; toxicity to the ear; ocular and epidermal toxicity; toxicity of pesticides and herbicides; neonatal and geriatric toxicology; carcinogenicity and teratology; blood dyscrasias; placental transfer of drugs; drugs in milk. Corequisites: PHARM 415 and 431. Restricted to Pharmacy students.

PHARM 404 Clinical Pharmacy

★3 (fi 6) (first term, 3-0-0). Lecture/discussion sessions are used to demonstrate clinical pharmacy responsibilities in a selected number of areas. Experience will be gained in using a case history, patient management approach to clinical problem solving. Topics of discussion include clinical laboratory tests, applied clinical pharmacokinetics, advanced OTCs, drug information, drug substance abuse, and clinical drug interactions. Corequisite: PHARM 431. (Restricted to Pharmacy students.)

PHARM 405 Introduction to Institutional Practice and Patient Counselling with the Emphasis on Nonprescription Drugs

★3 (fi 6) (first term, 3-1s-3). An understanding of the drug distribution system in hospitals. An evaluation of drug literature. Introduction to the workshop format and patient interviewing. An understanding of the role of self-medication in health care. An introduction to nonprescription drug products. Corequisites: PHARM 404, 415 and 431. Restricted to Pharmacy students.

PHARM 406 Monitoring Drug Therapy Based on Patient Interviews, Patient Counselling and Drug Information

★3 (fi 6) (second term, 3-1s-3). Lectures and laboratory exercises to develop the student's skills in clinical pharmacy practice relating to patient interviewing, dispensing, counselling and monitoring drug therapy. Prerequisites: PHARM 405, 415. Corequisite: PHARM 431 and 432. Restricted to Pharmacy students.

PHARM 415 Biopharmaceutics and Pharmacokinetics

★3 (fi 6) (first term, 3-0-0). Application of biopharmaceutics and pharmacokinetics to patient care and drug therapy. Clinical pharmacokinetics of selected classes of drugs. Prerequisites: PHARM 320 and PHARM 360. Corequisite: PHARM 431.

PHARM 427 Pain

★2 (fi 4) (second term, 11-2s-2 in 3 weeks). Anatomy, physiology, pathophysiology, pharmacology, medicinal chemistry, toxicology, pharmaceuticals, clinical pharmacokinetics, therapeutics and pharmacy practice relating to the pharmacist's role in providing patient care for conditions relating to non-malignant pain management. (Restricted to Pharmacy students.)

PHARM 431 Therapeutics

★6 (fi 12) (two term, 3-0-0). Integrated lectures and seminars on the pharmacological action of drugs and the therapeutics of common diseases. Basic pharmacological principles; mechanisms of actions of drugs; rationale of drug therapy and problems associated with the use of drugs in the disease state; the role of the pharmacist in therapeutics. Prerequisite: PMCOL 331. (Restricted to Pharmacy students.)

PHARM 432 Antimicrobial Agents and Infectious Diseases

★3 (fi 6) (second term, 3-2s-0). Integrated lectures and seminars on the use of antimicrobial agents in infectious diseases. Antibacterial, antifungal and antiviral agents will be discussed under the following headings: structure and relation to activity, mechanism of action, antimicrobial spectrum of activity, development of microbial resistance, pharmacokinetic properties and therapeutic use. Seminars and case studies focus on the pathogenesis and treatment of selected infectious diseases. (Restricted to Pharmacy students.)

PHARM 443 Radiopharmaceutical Sciences I

★3 (fi 6) (second term, 3-0-0). Basic principles involving the application of radiation and radioactive compounds in medical diagnosis, therapy and industry. Rationale for utility, preparation and quality control of radiopharmaceuticals. Biologic effects of various radiations. Prerequisites: ANAT 200, PHYSL 252, BIOCH 203/205.

PHARM 455 Specialty Pharmacy Rotation

★3 (*fi 6*) (either term, 160 hours). Consists of 160 hours in a practice area, on a full-time or part-time basis. Students are required to prepare a proposal for the placement with desired objectives, activities and an evaluation mechanism. The proposal is to be agreed to by the Placement Coordinator and the Site Coordinator/preceptor. The placement will be conducted under the coordination of the Placement Coordinator and preceptor(s) at the practice site. The student is also required to prepare a report on the outcomes of the placement in the form of a portfolio. Travel and accommodation costs are the responsibility of the student. Prerequisites: Dependent on specialty and consent of Faculty. Restricted to Pharmacy students.

PHARM 456 Clinical Pharmacy Rotations

★15 (*fi 30*) (either term, 12 weeks). The student is expected to demonstrate professional and technical competencies in a variety of practice situations, including counselling patients, obtaining medication histories, providing drug information, monitoring and evaluating drug therapy, adverse drug reaction assessment and reporting, and therapeutic drug monitoring. Prerequisites: PHARM 404, 405, 406, 415, and 431, PMCOL 331. Restricted to Pharmacy students.

PHARM 457 Contemporary Issues in Pharmacy

★1 (*fi 2*) (either term, 1-0-0). An evaluation of significant trends in the health system that may affect the profession of pharmacy. (Restricted to Pharmacy students.)

PHARM 458 Hospital Pharmacy

★3 (*fi 6*) (either term, 3-0-0). Current literature analysis and presentation of modern concepts in drug distribution, drug information systems, application of data processing to decentralized pharmacy services and administrative principles peculiar to institutional pharmacy. (Restricted to Pharmacy students.)

PHARM 460 Sterile Products

★3 (*fi 6*) (either term, 3-0-3). This course is designed as a comprehensive education in sterile pharmaceutical products that may be prepared and/or dispensed by a hospital pharmacy department. Specific distribution systems and administration techniques will also be discussed. In addition to didactic education, practical experience will be provided in the laboratory section of the course. Prerequisite: PHARM 360. (Restricted to Pharmacy students.)

PHARM 471 Pain Module

★3 (*fi 6*) (first term, 0-3s-0). This module is designed to enable senior pharmacy students to understand and apply the principles of pain management to patients presenting with pain. This course integrates knowledge of pain etiologies, pharmacology, medicinal chemistry, and pharmacokinetics with the therapeutics of pain management. Patient care, skill development and application of pharmaceutical sciences to management and treatment of pain are emphasized. This module is delivered as a seminar course and uses computer conferencing to facilitate communication among students and faculty to foster a collaborative learning environment. Site visits are an integral component of this course. Restricted to Pharmacy students.

PHARM 472 Complementary/Alternative Medicinal Therapies

★3 (*fi 6*) (either term, 3-0-0). The study of herbal preparations, nutritional supplements, and homeopathics. These are widely used by the general public as self-selected OTC (over-the-counter) products/NPDs (nonprescription drugs), or food items for therapeutic, disease prevention, or health promotion purposes. Emphasis will be placed on the role of the pharmacist to help clients make an informed choice and counsel them on the selection of useful and safe products. Prerequisites: PHARM 404, 405, 406 and 432. Restricted to Pharmacy students.

PHARM 481 Veterinary Pharmacology

★3 (*fi 6*) (either term, variable). A course in the commonly used veterinary biological and pharmaceutical preparations; general sanitary and management procedures for the prevention and control of livestock diseases; a brief review of infectious diseases and animal parasites.

PHARM 483 Home Health Care

★3 (*fi 6*) (second term, 3-0-0). To acquaint students with the variety of home health care products; to demonstrate the proper assembly, fitting, adjustment, and use of various products and supplies; to discuss the economics, marketing, and management of running a home health care department and supplying home health care products and services. (Restricted to Pharmacy students.)

PHARM 485 Medication Use in the Canadian Health Care System

★3 (*fi 6*) (second term, 3-0-0). An examination of the Canadian health care system with a focus on medication use and the profession of pharmacy. The course is organized in three general areas: 1) the Canadian health care system, 2) medication use in the Canadian health care system, and 3) medication use management within health care systems. The overall goal is to provide a wider awareness of the systems within which pharmacists work, and factors influencing the systems. Particular attention is given to medication formulary decision making at the provincial, regional and institutional levels. Restricted to Pharmacy students.

PHARM 489 Seminars in Therapeutics and Professional Practice

★3 (*fi 6*) (either term, variable). A seminar course for fourth year pharmacy students covering selected topics in therapeutics, pharmacokinetics and clinical

pharmacy. Prerequisites: PHARM 403, 415, and 431. (Restricted to Pharmacy students.)

PHARM 492 Epidemiology Applications for Pharmacy

★3 (*fi 6*) (second term, 3-0-0). An examination of how epidemiologic methods may be applied to the study of drug use and effects. Students will gain an understanding of factors that may influence pharmaceutical use, and, develop skills necessary to critically evaluate research designed to promote safe, effective, equitable, and efficient use of pharmaceuticals in the population. (Restricted to Pharmacy students.)

PHARM 493 Pharmaceutical Biotechnology

★3 (*fi 6*) (either term, 3-0-0). An introduction to the development of protein and peptide drugs, vaccines, and other drugs produced by biotechnological techniques involving molecular biology and/or genetic manipulations. Topics include basic principles, descriptions of objectives and methodology, and examples of modern drugs produced by these techniques. Therapeutic effects and clinical applications of currently marketed products are addressed. Prerequisites: BIOCH 203/205 or consent of the Faculty.

PHARM 494 Pharmacy Management: Selected Topics

★3 (*fi 6*) (either term, variable). Continuation of PHARM 340 with emphasis on financial management and the management of human resources. Projects on pharmacy operations. Prerequisite: PHARM 340.

PHARM 498 Pharmaceutical Research

★3 (*fi 6*) (either term, 0-0-4). Investigational work under the direction of a member of the Faculty. Preparation of a written report. Prerequisites: consent of the Faculty and the approval of a Faculty member to direct the research. This course may be taken during Spring/Summer by special arrangement. (Restricted to Pharmacy students.)

Graduate Courses

Note: The following undergraduate courses may be taken for credit by graduate students: PHARM 415, 473, 481, 484, 494, 496, 589.

PHARM 565 Clinical Pharmacokinetics

★3 (*fi 6*) (either term, 2-2s-0). A comprehensive course dealing with basic pharmacokinetic principles of dosage regimen calculation and pharmacokinetic considerations relating to the use of various drugs. Clinical pharmacokinetics of therapeutically important drugs will be covered in detail. The laboratory portion is designed to expose the students to the methods used in dosage-regimen adjustment based on the clinical status of the patient. Prerequisites: PHARM 415 and 431, PMCOL 331 and consent of the Faculty. (Restricted to Pharmacy students.)

PHARM 570 Advanced Pharmaceutical Analysis - Spectroscopy

★3 (*fi 6*) (first term, 3-0-3). Applications of instrumental methods of analysis (ultraviolet and infrared spectroscopy; NMR; mass spectrometry; atomic absorption spectroscopy) to pharmaceutical compounds. Offered in odd-numbered years. Prerequisite: PHARM 325 or consent of Faculty.

PHARM 580 Introduction to Computer-Aided Drug Design

★3 (*fi 6*) (second term, 3-0-2). An introductory course designed to provide students with the background and a hands-on understanding of techniques involved in computer-aided drug design, including bioinformatics, molecular modelling, molecular simulation, docking and QSAR. Prerequisite: consent of the Faculty.

PHARM 589 Pharmacy in Neoplastic Disease

★3 (*fi 6*) (either term, 3-0-0). Description of neoplastic disease, its prevalence and drug treatment with an emphasis on patient management. There is an emphasis on the pharmacists' role in preparing chemotherapy medication, minimizing toxic effects of cancer drugs, dosage considerations, concomitant use of medication for other diseases and psychosocial aspects of care. Students will also learn about newer forms of treatments and changes in the provision of treatment services. Prerequisite: PHARM 370. Restricted to Pharmacy students.

PHARM 593 Advanced Radiopharmaceutical Sciences II

★3 (*fi 6*) (first term, 3-0-4). Application of radionuclides in medical diagnosis and treatment; control of radionuclides in the hospital. Laboratory: preparation, quality control and clinical utility of currently used radiopharmaceuticals in nuclear medicine. Prerequisite: PHARM 443 or PHARM 601 or consent of Faculty.

PHARM 595 Clinical Rotations

★6 (*fi 12*) (two term, 900 hours). A clinical experience which will provide the student with the opportunity to practice clinical pharmacy in several speciality areas. The student will be expected to demonstrate professional competence in patient counselling, obtaining medication histories, providing drug information, applied pharmacokinetics and related areas. Credit will be granted after the completion of 900 hours of approved clinical training.

PHARM 596 Pharmaceutical Marketing

★3 (*fi 6*) (first term, 3-0-0). An examination of the process of marketing pharmaceuticals in Canada. Topics to be covered are: pre-marketing requirements, regulatory control over drugs, price and product competition, promotion and

advertising of pharmaceuticals, channels of distribution, packaging, ethics, price, and group purchasing. The course stresses the unique factors to be considered in marketing pharmaceuticals. Prerequisite: PHARM 340.

PHARM 601 Isotope Tracer Methodology I

★3 (fi 6) (first term, 3-0-3). Fundamental principles of radioactivity and health physics. The importance of radioisotopes in medicine, agriculture, industry, and research. Problems and limitations in the use of radioisotopes as tracers. Instrumentation and analysis methods. Experimental procedures, application of methods of analysis and criteria for evaluation of results. Laboratory: handling and preparation of radioisotopes for counting. Counting procedures. Tracer chemical and biochemical analyses.

PHARM 603 Activation Analysis

★3 (fi 6) (second term, 2-0-0). Physical and chemical basis of activation analysis, use of slow neutrons from the Slowpoke reactor, proton and charged particle activation; x-ray fluorescence; modern pulse-height analysis technique. Prerequisite: consent of Faculty. Note: Offered-alternate years.

PHARM 604 Applied Problems in Current Research

★3 (fi 6) (either term, 0-0-3). The student will work with one or two faculty members on special research techniques in bionucleonics or radiopharmacy. Prerequisite: consent of Faculty.

PHARM 605 Radiopharmaceutical Chemistry

★2 (fi 4) (second term, 2-0-0). A discussion of preparation of short-lived radiopharmaceuticals with emphasis on radiochemical synthesis using carbon-11, fluorine 18 and radionuclides of iodine and bromine; stability, storage and purity of radio-labelled compounds; labelling with long-lived radionuclides. Prerequisite: consent of Faculty. Note: Offered-alternate years.

PHARM 606 Current Topics in Bionucleonics and Radiopharmacy

★3 (fi 6) (either term, 3-0-0). Assigned readings, tutorials and seminars in recent advances in the fields of bionucleonics and radiopharmacy, conducted under the direction of several faculty members. Prerequisites: PHARM 601, 603, 604 or consent of Faculty.

PHARM 610 Advanced Physical Pharmacy

★3 (fi 6) (either term, 3-0-4). Special topics of a physical-chemical nature applicable to pharmaceutical systems. Emphasis is given to principles of colloid and surface science. Applications to dosage form design and biological systems are considered. Laboratory: experimental work in application of physicochemical principles to pharmaceutical systems. Prerequisite: consent of Faculty.

PHARM 611 Pharmaceutical Formulation and Development

★3 (fi 6) (second term, 3-0-4). Theoretical considerations basic to the technology of pharmaceutical dosage forms to meet the requirements of therapeutic efficacy, stability, and safety. Laboratory: development and formulation of pharmaceutical products. Prerequisite: consent of Faculty.

PHARM 615 Advanced Pharmacokinetics

★3 (fi 6) (second term, 3-0-0). This course deals with the theoretical aspects of pharmacokinetics. Compartmental and non-compartmental theories are treated in depth. The application of these theories is made in various areas where kinetics are involved. Prerequisite: PHARM 415 or equivalent or consent of Faculty. Note: Offered alternate years.

PHARM 624 Application of Nuclear Magnetic Resonance Spectroscopy to Medicinal and Pharmaceutical Chemistry

★3 (fi 6) (first term, 3-0-0). Basic interpretation and examples of use of NMR spectroscopy in problems of pharmaceutical synthesis and its studies of the mode of action of medicinally active compounds. Prerequisite: consent of Faculty. Note: Offered alternate years.

PHARM 626 Applications of Mass Spectrometry to Medicinal and Pharmaceutical Chemistry

★3 (fi 6) (either term, 3-0-0). Examples of the use of mass spectrometry in the identification of medicinal compounds are considered. Diagnostic spectra of extracts of medicinal preparations, identification of drug metabolites and applications of mass spectrometry to chemical toxicology and neurochemistry are studied. Prerequisite: consent of Faculty. Note: Offered alternate years.

PHARM 630 The Metabolism and Excretion of Drugs

★3 (fi 6) (either term, 3-0-0). The chemistry, biochemistry and kinetics of drug metabolism together with the factors affecting metabolism; the practical aspects of *in vitro* and *in vivo* studies of drug metabolism; the excretion of drugs by various routes and factors affecting excretion, the kinetics of excretion. Note: Offered alternate years.

PHARM 685 Methods for the Assessment of Health Related Quality of Life

★3 (fi 6) (first term, 3-0-0). The primary objective is to provide students with the background knowledge and methodological skills to be discriminating and informed users of health-related quality of life measures and interpreters of HRQL evidence. Topics include uses of HRQL measures, various systems for classifying HRQL measures, methodologies for the assessment of reliability, validity, responsiveness, and interpretability, and conceptualization of major approaches for the development of HRQL measures (including psychometric, clinical, and economics and decision

analytic approaches). Examples of different types of measures and their application in a wide variety of clinical areas are included.

PHARM 690 Advanced Seminar in Pharmacy and Pharmaceutical Sciences

★3 (fi 6) (either term, 3-0-0). Assigned readings, tutorials, and seminars on recent advances and methodological approaches in Pharmacy, conducted under the direction of academic staff members in the Faculty of Pharmacy and Pharmaceutical Sciences.

PHARM 694 Directed Project

★3 (fi 6) (either term, 0-0-3). Directed studies in pharmaceutical research, using one or more techniques of special interest to individual students. Prerequisites: consent of the Faculty and the supervising faculty member.

PHARM 697 Graduate Seminar

★0 (fi 1) (two term, 0-1s-0). Seminar training and short seminar presentations on topics related to the student's field of research. Normally, the seminar will be presented during the student's second or third term. Required of all MSc and PhD students.

PHARM 698 Graduate Seminar

★0 (fi 1) (either term, 0-1s-0). Seminar presentation based on the student's research. Normally to be taken during the final term, prior to thesis defense. Required of all MSc and PhD students. Prerequisite: PHARM 697.

PHARM 900 Directed Research Project

★6 (fi 12) (variable, unassigned).

221.173 Philosophie, PHILE

Faculté Saint-Jean

Cours de 1er cycle

PHILE 125 Logique pratique

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Les procédés et les principes d'analyse des arguments. La matière du cours pourra inclure les sophismes informels, l'initiation à la méthode scientifique, le raisonnement statistique élémentaire, la logique propositionnelle élémentaire et les procédés susceptibles de mener à une décision rationnelle. Note: La priorité sera accordée aux étudiants du BA de la Faculté Saint-Jean.

PHILE 140 Introduction à la philosophie occidentale

★6 (fi 12) (aux deux semestres, 3-0-0). Introduction aux principaux problèmes et théories qui ont dominé la pensée philosophique en Occident, par l'étude et la discussion critique de quelques classiques de la philosophie. Des lectures incluront la République de Plato et les Méditations métaphysiques de Descartes et une oeuvre majeure de Hobbes, Locke, Berkeley ou Hume.

PHILE 209 Une étude philosophique de l'être humain

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Un regard sur l'être humain: sa connaissance, ses façons d'aimer.

PHILE 386 La bioéthique

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Regard philosophique sur les problèmes majeurs de la bioéthique. Exemples: les droits et les devoirs du personnel hospitalier et du patient, l'euthanasie active et passive, le droit à la vie et l'avortement, la recherche et l'expérimentation en médecine humaine et animale, la manipulation génétique.

PHILE 392 Philosophie récente de l'Europe continentale

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction à divers mouvements post-phénoménologiques en Europe continentale, tels que l'herméneutique, la théorie critique, le post-structuralisme, etc., qui serviront de base théorique et méthodologique à l'analyse de phénomènes pertinents aux humanités.

221.174 Philosophy, PHIL

Department of Philosophy
Faculty of Arts

Notes

- (1) See also INT D 331 and 498 for courses which are offered by more than one Department or Faculty and which may be taken as options or as a course in this discipline.
- (2) No junior course presupposes background in Philosophy. PHIL 101, 102, and 120 are recommended for all students intending to continue in Philosophy. Courses at the 200-level are intended to provide a foundation for further study in Philosophy.
- (3) There are no formal prerequisites for 200- or 300-level courses (except for PHIL 220). Entrance to 400-level courses requires ★6 of prior courses in PHIL, at least three of which must be at the 200-level.

Undergraduate Courses

PHIL 101 Introduction to Philosophy: Values and Society

★3 (fi 6) (either term, 2-1s-0). An introduction to the classical problems of philosophy through study and critical discussion of selected philosophical classics and contemporary works. Emphasis will be placed on questions of moral and other values and on the nature of society and justice.

PHIL 102 Introduction to Philosophy: Knowledge and Reality

★3 (fi 6) (either term, 2-1s-0). An introduction to the classical problems of philosophy through study and critical discussion of selected philosophical classics and contemporary works. Emphasis will be placed on questions of the nature and extent of human knowledge and classic problems about the nature of reality and our place in it.

PHIL 103 Critical Thinking, Reading, and Writing

★3 (fi 6) (either term, 3-0-0). An introduction to some central topics in philosophy, with frequent writing assignments and a minimum 30% of class time devoted to writing instruction. Note: Credit cannot be obtained for both PHIL 103 and any of PHIL 101, 102, or 125.

PHIL 110 Philosophical Texts

★3 (fi 6) (either term, 3-0-0). Intensive study of different modes of philosophical writing including dialogue, meditation, essay, aphorism, treatise, formalized argument, etc. Excerpts from a range of major and minor authors (e.g. Augustine, Descartes, Montaigne, Rousseau, Nietzsche, Quine) will be studied. The course emphasizes the close reading and analysis of texts.

PHIL 120 Symbolic Logic I

★3 (fi 6) (either term, 3-0-0). A study of sentential logic, including translation, semantics, decision procedures and natural deduction followed by an introduction to predicate logic, concentrating on translation. Note: Not open to students with credit in PHIL 220.

PHIL 125 Practical Logic

★3 (fi 6) (either term, 3-0-0). Elementary methods and principles for analyzing reasoning as it occurs in everyday contexts. Topics may include informal fallacies, introduction to scientific method, elementary statistical reasoning, elementary sentential logic, as well as the study of argument in contemporary debates about issues of social concern.

PHIL 200 Metaphysics

★3 (fi 6) (either term, 3-0-0). Basic questions concerning the nature of reality. Topics may include existence, materialism and idealism, freedom and determinism, appearance and reality, causality, identity, time and space, universals and particulars.

PHIL 205 Philosophy of Mind

★3 (fi 6) (either term, 3-0-0). Basic questions concerning the mind and our attempts to study it scientifically.

PHIL 215 Epistemology

★3 (fi 6) (either term, 3-0-0). A study of such central topics in the theory of knowledge as truth and rationality, skepticism and the limits of knowledge, relativism and the objectivity of knowledge, the role of perception, memory and reason as sources of knowledge.

PHIL 217 Biology, Society, and Values

★3 (fi 6) (either term, 3-0-0). The philosophical and social impact of historical and contemporary topics in the biological sciences.

PHIL 220 Symbolic Logic II

★3 (fi 6) (either term, 3-0-0). A brief review of sentential logic followed by an intensive study of predicate logic with identity. Topics include translation, semantics, decision procedures, natural deduction systems, mathematical induction. Other topics include: theories of definite descriptions, elementary modal logic, formal axiomatic systems. Prerequisite: PHIL 120 or consent of Department.

PHIL 230 Greek Philosophy to Plato

★3 (fi 6) (either term, 3-0-0). A survey of the thought of the ancient Greek world from its beginnings with the Pre-Socratics up to and including Plato.

PHIL 240 Descartes to Hume

★3 (fi 6) (either term, 3-0-0). A survey of Philosophy in the 17th- and 18th centuries. Philosophers studied will include Descartes, Leibniz, Spinoza, Locke, Berkeley, and Hume.

PHIL 242 Aristotle and Hellenistic Philosophy

★3 (fi 6) (either term, 3-0-0). The thought of the ancient Greek world from Aristotle into the Hellenistic period.

PHIL 245 Kant to Nietzsche

★3 (fi 6) (either term, 3-0-0). A survey of the philosophy of Kant and the 19th-century. Philosophers studied will include Kant, Hegel, Marx, the Utilitarians, and Nietzsche.

PHIL 246 Russell to Quine

★3 (fi 6) (either term, 3-0-0). A survey of Analytic Philosophy in the first half of the 20th Century.

PHIL 250 Ethics

★3 (fi 6) (either term, 3-0-0). An examination of questions of right and wrong, good and evil, and reasons for action, through the study of ethical thought of authors such as Plato, Aristotle, Hobbes, Kant, and Mill.

PHIL 265 Philosophy of Science

★3 (fi 6) (either term, 3-0-0). An introduction to the central issues in contemporary philosophy of science. Topics may include theory evaluation, paradigm shifts and theory change, laws of nature, causation and explanation, the rationality of science and its social and historical setting.

PHIL 270 Political Philosophy

★3 (fi 6) (either term, 3-0-0). A survey of issues in contemporary political philosophy with attention to liberalism and communitarianism, sovereignty, feminism, entitlement and distribution, and global justice.

PHIL 280 Philosophy of Art

★3 (fi 6) (either term, 3-0-0). An introduction to some of the traditional theories, such as the expressionist and the formalist theories, which investigate the nature and function of the arts. The nature of aesthetic experience will also be considered.

PHIL 291 Existentialism

★3 (fi 6) (either term, 3-0-0). An introduction to the background and main themes of existentialist philosophy. Authors such as Kierkegaard, Nietzsche, Heidegger, and Sartre are considered.

PHIL 301 World Philosophies

★3 (fi 6) (either term, 3-0-0). An introduction to one or more non-Western approaches to philosophy, such as Africana, Asian, or aboriginal traditions of thought. Attention will be given to the internal structure of particular philosophical theories, as well as to connections with and interactions among broader cultural traditions, values, and practices.

PHIL 305 Philosophy of Psychology

★3 (fi 6) (either term, 3-0-0). Central topics at the interface of philosophy and psychology. Prerequisite: PHIL 205, or two courses in Psychology, or consent of Department.

PHIL 317 Philosophy of Biology

★3 (fi 6) (either term, 3-0-0). Core topics at the interface of biology and philosophy.

PHIL 325 Risk, Choice, and Rationality

★3 (fi 6) (either term, 3-0-0). A study of the formal theory of rationality including probability and induction, and elementary decision theory, with attention to the paradoxes of choice.

PHIL 332 Feminist Issues in Political and Social Philosophy

★3 (fi 6) (either term, 3-0-0). An introduction to feminist issues in current social and political philosophy. Comparison and evaluation of various schools of current feminist thought such as liberal feminism, radical feminism, Marxist feminism, and socialist feminism.

PHIL 336 Early Medieval Philosophy

★3 (fi 6) (either term, 3-0-0). Major philosophers in the Christian and Islamic traditions up to the reintroduction of Aristotelian texts in the early 12th century. Prerequisite: PHIL 230 or consent of Department.

PHIL 345 Humans and Animals

★3 (fi 6) (either term, 3-0-0). Philosophical approaches to the question of comparative human and animal cognition, emotion, awareness, and language. The course will also address the problem of animal rights vis-à-vis individual and institutional human interests.

PHIL 355 Philosophy of the Environment

★3 (fi 6) (either term, 3-0-0). Philosophical dimensions of issues raised by our relationship to the environment. Topics may include anthropocentrism versus biocentrism, the value of biodiversity, the aesthetic appreciation of nature, the relationship between environmental and economic values.

PHIL 357 Philosophy of Religion

★3 (fi 6) (either term, 3-0-0). General topics in the Philosophy of Religion, which may include the concept of 'religion,' the existence of God, meaning and intelligibility in religious language, religion and morality, implications of the social scientific study of religion.

PHIL 365 Philosophy of Computing

★3 (fi 6) (either term, 3-0-0). Emphasis on artificial intelligence, artificial life, and virtual reality. No previous familiarity with computing is necessary.

PHIL 366 Computers and Culture

★3 (fi 6) (either term, 3-0-0). A philosophical examination of moral and social issues arising from the computer revolution. Possible topics include hacking, internet culture, smart environments and cyborgs.

PHIL 368 Equality and Social Justice

★3 (fi 6) (either term, 3-0-0). A philosophical study of the notions of equality, privilege, and freedom. Readings from classical and contemporary texts on justice, equality, group identity and difference, oppression and liberation. Attention will

be paid to areas of current controversy such as welfare policies, affirmative action, and the nature and implications of sexual, cultural, and ethnic identity.

PHIL 375 Science and Society

★3 (fi 6) (either term, 3-0-0). A broadly based introduction to the intellectual, cultural, and social dimensions of science and their implications. Topics may include the impact of the Newtonian revolution, mechanism, materialism and Darwinism, and the nature of objectivity and rationality.

PHIL 380 Philosophy of Criticism

★3 (fi 6) (either term, 3-0-0). An introduction to the philosophical foundations of art criticism. Questions concerning the standards of interpretation and of evaluation of the arts will be given special attention.

PHIL 381 Philosophy and Literature

★3 (fi 6) (either term, 3-0-0). An introduction to the philosophical study of literature.

PHIL 382 Philosophy of Law: Theoretical and Social Issues

★3 (fi 6) (either term, 3-0-0).

PHIL 384 Applied Ethics

★3 (fi 6) (either term, 3-0-0). Moral theory applied to practical problems in areas such as business, war and peace, the environment, and human relations.

PHIL 386 Philosophy and Health Care

★3 (fi 6) (either term, 3-0-0). A philosophical examination of concepts and issues central to knowledge and practice of health care. Topics may include: rights and responsibilities of patients and health care personnel, passive and active euthanasia, abortion, research and experimentation, disclosure of diagnosis and risks, death and suffering.

PHIL 388 Philosophy and Nursing I

★1.5 (fi 3) (either term, 18 hours). Elementary methods and principles for analyzing reasoning in everyday contexts and a philosophical examination of concepts and issues central to knowledge and practice in nursing. Note: Open only to students registered in the BScN-Collaborative program.

PHIL 392 Topics in Recent Continental Philosophy

★3 (fi 6) (either term, 3-0-0). An introduction to such movements in recent European Philosophy as phenomenology, hermeneutics, critical theory, structuralism, and post structuralism. Prerequisite: PHIL 291 or consent of the Department.

PHIL 396 Third-Year Honors Seminar

★3 (fi 6) (either term, 0-3s-0). Note: For students in the third year of the Honors program.

PHIL 398 Philosophy and Nursing II

★1.5 (fi 3) (either term, 18 hours). Concepts and issues central to knowledge and practice in nursing. Topics may include: concepts of health, rights and responsibilities of patients and nurses, passive and active euthanasia, research and experimentation. Note: Open only to students registered in the BScN-Collaborative program and who have completed PHIL 388. Not available for credit to students who have completed PHIL 389.

PHIL 401 Topics in Epistemology

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 405 Topics in Philosophy of Mind

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 411 Philosophy of Space and Time

★3 (fi 6) (either term, 3-0-0). Selected theories and problems concerning the nature of space and time. A strong background in philosophy, mathematics, or physical sciences is desirable. Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 412 Topics in Philosophy of Science

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 415 Topics in Philosophy of Biology

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of the Department.

PHIL 417 Philosophy and Cognitive Science

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 420 Metalogic

★3 (fi 6) (either term, 3-0-0). The theoretical study of formal systems of logic. Topics include formal axiomatic systems, formal syntax and semantics, soundness and completeness proofs for both sentential and predicate logic. Prerequisite: PHIL 220 or consent of Department.

PHIL 421 Modal Logic

★3 (fi 6) (either term, 3-0-0). Standard modal systems in sentential and predicate logic including possible world semantics and completeness proofs. Tense logic and epistemic logic may be considered. Prerequisite: PHIL 220 or consent of Department.

PHIL 422 Topics in Advanced Symbolic Logic

★3 (fi 6) (either term, 3-0-0). Prerequisite: PHIL 220 or consent of Department.

PHIL 425 Topics in Rationality

★3 (fi 6) (either term, 3-0-0). Prerequisite: PHIL 325, ECON 101, or consent of Department.

PHIL 426 Philosophy of Language

★3 (fi 6) (either term, 3-0-0). Selected problems concerning the nature of language and meaning. Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 428 Logic and Language

★3 (fi 6) (either term, 3-0-0). Philosophical logic and its application to the semantics of natural language. Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 433 Topics in Feminist Philosophy

★3 (fi 6) (either term, 3-0-0). Prerequisite: PHIL 332, W ST 301, or consent of Department.

PHIL 434 Aristotle

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 436 Topics in Later Medieval Philosophy

★3 (fi 6) (either term, 3-0-0). Scholastic philosophy in medieval western Europe from the mid-12th century to 1350, including relevant developments in later Islamic thought. Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 440 Topics in Ancient Philosophy

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200 level, or consent of Department.

PHIL 442 17th- and 18th-Century Continental Philosophy

★3 (fi 6) (either term, 3-0-0). Topics concerning the early modern philosophical tradition of Descartes, Spinoza, and Leibniz. Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 443 17th- and 18th-Century British Philosophy

★3 (fi 6) (either term, 3-0-0). Topics concerning the early modern British philosophical tradition of Locke, Berkeley, and Hume. Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 445 Topics in 19th-Century Philosophy

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 447 Wittgenstein

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 448 Topics in 20th-Century Philosophy

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 450 Topics in Ethics

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 451 Topics in the History of Moral and Political Philosophy

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 453 Philosophy of History

★3 (fi 6) (either term, 3-0-0). Study of one or more of the following themes: Speculative accounts of our historical being and of the sense of history as a whole; critical analysis of the scope and limits of historiographic knowledge and explanation; historicist theses that philosophy is essentially historical. Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 470 Topics in Social and Political Philosophy

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 480 Topics in Aesthetics

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of Department.

PHIL 481 Topics in Philosophy and Literature

★3 (fi 6) (either term, 3-0-0). Prerequisite: At least ★6 in PHIL, ★3 of which must be at the 200-level, or consent of the Department.

PHIL 486 Directed Reading I

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

PHIL 487 Directed Reading II

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

PHIL 493 Fourth-Year Honors Seminar

★3 (fi 6) (first term, 0-3s-0). Note: For students in the fourth year of the Honors program.

PHIL 498 Honors Essay

★3 (*fi 6*) (either term, 3-0-0). Preparation of the honors essay, required in the fourth year of the Honors program.

221.174.1 Philosophy (from within the Roman Catholic Tradition) St Joseph's College

PHIL 209 The Human Person: Philosophical Issues

★3 (*fi 6*) (either term, 3-0-0). Personal identity, interpersonal relationships, sex and gender, freedom and immortality in historical and contemporary contexts.

PHIL 239 Greek Philosophy and the Christian Tradition

★3 (*fi 6*) (either term, 3-0-0). Issues concerning human beings, knowledge, ethics and society among Greek thinkers and their impact on Christian thought. Note: Not available for credit with PHIL 139.

PHIL 249 Medieval Philosophy and the Christian Tradition

★3 (*fi 6*) (either term, 3-0-0). Issues concerning human beings, faith and reason, free will and determinism, immortality and God among medieval thinkers and their significance for Christian thought. Note: Not available for credit with PHIL 139.

PHIL 269 Moral Issues in a Christian Context

★3 (*fi 6*) (either term, 3-0-0). Critical philosophical reflection on contemporary social and moral issues.

PHIL 289 Issues in the Philosophy of Christian Education

★3 (*fi 6*) (either term, 3-0-0). A philosophical study of the principles and aims of Christian education. Topics will include educating the whole person, religious beliefs and values, religious pluralism, tolerance, the Christian and Catholic educational tradition, separate schools.

PHIL 309 Augustine

★3 (*fi 6*) (either term, 3-0-0). Philosophical issues in Augustine: their historical context, significance and influence. Prerequisite: At least ★3 in PHIL or consent of the College. Note: Not open to students with credit in PHIL 439.

PHIL 319 Thomas Aquinas

★3 (*fi 6*) (either term, 3-0-0). Philosophical issues in Aquinas: their historical context, significance and influence. Prerequisite: At least ★3 in PHIL or consent of the College. Note: Not open to students with credit in PHIL 449.

PHIL 339 Contemporary World Views and Christianity

★3 (*fi 6*) (either term, 3-0-0). Critical study of Christianity in dialogue with such worldviews as atheism, agnosticism, naturalism, materialism, existentialism, feminism, liberalism, postmodernism.

PHIL 389 Philosophy and Nursing II: Christian Perspectives

★1.5 (*fi 3*) (either term, 18 hours). Ethical, cultural and religious concepts and issues central to knowledge and practice in nursing. Note: Open only to students registered in the BScN-Collaborative program and who have completed PHIL 388. Not available for credit to students who have completed PHIL 398 or CHRTC 352.

Note: For Christian Theology courses offered by St Joseph's College, see Christian Theology (CHRTC), St Joseph's College (from within the Roman Catholic Tradition).

Graduate Courses

Note: Only a selection of the courses listed below are offered each year.

PHIL 500 Metaphysics

★3 (*fi 6*) (either term, 3-0-0).

PHIL 501 Epistemology

★3 (*fi 6*) (either term, 3-0-0).

PHIL 505 Philosophy of Mind

★3 (*fi 6*) (either term, 3-0-0).

PHIL 510 Philosophy of Science

★3 (*fi 6*) (either term, 3-0-0).

PHIL 522 Topics in Logic

★3 (*fi 6*) (either term, 3-0-0).

PHIL 526 Philosophy of Language

★3 (*fi 6*) (either term, 3-0-0).

PHIL 532 Aristotle

★3 (*fi 6*) (either term, 3-0-0).

PHIL 540 Topics in Ancient Philosophy

★3 (*fi 6*) (either term, 3-0-0).

PHIL 546 Topics in Modern Philosophy

★3 (*fi 6*) (either term, 3-0-0).

PHIL 547 Topics in 20th Century Philosophy

★3 (*fi 6*) (either term, 3-0-0).

PHIL 550 Moral Philosophy

★3 (*fi 6*) (either term, 3-0-0).

PHIL 570 Social and Political Philosophy

★3 (*fi 6*) (either term, 3-0-0).

PHIL 580 Aesthetics

★3 (*fi 6*) (either term, 3-0-0).

PHIL 594 Selected Problems in Philosophy

★3 (*fi 6*) (either term, 3-0-0).

PHIL 596 Directed Reading I

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: Open only to graduate students beyond the qualifying year.

PHIL 597 Directed Reading II

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: Open only to graduate students beyond the qualifying year.

PHIL 696 Directed Reading III

★3-6 (*variable*) (variable, 3-0-0). Prerequisite: Open only to provisional PhD candidates.

PHIL 697 Directed Reading IV

★3-6 (*variable*) (variable, 3-0-0). Prerequisite: Open only to provisional PhD candidates.

221.175 Physical Activity, PAC

Faculty of Physical Education and Recreation

Goal of PAC Level I:

- (1) Acquisition of basic skills required in the activity and an appreciation of how these skills are used in combination in performance situations.
- (2) Development of the specific theoretical knowledges associated with terminology, history, sociocultural context, rules and organizational aspects, basic strategies and tactics, technique, and other concepts relevant to the activity.

Notes

- (1) Students enrolled in courses offered by the Faculty of Physical Education and Recreation must take responsibility for ensuring that they are physically and medically fit to be taking such courses. If a student has a physical or medical condition that may compromise his/her participation in a course, it is the student's responsibility to so inform the instructor of that course. Students may contact the Faculty for further information on physical activity requirements and are encouraged to seek medical advice if necessary.
- (2) Students are expected to attend the first class of any activity course appropriately dressed for active participation.
- (3) These courses may require the payment of additional miscellaneous fees. See §22.2.3 for details.

Undergraduate Courses

PAC 101 Principles and Concepts of Physical Activity

★3 (*fi 6*) (either term, 1-2s-0). An exploration of the principles and concepts that underlie the movement of individuals and groups in a variety of settings. As the focus of the course is on the development of conceptual understanding of movement, a wide range of activities and their contexts will be examined and experienced. Note: credit will be granted for only one of PAC 101 or PEDS 294.

PAC 110 Aquatics

★1.5 (*fi 3*) (either term, 0-3L-0). Development of proficiency in swimming and aquatic skills and the examination of theoretical aspects of aquatics. Prerequisite: Aquaquest Level 8, or RLSS Lifesaving II, or YMCA Level 3, or Red Cross Level Blue, or the ability to swim front and back crawl efficiently.

PAC 111 Basketball

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Basketball.

PAC 112 Field Hockey

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Field Hockey.

PAC 113 Football

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Football.

PAC 114 Ice Hockey

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Ice Hockey. Prerequisite: Average to above average skating ability. Note: Students must provide their own skates, sticks, hockey gloves, helmets, elbow pads and shin pads.

PAC 117 Rugby

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Rugby. Note: Mouth guards recommended.

PAC 118 Soccer

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Soccer.

PAC 131 Badminton

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in basic Badminton strokes and strategies. Note: Students must provide their own racquets and shuttlecocks.

PAC 133 Squash

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in basic Squash strokes and strategies. Note: Students must provide their own racquets, balls, and eye guards.

PAC 135 Tennis

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in the basic Tennis strokes (forehand, backhand, serve, and volley) and strategies. Note: Students must provide their own racquets, balls, and non-marking Tennis shoes.

PAC 137 Volleyball

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Volleyball.

PAC 140 Baseball/Fastball/Softball

★1.5 (*fi 3*) (Spring/Summer, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Baseball/Fastball/Softball.

PAC 145 Golf

★1.5 (*fi 3*) (Spring/Summer, 0-3L-0). Acquisition of theoretical knowledge and personal skill in driving, chipping, pitching and putting. Note 1: This course requires the payment of additional miscellaneous fees. See the University Regulations and Information for Students section of the Calendar, Fee Payment Guide. Note 2: Students can rent equipment from the local golf course.

PAC 154 Wrestling

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in takedowns and groundwork.

PAC 160 Gymnastics

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of personal skill in the fundamental movements common to all forms of gymnastics.

PAC 173 Athletics (Track and Field)

★1.5 (*fi 3*) (first term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in sprinting, hurdling, cross country running, high jumping, long jumping, discus throwing, javelin throwing, and relays.

PAC 174 Athletics (Track and Field)

★1.5 (*fi 3*) (second term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in sprinting, hurdling, middle distance running, triple jumping, high jumping, pole vaulting, shot putting, hammer throwing, and relays.

PAC 180 Canoeing and Kayaking

★1.5 (*fi 3*) (Spring/Summer, 0-3L-0). Acquisition of theoretical knowledge and personal skill in strokes, manoeuvres, and rescue. Prerequisite: Aquaquest Level 8, or RLSS Lifesaving II, or YMCA Level 3, or Red Cross Level Blue, or the ability to swim front and back crawl efficiently.

PAC 181 Cross Country Skiing

★1.5 (*fi 3*) (second term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in classical/skiing and hill manoeuvres. Note: One required day trip will be scheduled on a weekend during the course.

PAC 182 Indoor Wall Climbing

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in basic climbing techniques, rope management, and belays. Note: Equipment is available for rent from Urban Uprising.

PAC 183 Introduction to Curling

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in Curling.

PAC 197 Selected Topics in Physical Activity - Level I

★1.5 (*fi 3*) (either term, 0-3L-0). Note: Topics may vary from year to year.

PAC 199 Directed Studies

★1.5 (*fi 3*) (either term, 0-3L-0). Acquisition of theoretical knowledge and personal skill in an individual or team activity. Prerequisite: Consent of Faculty. Note: Topics may vary from year to year.

PAC 310 Analysis and Instruction of Aquatics

★3 (*fi 6*) (either term, 0-3L-0). This course examines practical and theoretical aspects and techniques related to instructing swimming and aquatic skills. Certification at the Instructor's level is optional provided students meet some extracurricular requirements. Prerequisite: PAC 110 or RLSS Bronze Medallion or the equivalent in swimming skill.

PAC 311 Analysis and Instruction of Basketball

★3 (*fi 6*) (either term, 0-3L-0). The theory, practice, and teaching of the fundamental skills of Basketball. Prerequisite: PAC 111.

PAC 314 Analysis and Instruction of Ice Hockey

★3 (*fi 6*) (either term, 0-3L-0). The theory, practice, and teaching of fundamental team play. Emphasis will be on the development of concepts and strategies from which effective systems are created. Students must provide their own equipment: skates, stick, helmet, hockey gloves, elbow pads and shin pads. Prerequisite: PAC 114.

PAC 318 Analysis and Instruction of Soccer

★3 (*fi 6*) (either term, 0-3L-0). The theory, practice, and teaching of the fundamental skills of Soccer. Emphasis on skill acquisitions and analysis. Prerequisite: PAC 118.

PAC 320 Structure and Strategy of Games

★3 (*fi 6*) (either term, 0-3L-0). A study of similarities and differences in games (sports) through an examination of their specific rules, skills and strategies. Class members will be exposed to experiences at the practical and theoretical levels in the categories of territory, target, field and court games. Prerequisite: One of: PAC 101, PEDS 293 or 294.

PAC 325 The Study of Games for Children and Youth

★3 (*fi 6*) (either term, 1-2s-0). An in-depth study of games played by children and youth in informal situations and in organized programs. Opportunities to observe and work with children and youth will be provided. Prerequisite: One of PAC 101, PEDS 293, 294 or 338.

PAC 331 Analysis and Instruction of Badminton

★3 (*fi 6*) (either term, 0-3L-0). Theory and practice of the skills and strategies of Badminton. Note: Students must provide their own racquets and shuttlecocks. Prerequisite: PAC 131.

PAC 333 Analysis and Instruction of Squash

★3 (*fi 6*) (either term, 0-3L-0). The theory, practice, and teaching of the skills and strategies of Squash. Note: Students must provide their own racquets, balls, and eye guards. Prerequisite: PAC 133.

PAC 335 Analysis and Instruction of Tennis

★3 (*fi 6*) (either term, 0-3L-0). Theory and practice of the skills and strategies of Tennis. Note: Students must provide their own racquets, balls, and non-marking Tennis shoes. Prerequisite: PAC 135.

PAC 337 Analysis and Instruction of Volleyball

★3 (*fi 6*) (either term, 0-3L-0). The theory, practice and teaching of the fundamental skills of Volleyball. Emphasis will be on volleyball skill instruction, advanced personal skill acquisition and fundamental team systems. Prerequisite: PAC 137.

PAC 345 Analysis and Instruction of Golf

★3 (*fi 6*) (Spring/Summer, 0-3L-0). The theory, practice, and teaching of the fundamental skills of Golf.

Note 1: This course requires the payment of additional miscellaneous fees. See the University Regulations and Information for Students section of the Calendar, Fee Payment Guide. Note 2: Students can rent equipment from the local golf course. Prerequisite: PAC 145.

PAC 354 Analysis and Instruction of Wrestling

★3 (*fi 6*) (either term, 0-3L-0). Emphasis on wrestling takedown and groundwork techniques. Includes theory, history, officiating and coaching principles. Prerequisite: PAC 154.

PAC 355 The Theory and Practice of Yoga

★3 (*fi 6*) (either term, 0-3L-0). Emphasis on philosophy, scientific basis and unique yoga approach to fitness and stress management along with practice of yoga asanas.

PAC 360 Analysis and Instruction of Gymnastics

★3 (*fi 6*) (either term, 0-3L-0). Provides theoretical and practical foundations common to recreational and competitive gymnastics. Prerequisite: PAC 160.

PAC 365 The Study of Gymnastics for Children and Youth

★3 (*fi 6*) (either term, 1-2s-0). A study of a variety of gymnastic programs from the perspective of their potential to meet the needs of children and youth at various ages. Class members will be required to plan, present, and evaluate gymnastic activities for children and youth. Prerequisite: One of PAC 101, PEDS 293 or 294.

PAC 370 Analysis and Instruction of Track and Field Events

★3 (*fi 6*) (either term, 0-3L-0). Sprinting, hurdles, long-jump, high jump, triple jump, pole vault, distance running, relays, shot, discus, hammer, javelin, and related strength training. Prerequisite: PAC 173 or PAC 174.

PAC 380 Analysis, Instruction, and Leadership of Canoeing and Kayaking

★3 (*fi 6*) (Spring/Summer, 0-2s-4). The theory and practice of canoeing and kayaking instruction and trip leadership appropriate for various populations. Prerequisite: PAC 180.

PAC 383 Analysis and Instruction of Curling

★3 (*fi 6*) (either term, 0-3L-0). Designed to offer students advanced skill and theoretical development fundamental to safe and enjoyable competitive involvement in Curling as a player, coach, and official. Prerequisite: PAC 183.

PAC 390 Applied Resistance Training

★3 (fi 6) (either term, 2-0-1). The scientific examination of resistance training as an applied training methodology for general conditioning and sport-specific enhancement. Emphasis on resistance training techniques, lifting mechanics, program design and implementation will be the core element. Supplementary topics include plyometric training, Olympic lifts, and selected population program modifications. Prerequisite: PEDS 200 and 335.

PAC 391 Applied Endurance Training

★3 (fi 6) (either term, 0-3L-0). An examination of the theoretical and practical aspects of both aerobic and anaerobic endurance training for general conditioning and sport. Topics include: the physiological limitations to endurance exercise; the assessment of endurance capacities; and the development and monitoring of endurance training programs. Prerequisite: PEDS 335.

PAC 397 Selected Topics in Physical Activity - Level II

★3 (fi 6) (either term, 0-3L-0). Note: Topics may vary from year to year.

PAC 399 Directed Studies

★3 (fi 6) (either term, 3-0-0). The theory, practice and teaching of the fundamental skills of an individual or team activity. Prerequisite: Consent of Faculty. Note: Topics may vary from year to year.

221.176 Physical Education and Sport, PEDS

Faculty of Physical Education and Recreation

Undergraduate Courses

Note: Enrolment in all PEDS courses is restricted to students registered in the Faculty of Physical Education and Recreation, or to students registered in specified programs that require PEDS courses to meet degree requirements. Other students must obtain prior approval of the Faculty.

PEDS 100 Structural Anatomy

★3 (fi 6) (either term, 3-0-2). Introductory study of human anatomy. Students learn structural and functional components of selected systems of the human body.

PEDS 101 Introduction to Human Physiology

★3 (fi 6) (either term, 3-0-0). An introduction to human physiology from the cellular to systemic level with special emphasis on systems that adapt to exercise stress. Note: Credit will be granted for only one of PEDS 101 or 102.

PEDS 103 Integrative Human Physiology

★3 (fi 6) (second term, 3-0-0). Introduction to Integrative Human Physiology. Focuses on the regulation, control, and integration of cellular functions in the human body with special emphasis on systems that respond to exercise stress. Prerequisite: PEDS 101. Note credit will be granted for only one of PEDS 102 or 103.

PEDS 200 Physiology of Exercise

★3 (fi 6) (either term, 3-0-2). An introduction to physiological adaptations to stress of exercise and training. Prerequisite: PEDS 101 or 102.

PEDS 203 Skill Acquisition and Performance

★3 (fi 6) (either term, 3-0-0). The course presents a psychological approach to understanding human motor behavior. The course examines the processes involved in learning motor skills and controlling movement, and the factors that influence acquisition and performance.

PEDS 205 Introduction to Outdoor Environmental Education

★3 (fi 6) (either term, 1-0-3). A conceptual and experiential introduction to outdoor environmental education and leadership. In addition to weekly lecture and lab components, the course includes weekend commitments. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details.

PEDS 206 Biomechanics

★3 (fi 6) (either term, 3-0-0). A systematic procedure for qualitative analysis of human motion is presented. Students proceed from the identification of mechanical principles governing motion through to the formation of deterministic models and observational strategies. A weekly one-hour optional tutorial session will be scheduled.

PEDS 240 Introduction to Sports Injuries

★3 (fi 6) (either term, 3-0-2). Analysis of practical and theoretical concepts of sports injury. Includes an overview of sports medicine, care and prevention of injuries, and safety in athletics and physical education. Prerequisite: PEDS 100.

PEDS 245 Introduction to the Profession of Coaching

★3 (fi 6) (either term, 3-0-0). Examines the principles of coaching as they relate to the development of the athlete, the role of the coach, and organization of sport in contemporary society. Designed to present basic coaching theory that is applicable to a variety of sport settings with the focus on the practice and the season. Students who meet standards, as set by the Coaching Association of Canada, will receive appropriate NCCP certification. Prerequisites: PEDS 100, 102, 200 and 206. Note: Credit will only be granted for one of PEDS 245 or 345

PEDS 246 Coaching Practicum I

★3 (fi 6) (two term, variable). Students will be required to coach for a complete season in a program approved by the student's Mentor Coach. The purpose of the practicum is to provide the student with a practical coaching experience under the guidance of a Program Coach. It is intended to introduce the student to the demands of the profession of coaching. Note: at least 100 hours of outside-classroom time is required. Corequisite: PEDS 245.

PEDS 293 Introduction to the Movement Activities of Children

★3 (fi 6) (either term, 1.5-0-2). A study of developmentally appropriate movement activities for children. Students will participate and work with children in a variety of physical activities in recreational, educational and sport environments.

PEDS 294 A Conceptual Approach to Physical Activity

★3 (fi 6) (either term, 1-2s-0). A study of the fundamental movement concepts that underlie the physical activities engaged in by youth of secondary school age. Note: Credit will be granted for only one of PAC 101 or PEDS 294.

PEDS 302 Human Motor Control

★3 (fi 6) (either term, 3-0-2). Presents a multi-level approach that focuses on the neural and behavioral foundations underlying the control of movement. Prerequisite: PEDS 203.

PEDS 303 Psychology of Sport and Physical Activity

★3 (fi 6) (either term, 3-0-0). This course introduces the student to select psychological theory as it relates to sport and physical activity. Psychological constructs along with their theoretical perspectives will be viewed within a cognitive, emotional, and behavioral framework. An analytical approach is encouraged.

PEDS 305 Adventure Education Leadership

★3 (fi 6) (Spring/Summer, 0-3s-3). Principles and practice of wilderness travel with an emphasis on personal group development through outdoor pursuits. Technical skill development in navigation, rock climbing, minimal impact travel, survival and rescue, and rescue. Note: This course requires the payment of additional miscellaneous fees. See the University Regulations and Information for Students section of the Calendar, Miscellaneous Fees. Prerequisite: PEDS 205.

PEDS 306 Quantitative Biomechanics of Physical Activity

★3 (fi 6) (either term, 3-0-2). Further application of the principles of mechanics to understanding, analyzing, and measuring human movement. Topics include linear and angular kinematics and kinetics, photo instrumentation, body segment parameters, the link segment model and work-energy relationships. Prerequisite: PEDS 206.

PEDS 307 Physical Growth and Psychomotor Development

★3 (fi 6) (either term, 3-0-0). A study of the sequential changes in physical growth and motor development with emphasis on individual differences.

PEDS 309 Statistics, Measurement, and Evaluation

★3 (fi 6) (either term, 3-0-0). Descriptive and inferential statistics, classical true-score reliability theory, validity, and evaluation. Emphasis on practical application of tests and measurement related to a variety of sport, community and institutional settings. Note: Students cannot receive credit for PEDS 309 if they received credit for PSYCO 211, SOC 210, STAT 141 or STAT 151.

PEDS 334 Body Composition, Nutrition and Physical Activity

★3 (fi 6) (either term, 3-0-0). Emphasis on assessment and evaluation of body composition. Other topics include the regulation of body composition, nutritional requirements for athletes, eating disorders, and obesity. Prerequisite: PEDS 200 (no concurrent registration).

PEDS 335 Advanced Conditioning Methodology

★3 (fi 6) (either term, 3-0-0). A survey of the theoretical bases of conditioning programs. The course emphasis is on the nature of physiological adaptation to selected training regimens and the factors which influence the adaptive process. Prerequisite: PEDS 200 (no concurrent registration).

PEDS 338 Physical Activity and Sport for Children

★3 (fi 6) (either term, 0-3s-0). This course focuses on the child from birth to twelve years of age in a wide range of physical activities in both free and structured environments. It will look at activities offered in home, recreational, educational and competitive environments. There will be emphasis on the developing capabilities of the child and the most appropriate types of activity for any age or stage of development.

PEDS 345 Introduction to Coaching

★3 (fi 6) (either term, 3-0-0). This course introduces the student to a variety of coaching topics of both a theoretical and a practical nature, from a pedagogical perspective. This course is inclusive of the content of the NCC Program (Parts A and B). Note: credit will be granted for only one of PEDS 245 or 345.

PEDS 346 Coaching Practicum II

★3 (fi 6) (two term, variable). Students will be required to coach for a complete season, preferably with High Performance athletes, in a program approved by the student's Mentor Coach. The student should expect to assume more responsibility than in PEDS 246, either in program or athlete development. The guidance of a highly qualified Head Coach is essential. It is intended to introduce the student to the demands of coaching in a High Performance-oriented program. Note: at least 150 hours of outside-classroom time is required. Prerequisite: PEDS 246.

PEDS 385 Physical Activity and the Aging Adult

★3 (*fi 6*) (either term, 3-0-0). An examination of the role of physical activity on the health and lifestyle of aging adults. Note: PEDS 385 was formerly PEDS 484. Credit will only be granted for one of these courses.

PEDS 391 Introduction to the Scientific Basis of Human Movement

★3 (*fi 6*) (either term, 3-0-0). Lecture course with an emphasis on introductory knowledge and practical implications of the structural and functional characteristics and capacities of the human body with respect to movement. Note: Degree Credit is not available for BPE, BPE/BEEd, or BSc-KIN students.

PEDS 400 Human Gross Anatomy

★3 (*fi 6*) (either term, 3-0-3). The course is designed to provide in-depth information on the structure of the human body. Lectures and laboratories emphasize the anatomical relationship in the extremities and the trunk as they relate to human movement, athletic therapy, and fitness. Lectures are followed by dissections of the human body and prosection demonstrations. Prerequisite: PEDS 100.

PEDS 401 Applied Ethics in Physical Education and Sport

★3 (*fi 6*) (either term, 2-1s-0). A philosophical examination of ethical questions in the professional practice of physical education and sport. Prerequisite: PERLS 204. Note: This course was formerly PEDS 201. Credit will be granted for only one of these courses.

PEDS 402 Human Factors and Ergonomics

★3 (*fi 6*) (either term, 3-0-0). The abilities and limitations of human performance are examined with respect to how we interact with tasks and objects in our environment. Work systems will be analyzed and evaluated in terms of the capabilities and limitations of human participants. This approach can be taken from a number of different and interrelated perspectives such as biomechanics, motor behaviour, motor control, and physiology. Prerequisites: PEDS 203 and 302.

PEDS 403 The Application of Psychological Skills to Sport and Physical Activity

★3 (*fi 6*) (either term, 3-0-0). The direct application of select psychological skills to sport and physical activity. A strong emphasis is placed on how to apply psychological skills in a variety of settings. Prerequisite: PEDS 303.

PEDS 405 Outdoor Environmental Leadership

★3 (*fi 6*) (either term, 3-0-3). Principles, methods, and supervised practice of outdoor environmental education, environmental philosophy, and issues investigation and action as relevant to those leading and/or participating in the natural environment. Prerequisite: PEDS 205.

PEDS 409 Introduction to Research

★3 (*fi 6*) (either term, 3-0-0). An overview of research in physical education with emphasis on practical application of research techniques and designs. This course is intended for students who possess a minimal knowledge of statistics. Prerequisite: PEDS 309 or an introductory statistics course.

PEDS 411 Physiology of Emergency Response Occupations

★3 (*fi 6*) (either term, 3-0-2). Explores selected issues of work physiology related to emergency response occupations with the main emphasis on fire fighting. Topics will include: human rights legislation and policies related to bona fide occupational requirements; the assessment of workload; the physiological limitations to work capacity; the development and implementation of physical fitness testing programs for applicants and incumbents; and, the development and monitoring of fitness training programs related to work demands. Prerequisite: PEDS 335.

PEDS 412 Selected Topics in Advanced Exercise Physiology

★3 (*fi 6*) (either term, 3-0-0). Covers the acute and chronic response to exercise through an increased understanding of the mechanisms and adaptations that occur within the human body. Invited guest speakers will present topics of current interest that may include different sport modalities, different populations or different disease states to assist in the exploration of the field of exercise science. Prerequisites: PEDS 200 and 409.

PEDS 430 Dimensions of Physical Activity Performance

★3 (*fi 6*) (either term, 3-0-0). This course explores the integrated nature of physical activity performance with emphasis on the biological, psychological, technical, and tactical dimensions. Skills in observation, interviewing, intervention, program development, and evaluation will be examined and developed through problem solving techniques. Prerequisite: PEDS 200, 203, 206, and 303. Recommended: PEDS 240, 245/345, 302, 335, and 403.

PEDS 440 Advanced Athletic Therapy Methods and Techniques

★3 (*fi 6*) (either term, 3-0-0). Recognition of the potentially serious injury. Advanced prevention, treatment, and sport-specific rehabilitative methods and techniques in athletic therapy. Prerequisites: PEDS 100 and PEDS 240.

PEDS 444 Helping Skills and Strategies in Sport and Physical Activity

★3 (*fi 6*) (either term, 1.5-1.5s-0). This course will present the student with counselling theories and helping skills as they relate to a variety of populations in sport and physical activity settings. Time will be spent in the seminar format developing individual and group skills. Prerequisites: PEDS 303 or HE ED 321. Corequisite: PEDS 403.

PEDS 446 Coaching Practicum III

★6 (*fi 12*) (two term, variable). Students will be required to coach for a complete

season, preferably as a Head Coach, in a program approved by the student's Mentor Coach. The purpose of this practicum is to provide the students with the practical coaching experience of running their own program for one complete season. It is intended to familiarize the students with the demands of being a Head Coach. Note: at least 250 hours of outside-classroom time is required. Prerequisite: PEDS 346.

PEDS 447 Advanced Topics in Coaching

★3 (*fi 6*) (either term, 3-0-0). Study of advanced topics in coaching as they relate to the development of the athlete, the coach, and the organization of sport in contemporary society. Designed to present coaching theory that will guide rising coaches in the development of sport programs that will positively contribute to Canadian society and its sport development model. Students meeting the standards, as set by the Coaching Association of Canada, will receive the appropriate NCCP certification. Prerequisites: PEDS 245 and 246.

PEDS 471 Active Living for Individuals with Developmental Disabilities

★3 (*fi 6*) (either term, 2-0-2). An in-depth review of characteristics of children with movement difficulties as well as persons with mental deficiency with implications for program planning and service delivery. Prerequisite: PERLS 207.

PEDS 472 Active Living for Individuals with Physical Disabilities

★3 (*fi 6*) (either term, 2-0-2). An in-depth review of characteristics of persons with physical disabilities with implications for program planning and service delivery. Prerequisites: PERLS 207 and PERLS 370.

PEDS 485 Educational Gerontology in Physical Activity, Fitness, and Sport

★3 (*fi 6*) (either term, 1.5-0-1.5). The study and practical application of the principles of educational gerontology. Involves students in the analysis and instruction of older adults in a variety of sport, fitness, and physical activity settings. Focus is on the issues and challenges of instruction in two populations: (1) aged, frail adults and (2) elderly, athletic adults. Note: PEDS 485 was formerly PEDS 384. Credit will be granted for only one of these courses.

PEDS 490 Professional Practicum

★6 (*fi 12*) (variable, variable). A half-time Professional Practicum that may run for a single term for 20 hours per week, two terms for 10 hours per week, or the equivalent time. Students must apply to the Practicum Supervisor. A limited number of placements are available. Note: Students will not be allowed to register in more than ★9 concurrently with PEDS 490 unless approved by the Practicum Supervisor.

PEDS 491 Professional Practicum

★12 (*fi 24*) (either term, 14 weeks). Fourteen weeks of professional experience in a full-time (approximately 35 - 40 hours per week) route-related placement. Students must apply to the Practicum Supervisor. A limited number of placements are available. Note: Students will not be allowed to register in any other course in conjunction with PEDS 491 unless approved by the Practicum Supervisor.

PEDS 497 Selected Topics in Physical Education and Sport

★3 (*fi 6*) (variable, variable). A course offered on a topic of current interest in physical education and sport. Topics may vary from year to year. Prerequisite: consent of Faculty.

PEDS 499 Directed Studies

★3 (*fi 6*) (variable, variable). A course designed to meet the needs of individual students. Prerequisite: consent of Faculty.

Graduate Courses**PEDS 500 Seminar in Biomechanics**

★3 (*fi 6*) (either term, 0-3s-0).

PEDS 511 Exercise Testing and Exercise Prescription

★3 (*fi 6*) (either term, 1-1s-2). The theory and practice of exercise tests, interpretation, and exercise prescription for selected populations.

PEDS 512 Selected Topics in Advanced Exercise Physiology

★3 (*fi 6*) (either term, 3-0-0). Covers the acute and chronic response to exercise through an increased understanding of the mechanisms and adaptations that occur within the human body. Invited guest speakers will present topics of current interest that may include different sport modalities, different populations or different disease states to assist in the exploration of the field of exercise science. Lectures are the same as for PEDS 412, but with additional assignments and evaluation appropriate to graduate studies. This course may not be taken for credit if credit has already been obtained in PEDS 412. Prerequisites: Consent of Faculty.

PEDS 515 Exercise Physiology Laboratory Techniques

★3 (*fi 6*) (either term, 1-0-3). The study of theoretical and practical issues related to selected laboratory techniques.

PEDS 516 Muscle: Exercise and Training

★3 (*fi 6*) (either term, 0-3L-0). This course will examine the developmental, morphological and metabolic properties of skeletal muscle and the way in which skeletal muscle adapts to acute and chronic exercise.

PEDS 517 Exercise Biochemistry Techniques

★3 (*fi 6*) (either term, 1-0-3). This is primarily a laboratory experience for students

to gain competencies in performing basic histochemical and biochemical procedures that are common in exercise physiology research. Prerequisite: consent of the Instructor.

PEDS 518 Hormonal Response to Exercise

★3 (*fi 6*) (either term, 1.5-2s-0). Designed to increase the student's knowledge about normal endocrine physiology and the hormonal response to acute and chronic exercise. Variables that influence the hormonal response to exercise and its subsequent measurement in circulation will be addressed. The use of hormonal analysis for monitoring health, body composition and training status of athletes will also be discussed. Offered in alternate years.

PEDS 530 Adapted Physical Activity

★3 (*fi 6*) (either term, 0-3s-0). Seminar on current theoretical, practical and research issues in adapted physical activity.

PEDS 540 The Psychology of Performance Enhancement in Sport and Physical Activity

★3 (*fi 6*) (either term, 0-3s-0). This seminar focuses on the role of psychology as it relates to performance enhancement in the areas of sport and physical activity. Performance constructs and skills along with mental skills training programs will be discussed and evaluated.

PEDS 544 Psychosocial Dimensions of Athletic Behaviour in the Competitive Sport Environment

★3 (*fi 6*) (either term, 0-3s-0). A theoretical analysis of psychosocial constructs in sport including competitive anxiety, motivation, perfectionism, burnout, aggression, moral reasoning, enjoyment, and sport injury. Frequently examines the construct validation processes that researchers employ in the development of latent constructs and associated nomological networks.

PEDS 545 Exercise Oncology

★3 (*fi 6*) (either term, 0-3s-0). An overview of the potential role of physical exercise in cancer prevention and control. Specifically, physical exercise is examined for purposes related to cancer prevention, coping, rehabilitation, palliation and survival. A multidisciplinary perspective draws on kinesiology, oncology, epidemiology, psychology, rehabilitation medicine and palliative care.

PEDS 570 Coaching Seminar I

★3 (*fi 6*) (either term, 0-3s-0). This course is the first of two courses designed as a series of specialized topics related to coaching. Seminar topics may include: Energy Systems; Nutrition for Optimal Performance; Environmental Factors and Performance; and Recovery and Regeneration. Prerequisite: consent of Faculty

PEDS 571 Coaching Seminar II

★3 (*fi 6*) (either term, 0-3s-0). This course is the second of two courses designed as a series of specialized topics related to coaching. Seminar topics may include: Psychological Preparation for Coaches; Planning and Periodization; Athlete Long-term Development; Self-awareness and Personal Management; and the Canadian Sport System. Prerequisite: consent of Faculty

PEDS 572 Coaching Practicum

★6 (*fi 12*) (two term, variable). Students will be required to coach for a complete season as head coach or assistant coach with major responsibilities in High Performance program approved by the student's Coaching Mentor. The purpose of the practicum is to provide students with practical experience of running their own High Performance program for an entire duration of 1 annual cycle that will include 1 competitive season. Note: a minimum of 250 hours of outside-classroom time is required. Prerequisite: consent of the Faculty.

PEDS 577 Sport and Ethics

★3 (*fi 6*) (either term, 0-3s-0). An examination of ethical problems in sport. Prerequisite: PEDS 401 or consent of Faculty.

PEDS 580 The Nature of Scientific Inquiry in Physical Education and Sport Studies

★3 (*fi 6*) (either term, 0-3s-0). An introduction to the basic philosophy and nature of scientific inquiry as it applies to contemporary research. prerequisite: PEDS 309 or consent of Faculty.

PEDS 610 Seminar in Exercise Physiology

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

221.177 Physical Education, Recreation and Leisure Studies, PERLS

Faculty of Physical Education and Recreation

Undergraduate Courses

Note: Enrolment in all PERLS courses is restricted to students registered in the Faculty of Physical Education and Recreation, or students registered in specified programs that require PERLS courses to meet degree requirements. Other students must obtain prior approval of the Faculty.

PERLS 104 Introduction to Sociocultural Aspects of Leisure and Sport

★3 (*fi 6*) (either term, 2-1s-0). The study of play, physical education, recreation,

sport, and leisure as institutionalized ways in which society organizes and teaches attitudes and skills. Provides an introduction to the importance of sociocultural inquiry and the notion of being critical as an empowering process.

PERLS 105 Introduction to the Management of Sport, Physical Activity and Recreation Programs

★3 (*fi 6*) (either term, 3-0-1). Provides students with an introduction to the management concepts required to successfully administer a sport, recreation or physical activity.

PERLS 204 Leisure and Sport in Canadian Society: Historical Perspectives

★3 (*fi 6*) (either term, 3-0-0). An examination of the significant changes which have occurred in leisure and sport, specifically over the last century and with particular reference to Canadian society. Prerequisite: PERLS 104.

PERLS 207 Physical Activity and Leisure for Special Populations

★3 (*fi 6*) (either term, 3-0-0). An introduction into the current trends in the theory and practice in physical education and recreation from special groups. The course includes a survey of special populations and their implications for service delivery.

PERLS 304 Sport and Leisure in Canadian Society: Sociological Perspectives

★3 (*fi 6*) (either term, 2-1s-0). What it means to bring a sociological imagination to the study of sport and leisure with particular reference to Canadian society. Prerequisites: PERLS 104 and 204.

PERLS 335 Volunteers Management in Recreation, Sport and Physical Activity

★3 (*fi 6*) (either term, 3-0-0). An examination of the specific role played by volunteer management in the delivery of recreation, sport and physical activity programs, including the structure and processes of the voluntary organizations that make up the recreation delivery system. Prerequisite: PERLS 105. Note: credit will be granted for only one of RLS 335 or PERLS 335.

PERLS 350 Advanced Analysis of Sport and Leisure Organizations

★3 (*fi 6*) (either term, 3-0-0). Theoretical consideration for the organization and administration of physical education, sport, recreation, and leisure programs. Prerequisite: PERLS 105.

PERLS 351 Cultural Studies of Sport and Leisure

★3 (*fi 6*) (either term, 0-3s-0). A seminar in cultural studies of sport and leisure that explores key concepts in contemporary cultural studies, such as identity, representation, hegemony, and narrative. Intended to examine the relevance of population culture to the study of sport and leisure in Canada and beyond. Prerequisite: PERLS 104.

PERLS 370 Assessment and Service Delivery for Special Populations

★3 (*fi 6*) (either term, 3-0-1). An overview of basic qualitative and quantitative assessment principles and their use to deliver quality physical activity and recreation services for special needs populations. Prerequisites: PERLS 207 and PEDS 309.

PERLS 371 Assessment and Evaluation in Physical Activity for Children and Youth

★3 (*fi 6*) (either term, 3-0-1). Provides an overview of basic assessment principles and their application in the provision of physical activity for children and youth. Designed for individuals who are particularly interested in assessment of movement, and its concomitant goals, for the purpose of instruction and evaluation. Prerequisites: PERLS 207 and PEDS 309.

PERLS 404 Landscape and Memory: The History of Nature, Parks and Travel

★3 (*fi 6*) (either term, 0-3s-0). This seminar examines history at the crossroads of nature, parks, and travel. It concerns the formation of ideas about nature expressed through leisure. Topics include: adventure, exploration, national parks, wildlife conservation, mountaineering, canoeing, wilderness art, recreation, youth movements, urban parks, holidays, cultural heritage, and tourism. Attention is given to the study of Canadian life in the 19th and 20th centuries, along with international tangents. Prerequisite: Consent of Instructor.

PERLS 420 Play: The Foundation of Recreation, Sport and Physical Activity

★3 (*fi 6*) (either term, 3-0-0). This course will provide students with an in-depth understanding of the concept of play. It will offer learning experiences that will enable students to create play in various recreation, sport, tourism and physical activity contexts. Prerequisite: RLS 100 or HE ED 110

PERLS 450 Process Management

★3 (*fi 6*) (either term, 3-0-0). This course will introduce students to some of the concepts associated with process management and how, through the use of strategies associated with these concepts, individuals can assist organizations toward their desired goals. Such human processes as communication; problem solving and decision making; creating, building and maintaining a group; intergroup relationships; initiating and managing change; and assessing performance will be considered. Prerequisite: PERLS 350.

PERLS 451 Sport and Population Culture in Canada

★3 (*fi 6*) (either term, 0-3s-0). An examination of the place of sport in contemporary

Canadian popular culture, with three principal aims: 1. To offer an introduction to cultural studies and its key concepts such as nation, identity, representation and ideology, 2. To give students a chance to think about how social difference and inequality work in contemporary Canadian society, and how it is reflected in the world of sport, and leisure. 3. To examine the effect of both cultural and economic globalization, past and present, in order to gauge its effects on sport in Canadian society. Not open to students with credit in INT D 405. Prerequisite: PERLS 104.

PERLS 452 Leisure Facilities: Planning and Management

★3 (fi 6) (either term, 0-3L-0). An examination of the planning, design, and management processes associated with leisure facilities (inclusive of sport, recreation, and tourism facilities). Attention is focused on the provision of leisure opportunities of a predominantly intensive-use nature which tend to occur in an urban or near-urban setting. These facilities will be considered within the context of the communities in which they function. Note: This course requires the payment of additional miscellaneous fees. See the University Regulations and Information for Students section of the Calendar, Miscellaneous Fees. Prerequisite: PERLS 105.

PERLS 497 Selected Topics in Physical Education, Recreation and Leisure Studies

★3 (fi 6) (variable, variable). A course offered on a topic of current interest in physical education and sport. Topics may vary from year to year. Prerequisite: Consent of Faculty.

PERLS 499 Directed Studies

★3 (fi 6) (variable, variable). A course designed to meet the needs of individual students. Prerequisite: Consent of Faculty.

Graduate Courses

PERLS 504 The History of Nature, Parks, and Travel

★3 (fi 6) (either term, 0-3s-0). Examines history at the crossroads of nature, parks, and travel. It concerns the formation of ideas about nature expressed through leisure. Topics include: adventure, exploration, national parks, wildlife conservation, mountaineering, canoeing, wilderness art, recreation, youth movements, urban parks, holidays, cultural heritage, and tourism. Attention is given to the study of Canadian life in the 19th and 20th centuries, along with international tangents.

PERLS 541 Social Cognitive Approaches to Health Promoting Behaviors

★3 (fi 6) (either term, 0-3s-0). This course will address social-cognitive theories as they relate to behavioral change in the broad areas of health-promoting-behaviors (HPBS) with particular emphasis on physical activity. The theories and models to be covered will include Stages of Change, Social-Cognitive and Self-efficacy, Reasoned Action and Planned behavior, Self-esteem (various), etc. The specific context areas and order of classes will be determined in consultation with the class members each term. Areas of common interest will be identified and used as the basis for classes and examples throughout the term. The course is appropriate for individuals interested in social psychological and social-cognitive influences on health promoting behaviors and sport performance. May contain alternative delivery sections; refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

PERLS 544 Aging, Health and Active Living

★3 (fi 6) (either term, 0-3s-0). An exploration of the benefits and risks of late-life physical activity, as well as life course barriers and incentives to health promotion through active living. The course will examine theoretical explanations for sedentary leisure of older adults through a critical review of the interdisciplinary gerontological literature.

PERLS 550 Sport and Leisure Organizations and the Public Sector

★3 (fi 6) (either term, 0-3s-0). Emphasis is on the role of the federal, provincial and municipal governments in Canada in amateur sport and leisure including the interorganizational relations between the public sector and nonprofit/voluntary amateur sport and leisure organizations.

PERLS 551 Organizational Analysis of Sport and Leisure

★3 (fi 6) (either term, 0-3s-0). Concepts and perspectives in organizational theory are examined in relation to sport and leisure organizations in the public, nonprofit/voluntary, and commercial sector to help students understand and analyze the complexity of managing sport and leisure organizations effectively. Topics include, but are not limited to, organizational design, organizational environments, strategy and decision-making, organizational culture, power and politics, and conflict and change.

PERLS 581 Social Research Applications to Leisure and Sport

★3 (fi 6) (either term, 0-3s-0). An examination of both quantitative and qualitative research methodologies as they apply to the sociocultural area of sport and physical education and to the general field of leisure studies.

PERLS 582 Graduate Seminar: A Seminar in Current Factors, Problems and Issues

★3 (fi 6) (either term, 0-3s-0).

PERLS 590 Research and Directed Studies I

★3 (fi 6) (either term, 0-3s-0).

PERLS 591 Research and Directed Studies II

★3 (fi 6) (either term, 0-3s-0).

PERLS 599 Directed Studies and Research

★3 (fi 6) (two term, 0-1.5s-0).

PERLS 613 Special Topics in the Socio-Cultural Study of Leisure, Sport, and Health

★3 (fi 6) (either term, 0-3s-0). Explores topics in the socio-cultural study of leisure, sport, and health that are of interest to students enrolled in the course.

PERLS 690 Directed Studies and Research

★3 (fi 6) (either term, 0-3s-0).

PERLS 691 Directed Studies and Research

★3 (fi 6) (either term, 0-3s-0).

PERLS 699 Directed Studies and Research

★3 (fi 6) (two term, 0-1.5s-0).

PERLS 900 Directed Research Project

★6 (fi 12) (variable, unassigned). A significant piece of scholarly writing. This course used by course-based Master's students.

221.178 Physical Therapy, PThER

Department of Physical Therapy
Faculty of Rehabilitation Medicine

Note: All PThER courses are open to Physical Therapy students only.

Undergraduate Courses

PThER 387 Seminar in Therapeutics

★3 (fi 6) (either term, 0-2s-0). Credit. A seminar series designed to integrate therapeutic treatments in physical therapy, including a critical review of the clinical and research literature. Prerequisites: PThER 380, 322, 384, 396, 375, REHAB 463.

PThER 431 Clinical Practice VI

★1-3 (variable) (either term, 5 weeks). Credit. Clinical practice in approved clinical affiliations.

PThER 433 Clinical Practice VII

★1-3 (variable) (either term, 5 weeks). Credit. Clinical practice in approved clinical affiliations.

PThER 459 Exercise Physiology for Rehabilitation

★3 (fi 6) (either term, 3-0-0). The acute and chronic physiological responses to exercise in health, injury and disease as seen in physical therapy. Equivalent to REHAB 362.

PThER 466 Individual Study/Special Subject

★1-12 (variable) (either term, variable). Registration will be contingent on the student's having made prior arrangements with the Department. Credit for this course may be obtained more than once. Prerequisite: consent of Department.

PThER 467 Individual Study

★3 (fi 6) (either term, 3-0-0). A course intended to allow the senior undergraduate student to pursue a topic of interest in more depth than the classroom structure permits. This may take the form of directed reading, laboratory work or clinical experience. Prerequisite: consent of Department.

PThER 468 Sports Therapy

★3 (fi 6) (either term, 3-0-2). An introduction to the prevention and care of sports injuries including the adaptation of therapeutic exercise to the highly trained individual. Prerequisite: consent of Instructor.

PThER 472 Paediatrics and the Physical Therapist

★3 (fi 6) (either term, 0-3L-0). An examination of typical and atypical infant motor development and application of this knowledge to paediatric physical therapy intervention strategies. Related theory, research and practice issues will be discussed.

PThER 481 Cardiac Rehabilitation

★3 (fi 6) (either term, 2-0-3). The physiological and psychological aspects of rehabilitation of cardiac patients, with practical experience in their management. Prerequisite: consent of Instructor.

PThER 485 Advanced Manual Therapy for Peripheral and Vertebral Joints

★3 (fi 6) (either term, 0-2s-1). Lectures, critical discussion and practice in the use and application of selected mobilization and manipulation techniques used in the treatment of peripheral and vertebral joint dysfunction. Prerequisite: PThER 385.

PThER 490 Measurement and Technology in Rehabilitation

★3 (fi 6) (either term, 0-3s-2). The principles involved in measurement, evaluation

and assistive technology and their application to practice in rehabilitation. This course will include measurement of physical impairment, disability and handicap, and assistive technologies for seating and positioning, mobility, computer access and environmental control. Prerequisite: PHER 375 or consent of Instructor.

PTHER 495 Medicine and Surgery

★3 (*fi 6*) (either term, 0-3s-0). The study of selected clinical problems, their underlying conditions and physical therapy management. Prerequisites: REHAB 283, REHAB 285, REHAB 295, PHYSYL 161.

Graduate Courses

PTHER 505 Recent Advances in Neuroscience and its Impact on

Physical Therapy

★3 (*fi 6*) (either term, 0-3s-0). Seminar on the recent advances in neuroscience that could influence the practice of physical therapy.

PTHER 506 Electromyographic Kinesiology

★3 (*fi 6*) (either term, 1-0-2). Seminar and laboratory sessions on advances in electromyography applied to physical therapy and allied areas.

PTHER 507 Instrumentation in Physical Therapy

★3 (*fi 6*) (either term, 2-0-2). A course on electronic fundamentals applied to measuring instruments and their basic components as used in physical therapy research.

PTHER 510 Rehabilitation Ergonomics

★3 (*fi 6*) (either term, 1-2s-0). The application of ergonomic principles in rehabilitation.

PTHER 515 Introduction to Physical Therapy Practice

★3 (*fi 6*) (either term, 5-6s-0 in 4 weeks). Introduction to the theory and concepts of rehabilitation science as applied to physical therapy in a variety of health care environments. Content will include disability issues, communication, models of disablement and introduction to a model of practice for guiding clinical decisions. Restricted to MPT students.

PTHER 516 Anatomy

★3 (*fi 6*) (either term, 3-0-1.5 in 14 weeks). Anatomy of the upper limb, lower limb and trunk. Specific emphasis on knowledge of joints, ligaments, nerve supply and deep muscles.

PTHER 517 Clinical Placement I

★1 (*fi 2*) (either term, 1 week). Introduction to clinical practice in approved clinical affiliations. Restricted to MPT students.

PTHER 518 Clinical Placement II

★5 (*fi 10*) (either term or Spring/Summer, 5 weeks). Credit. Clinical practice in approved clinical affiliations.

PTHER 519 Clinical Placement III

★5 (*fi 10*) (either term or Spring/Summer, 5 weeks). Credit. Clinical practice in approved clinical affiliations.

PTHER 520 Clinical Placement IV

★1-5 (*variable*) (either term, 5 weeks). Credit. Clinical practice in approved clinical affiliations. Can be combined with INT D 411 for an interdisciplinary placement for a combined total weighting of ★5.

PTHER 521 Clinical Placement V

★1-5 (*variable*) (either term, 5 weeks). Credit. Clinical practice in approved clinical affiliations. Can be combined with INT D 411 for an interdisciplinary placement for a combined total weighting of ★5.

PTHER 522 Clinical Placement VI

★1-5 (*variable*) (either term or Spring/Summer, 5 weeks). Credit. Clinical practice in approved clinical affiliations. Can be combined with INT D 411 for an interdisciplinary placement for a combined total weighting of ★5.

PTHER 523 Clinical Placement VII

★1-5 (*variable*) (either term, 5 weeks). Credit. Clinical practice in approved clinical affiliations. Can be combined with INT D 411 for an interdisciplinary placement for a combined total weighting of ★5.

PTHER 524 Professional Issues I

★1 (*fi 2*) (either term, 1-3s-0 in 4 weeks). Introduction to concepts required for effective clinical experiences. Topics will include ethics, client-centred principles, communication and professional conduct. Restricted to MPT students.

PTHER 525 Professional Issues II - Health Care, Ethics and Medical-Legal Issues

★3 (*fi 6*) (either term or Spring/Summer, 3-5s-0 in 4 weeks). Continuation of the study of professional issues relevant to the practice of physical therapy. Ethical, cultural, medical-legal and regulatory issues and their impact on professional practice. Prerequisites: INT D 410 and PHER 524.

PTHER 526 Professional Issues III - Administration and Business in Physical Therapy

★2 (*fi 4*) (either term, 1-1.5S-0 in 10 weeks). Administrative issues in the public and private health care sectors. Focus on impact of health policy, payment systems, funding proposals and business planning. Prerequisite: PHER 525.

PTHER 527 Professional Issues IV - Professional Responsibilities

★1 (*fi 2*) (either term or Spring/Summer, 12 Hours in 9 weeks). Credit. Focus on learning issues in professional practice, including supervision of physical therapy students and therapist assistants, continuing competence and teaching interventions. Prerequisite: PHER 526.

PTHER 528 Foundations of Physical Therapy

★6 (*fi 12*) (either term, 3-2S-5 in 10 weeks). Introduction to the theory and application of physical therapy skills with an emphasis on assessment and handling techniques. Functional application of anatomy knowledge will be emphasized. Corequisite: PHER 516. Prerequisite: PHER 515. Restricted to MPT students.

PTHER 529 Movement Analysis I

★2 (*fi 4*) (either term, 2-0-2 in 10 weeks). Provides an introduction to mechanical and analytical concepts pertinent to physical therapy. Systematic analysis of posture, balance and functional movements will be included. The influence of person, task and environment on task performance will be addressed. Corequisite: PHER 516.

PTHER 530 Research and Directed Studies

★3 (*fi 6*) (either term, 3-0-0). Work on a special project under the supervision of a faculty member. Prior approval of the instructor and the student's advisor required.

PTHER 531 Research and Directed Studies

★3 (*fi 6*) (either term, 3-0-0). Work on a special project under the supervision of a faculty member. Prior approval of the instructor and the student's advisor required.

PTHER 532 Research and Directed Studies

★3 (*fi 6*) (two term, 1.5-0-0). Work on a special project under the supervision of a faculty member. Prior approval of the instructor and the student's advisor required.

PTHER 533 Research and Directed Studies

★6 (*fi 12*) (two term, 3-0-0). Work on a special project under the supervision of a faculty member. Prior approval of the instructor and the student's advisor required.

PTHER 534 Integrated Practice I

★1.5 (*fi 3*) (either term, 0-1s-1.5 in 10 weeks). Active learning strategies, including the use of case scenarios, will be used to integrate students' learning in the block. Critical thinking skills are required to integrate knowledge of clinical skills, research application, measurement and evaluation, and professional issues. Restricted to MPT students.

PTHER 535 Integrated Practice II

★1.5 (*fi 3*) (either term, 0-2s-1.5 in 10 weeks). Active learning strategies, including the use of case scenarios, will be used to integrate students' learning in the block. Critical thinking skills are required to integrate knowledge of clinical skills, research application, measurement and evaluation, and professional issues. Prerequisite: PHER 534, 538 and 544.

PTHER 536 Integrated Practice III

★1.5 (*fi 3*) (either term, 0-2s-1.5 in 7 weeks). Active learning strategies, including the use of case scenarios, will be used to integrate students' learning in the block. Critical thinking skills are required to integrate knowledge of clinical skills, research application, measurement and evaluation, and professional issues. Prerequisite: PHER 535. Corequisite: PHER 548.

PTHER 537 Integrated Practice IV

★3 (*fi 6*) (either term or Spring/Summer, 90 hours in 9 weeks). Credit. Self-directed learning applied to complex client scenarios across the continuum of care. Critical thinking skills are required to integrate knowledge of clinical skills, research application, measurement, evaluation and professional issues. Prerequisite: INT D 410, PHER 526, 536 and 548.

PTHER 538 Musculoskeletal I

★6 (*fi 12*) (either term, 1-1.5s-6 in 15 weeks). The study of acute musculoskeletal conditions. Areas of practice will include: an understanding of pathology, assessment, intervention, outcome evaluation, relevant therapeutic exercise, electrophysical agents and evidence-based skills. These clinical skills will be integrated into the context of clinical practice with issues in research application, measurement and evaluation. Prerequisites: PHER 528 and 529.

PTHER 539 Movement Analysis II

★2 (*fi 4*) (either term, 1-0-1.5 in 15 weeks). Application of anatomy and biomechanics knowledge to the systematic analysis of complex functional movements. Introduction to the phases of typical gait and application to atypical gait. Prerequisites: PHER 528 and 529. Restricted to MPT students.

PTHER 540 Practicum

★0 (*fi 3*) (either term, unassigned). A practicum in the student's area of concentration and interest to be taken by the student if his/her committee feels the student needs, or the student desires, further practical experience. This course may involve experience off campus in any geographical area where the student may gain the necessary experience.

PTHER 541 Critical Appraisal I

★3 (fi 6) (either term, 2-2s-0 in 10 weeks). Introduction to research methods with an emphasis on issues of measurement and evaluation in rehabilitation science and application of the knowledge to a critical evaluation of a selected measure used in physical therapy. Students will apply advanced information retrieval strategies to rehabilitation science literature. Corequisite: PTHER 528. Restricted to MPT students.

PTHER 542 Critical Appraisal II

★1 (fi 2) (either term or Spring/Summer, 2-1s-0 in 4 weeks). Introduction of single subject design and application of research methods through the identification and evaluation of best evidence for a client observed during clinical placement. Prerequisite: PTHER 541.

PTHER 543 Critical Appraisal III

★1 (fi 2) (either term, 0-4s-0 in 10 weeks). Introduction to the concepts of systematic reviews and single-subject design applied to the clinical placement experiences. Prerequisite: PTHER 542.

PTHER 544 Cardiorespiratory I

★2 (fi 4) (either term, 2-0-2 in 10 weeks). The study of acute cardiorespiratory conditions. Areas of practice will include: an understanding of pathology, assessment, intervention, outcome evaluation, relevant therapeutic exercise, electrophysical agents and evidence-based skills. These clinical skills will be integrated into the context of clinical practice with issues in research application, measurement and evaluation. Prerequisites: PTHER 516, 528, 541. Restricted to MPT students.

PTHER 545 Tissue Mobilization

★2 (fi 4) (either term or Spring/Summer, 2-1s-4 in 4 weeks). An introduction to the use of mobilization techniques to treat selected peripheral and spinal conditions. Prerequisites: PTHER 538 and 539.

PTHER 546 Neurology I

★6 (fi 12) (either term, 5-1.5s-4 in 8 weeks; 3-1.5s-4 2). Introduction to the theory and application of physical therapy in neurology with children and adults. Areas of practice will include assessment, intervention, outcome evaluation, therapeutic exercise, electrophysical agents, and evidence-based skills. These clinical skills will be integrated into the context of practice with relevant issues in research application, measurement and evaluation. Corequisite: PTHER 547 and REHAB 455. Prerequisites: PTHER 539, 542 and 544.

PTHER 547 Movement Across the Lifespan

★2 (fi 4) (either term, 1-1.5s-1.5 in 8 weeks). An examination of typical motor development and how movement changes across the lifespan. The interactive effects of the task, environment and age-related changes in postural control, the musculoskeletal system and the cardiorespiratory systems will be explored. Students will apply this knowledge of movement to prevalent age-related conditions treated by physical therapists.

PTHER 548 Physical Therapy in Long-term Conditions

★6 (fi 12) (either term, 3-3s-6 in 10 weeks). Study of the theory and application of physical therapy in clients with selected musculoskeletal, neurological and cardiorespiratory conditions of a long-term nature. Areas of practice will include assessment, intervention, outcome evaluation, therapeutic exercise, electrophysical agents, and evidence-based skills. These clinical skills will be integrated into the context of practice with relevant issues in research application, measurement and evaluation. Prerequisites: PTHER 538, 543, 544, 546 and 547.

PTHER 549 Advanced Joint Mobilization, Stabilization and Manipulation

★1 (fi 2) (either term, 18 hours in 6 weeks). The use and application of selected mobilization, stabilization and manipulation techniques in the treatment of peripheral dysfunction. These clinical skills will be integrated into the context of practice with relevant issues in research application, measurement and evaluation. Prerequisite: PTHER 545.

PTHER 551 Project Design I

★1 (fi 2) (either term, 0-1s-0 in 8 weeks). Credit. Identification and preparation of the written evaluative component of major project. Prerequisites: PTHER 541 and 542.

PTHER 552 Project Design II

★1 (fi 2) (either term, 0-2s-0 in 10 weeks). Credit. Identification and preparation of the written evaluative component of major project. Prerequisites: PTHER 543.

PTHER 553 Project Design III

★1 (fi 2) (either term or Spring/Summer, 13.5 hours in 9 weeks). Credit. Identification and preparation of the written evaluative component of major project. Prerequisites: PTHER 526, 543 and 548.

PTHER 554 Selectives

★1 (fi 2) (variable, unassigned). Students can register in these extra to requirement courses from a variety of topic areas. Note: Course title is variable; course may be repeated.

PTHER 556 Advances in Medical Science

★2 (fi 4) (either term). Seminar on advances in scientific topics related to physical therapy.

PTHER 559 Adv Joint Mobilization and Manipulation

★2 (fi 4) (either term or Spring/Summer, 28 hours in 9 weeks). The use and

application of mobilization, stabilization and manipulation techniques in the treatment of peripheral and vertebral joint dysfunction. These clinical skills will be integrated into the context of practice with relevant issues in research application, measurement and evaluation. Prerequisite: PTHER 548 and 549.

PTHER 568 Recent Advances in Sports Therapy

★3 (fi 6) (either term, 0-3s-0). Seminar on advances in sports therapy and other related topics.

PTHER 570 Measurement and Evaluation in Physical Therapy

★3 (fi 6) (either term, 2-0-3). The principles involved in measurement and evaluation and their application in the practice of physical therapy.

PTHER 571 Recent Advances in Paediatric Physical Therapy

★3 (fi 6) (either term, 0-3s-0). A seminar course evaluating theoretical frameworks and intervention strategies used in paediatric physical therapy.

PTHER 581 Cardiopulmonary Rehabilitation

★3 (fi 6) (either term, 2-0-3). The general principles of cardiopulmonary rehabilitation as applied to patients with selected pathological conditions. Prerequisite: consent of Instructor.

PTHER 900 Major Project

★3 (fi 6) (variable, unassigned). Credit. This capping exercise has 2 components: a practical examination of clinical skills and a group written evaluative project. Prerequisite: PTHER 551, 552 and 553.

221.179 Physics, PHYS

Department of Physics
Faculty of Science

Notes

- (1) Credit may normally be obtained for only one of PHYS 124, 144 or ENPH 131.
- (2) Credit may normally be obtained for only one of PHYS 126, 130 or 146.
- (3) Credit may normally be obtained for only one of PHYS 230 or 281.
- (4) Credit may normally be obtained for only one of PHYS 208 or 271.
- (5) Credit may normally be obtained for only one of PHYS 211 or 224.
- (6) Also see Astronomy (ASTRO) and Geophysics (GEOPH) listings for other courses offered by the Department of Physics.
- (7) PHYS 200, 301, 308, 319, 364, and 395 are offered alternate years only. Please consult the Department for course scheduling.

Undergraduate Courses

0 PHYS 114 Physics: The Big Picture

★3 (fi 6) (either term, 3-0-0). A qualitative and mostly non-mathematical course in which the overall structure and main concepts of physics are examined. Classical versus quantum worlds; order versus chaos; Newton's versus Einstein's universe; selected topics and issues in modern physics. Prerequisites: Pure or Applied Mathematics 30. Note: This course does not qualify as an equivalent to high school Physics 30. This course also does not qualify as a prerequisite for 200 or higher level ASTRO, GEOPH, MA PH, or PHYS courses. Not accepted as part of the Physics requirements for Faculty of Medicine and Dentistry applications.

0 PHYS 124 Particles and Waves

★3 (fi 6) (either term, 3-0-3). Algebra-based course primarily for students in life, environmental, and medical sciences. It guides the student through two distinct types of motion: motion of matter (particles) and wave motion. Vectors, forces, bodies in equilibrium, review of kinematics and basic dynamics; conservation of momentum and energy; circular motion; vibrations; elastic waves in matter; sound; wave optics; black body radiation, photons, de Broglie waves. Examples relevant in environmental, life, and medical sciences will be emphasized. Prerequisites: Physics 20 or equivalent, Pure Mathematics 30. Physics 30 is strongly recommended. Note: Credit may be obtained for only one of PHYS 124, 144, or EN PH 131.

0 PHYS 126 Fluids, Fields, and Radiation

★3 (fi 6) (either term, 3-0-3). A continuation of PHYS 124 primarily for students in life, environmental, and medical science. Fluid statics and dynamics, gases, kinetic interpretation; electrostatics; currents and circuits; magnetic field; electromagnetic induction; nuclear radiation, its interaction with matter and applications. Prerequisite: PHYS 124. Note: Credit may be obtained for only one of PHYS 126, 130, or 146.

PHYS 130 Wave Motion, Optics, and Sound

★3.8 (fi 6) (either term, 3-0-3/2). Geometrical optics, optical instruments, oscillations, waves, sound, interference, diffraction. Prerequisites: Pure Mathematics 30, Mathematics 31, Physics 30. Corequisite: MATH 100 or equivalent. Restricted to Engineering students. Other students who take this course will receive ★3.0.

0 PHYS 144 Newtonian Mechanics and Relativity

★3 (fi 6) (first term, 3-0-3). A calculus-based course for students majoring in the physical sciences. Newtonian mechanics, including kinematics, dynamics, conservation of momentum and energy, rotational motion and angular momentum;

special relativistic kinematics and dynamics, including length contraction, time dilation, and the conservation of energy and momentum in special relativity. Prerequisites: Mathematics 31, Physics 30. Corequisites: MATH 113 or 114 or equivalent. Note: Credit may be obtained for only one of PHYS 124, 144, or EN PH 131.

PHYS 146 Fluids and Waves

★3 (fi 6) (second term, 3-0-3). A calculus-based course for students majoring in the physical sciences. Fluid statics and dynamics, elasticity and simple harmonic motion; sound waves, wave properties of light; quantum waves, wave-particle duality. Prerequisite: PHYS 124 or 144. Corequisite: MATH 115 or equivalent. Note: Credit may be obtained for only one of PHYS 126, 130 or 146.

PHYS 200 Relativistic Aspects of Modern Physics

★3 (fi 6) (second term, 3-0-0). Topics included are limitations of classical physics; Einstein's special theory; length contraction; time dilation; twin paradox; equivalence of mass and energy; relativistic mass and momentum; the General Theory of Relativity including deflection of light, black holes, models of the universe, and curvature of space. Prerequisite: First-year Physics course(s) (two-term). Pre- or corequisite: MATH 113 or 114. Note: This course is not available for credit toward Honors or Specialization Physics and Mathematical Physics degree programs. Offered alternate years only. Consult Department for course scheduling.

PHYS 208 Quantum Aspects of Modern Physics

★3 (fi 6) (second term, 3-0-0). Experimental evidence leading to the development of quantum mechanics including the photo-electric effect, the Compton effect, X-ray production and electron diffraction; a discussion of the Heisenberg uncertainty principle and the Schrodinger theory of quantum mechanics including applications of one dimensional potential wells and barriers; tunnelling; the simple harmonic oscillator; atomic physics; hydrogen atom; periodic table. Prerequisites: PHYS 126 or 146; MATH 113 or 114. Credit may be obtained in only one of PHYS 208 or 271.

PHYS 211 Thermodynamics and Kinetic Theory

★3 (fi 6) (second term, 3-0-0). Temperature: heat, work, and the first law of thermodynamics; entropy and the second law, enthalpy, Helmholtz and Gibbs free energy; thermodynamic equilibrium criteria; Maxwell's relations, phase transitions; elementary kinetic theory of gases. Prerequisite: PHYS 126 or 146 or EN PH 131. Pre- or corequisite: MATH 215 or 317 or equivalent. Credit may normally be obtained in only one of PHYS 211 or 224.

PHYS 212 Revolutions in Physics: The Structure of the Universe

★3 (fi 6) (first term, 3-0-0). This course traces the conceptual development of our understanding of the structure of the physical universe from Babylonian astronomy up to Einstein's Theory of Relativity, and its application to cosmology. Prerequisite: PHYS 126.

PHYS 213 Revolutions in Physics: The Quantum Theory of Matter

★3 (fi 6) (second term, 3-0-0). This course traces the evolution of theories of matter, the limitations of classical causality, and the development and interpretations of Quantum Mechanics including implications for exciting current topics in Physics. Prerequisite: PHYS126.

PHYS 224 Thermal Physics

★3 (fi 6) (first term, 3-0-0). Thermal properties of matter: temperature, thermal expansion, ideal gas laws; thermal energy: specific and latent heats, calorimetry, heat conduction, radiation convection; thermodynamics: work, heat, internal energy, first law, thermal processes. Carnot engine, refrigerators, heat pumps, second law; kinetic theory of gases, Maxwell distribution, effusion; mean free path, kinetic theory of transport processes; laws of probability and statistical physics: entropy, arrow of time; applications: diffusion, osmosis, membranes, unwinding of DNA molecules. Prerequisites: PHYS 126 or 146 or EN PH 131, and MATH 113 or 114. This course is part of a sequence with PHYS 124 and 126 for General program students. Credit may normally be obtained in only one of PHYS 211 or 224.

PHYS 230 Electricity and Magnetism

★3.8 (fi 6) (either term, 3-0-3/2). Electric fields, Gauss' Law; electric potential; capacitance and dielectrics; electric current and resistance; magnetic fields, Ampere's Law; Faraday's Law; inductance; magnetic properties of matter. Prerequisites: PHYS 130 or 146, and MATH 100. Corequisite: MATH 101 or 115. Note: Restricted to Engineering students. Other students who take this course will receive ★3.0.

PHYS 234 Introductory Computational Physics

★3 (fi 6) (second term, 3-0-3). Algorithms for scientific data analysis: sorting methods, polynomial fitting, regression, interpolation, and Fourier analysis: techniques for solving physics and geophysics problems with selected topics from mechanics, waves, geometrical optics and ray tracing, electricity and magnetism, statistical physics, decay processes, quantum physics, signal processing. Prerequisites: PHYS 126 or 146 or EN PH 131, and MATH 113 or 114, and MATH 102 or 120 or 125.

PHYS 244 Mechanics

★3 (fi 6) (second term, 3-0-0). Particle dynamics; oscillating systems and normal modes; conservative forces and energy; introduction to Lagrangian and Hamiltonian dynamics; central forces; orbital motion and scattering. Prerequisite: PHYS 126 or 146 or EN PH 131. Corequisite: MATH 215 or 317 or equivalent.

PHYS 261 Physics of Energy

★3 (fi 6) (first term, 3-0-0). Energy in its various forms; conservation of energy principle; consumption of primary energy resources; space heating, heat transfer, heating degree-days; hydro, tidal, and wind power; ideal gases; heat engines, refrigerators and the second law of thermodynamics; nuclear fission, nuclear reactors; alternative and renewable energy resources. Prerequisites: ★6 in 100-level PHYS courses, and MATH 113 or 114, plus one other MATH course.

PHYS 264 Environmental Physics I

★3 (fi 6) (second term, 3-0-0). Principles of materials balance and the calculation of the concentration of pollutants; exponential growth and decay; wet and dry adiabatic lapse rates and the dispersal of air pollutants; thermal conduction, convection and radiation; solar energy and solar technology; photovoltaics; water vapor and humidity. Prerequisites: ★6 in 100-level PHYS courses and MATH 113 or 114, plus one other MATH course.

PHYS 271 Introduction to Modern Physics

★3 (fi 6) (either term, 3-0-0). Experimental evidence for limitations of classical physics; review of special relativity: quantization of charge, light, and energy; blackbody radiation, photoelectric effect, Compton effect; models of the atom; wave-like properties of particles; the uncertainty principle, the Schrodinger Equation, the infinite and finite square well, the harmonic oscillator, tunneling; the hydrogen atom, orbital angular momentum and electron spin; spin and statistics; selected topics. Prerequisite: PHYS 126 or 146 or EN PH 131, and MATH 115 or equivalent. Note: Credit may be obtained in only one of PHYS 208 or 271.

PHYS 281 Electricity and Magnetism

★3 (fi 6) (first term, 3-0-0). Electric fields; Gauss' law; electric potential; capacitance and dielectrics; electric current and resistance; DC circuits; magnetic fields; Ampere's Law; Faraday's Law; inductance; magnetic properties of matter, AC circuits; Maxwell's equations; electromagnetic waves. Prerequisite: PHYS 126 or 146. Corequisite: MATH 214 or 217 or equivalent.

PHYS 292 Physics Laboratory A

★3 (fi 6) (two term, 0-0-3). Experiments in mechanics, electromagnetism and atomic physics. Corequisites: PHYS 281 or 230, and MATH 214 or equivalent. Note: Restricted to Engineering students.

PHYS 294 General Physics Laboratory

★3 (fi 6) (first term, 0-0-6). Introduction to methods of experimental physics with examples from modern physics. Prerequisite: MATH 113. Pre- or corequisite: PHYS 224. Note: Not to be taken by Specialization or Honors students in Physics, Geophysics or Mathematical Physics. Credit may be obtained in only one of PHYS 294 or 295.

PHYS 295 Experimental and Statistical Methods of Physics

★3 (fi 6) (first term, 0-0-6). Detection of radioactive emissions using a Geiger counter, determination of the absolute zero of temperature using a gas thermometer, and other experiments illustrating the analysis of experimental data. Prerequisites: PHYS 126 or 146, and MATH 115. Credit may be obtained in only one of PHYS 294 or 295.

PHYS 297 Classic Experiments in Physics

★3 (fi 6) (either term, 0-0-6). Choice of modern physics experiments including speed of light, measurement of e/m , Balmer series in hydrogen, photoelectric effect, and the Millikan oil drop and Franck-Hertz experiments. Prerequisite: PHYS 294 or 295. Corequisites: PHYS 208 or 271, and 281, and MATH 115.

PHYS 301 Particles, Nuclei, and the Cosmos

★3 (fi 6) (first term, 3-0-0). Relativity; properties and structure of the nucleus; radioactivity, carbon dating, tracer techniques; nuclear fission; fusion; nuclear reactors; elementary particles and particle accelerators; standard model; astrophysics; cosmology. Prerequisite: PHYS 208 or 271; MATH 115. Note: This course is not available for credit toward Honors Physics and Mathematical Physics degree programs. Offered alternate years only. Consult Department for course scheduling.

PHYS 308 Statistical, Molecular, and Solid State Physics

★3 (fi 6) (second term, 3-0-0). Classical and quantum statistics; fermions; bosons; molecular structure and spectra; molecular bonding; vibrational and rotational states; absorption; stimulated emission; population inversion; lasers; solid state physics; crystal structure; free-electron gas in metals; band theory of solids; semiconductors; semiconductor devices; superconductivity. Prerequisites: PHYS 208 or 271; MATH 115. Note: Not available for credit towards Honours Physics and Mathematical Physics degree programs. Offered alternate years only. Consult Department for course scheduling.

PHYS 311 Statistical Physics I

★3 (fi 6) (first term, 3-0-0). Quantum states, probability distributions, temperature and entropy; canonical ensemble and the partition function; ideal gases, paramagnets; blackbody radiation. Debye model for phonons; quantum statistics; Fermi-Dirac distribution and electrons in metals; Bose-Einstein distribution. Prerequisites: PHYS 211, 271 and MATH 215 or 317 or equivalent.

PHYS 319 Physical Principles of Electron Microscopy

★3 (fi 6) (second term, 3-0-0). Application of the basic principles of optics, electricity, and magnetism to the focusing of electron beams and to the design of transmission and scanning electron microscopes; electron scattering by atoms;

electron diffraction; interpretation of images of biological and crystalline specimens; microanalysis by X-ray emission spectroscopy. Prerequisite: PHYS 208. Offered alternate years only. Consult Department for course scheduling.

PHYS 351 Relativity

★3 (fi 6) (either term, 3-0-0). Lorentz transformations, definition of scalars, vectors, tensors; transformation of electromagnetic field; relativistic kinematics-collisions, centre of momentum, and laboratory frames; applications; introduction to general relativity. Prerequisites: PHYS 244, 281, and MATH 215.

PHYS 362 Optics and Lasers

★3 (fi 6) (first term, 3-0-0). Gaussian optics; optical instruments; matrix analysis of lens systems; aberrations; polarization; double- and multiple-beam interference; Fraunhofer and Fresnel diffraction; introduction to laser physics and applications; selected topics from contemporary optics. Prerequisite: PHYS 230 or 281, and MATH 215. For Engineering students, E E 335 is a corequisite in place of MATH 215.

PHYS 364 Environmental Physics II

★3 (fi 6) (first term, 3-0-0). Terrestrial thermal environment; molecular absorption of electromagnetic radiation and the carbon dioxide problem; factors affecting the long-term stability of the earth's climate; the ozone problem; aspects of building ventilation; radioactivity and the effect of ionizing radiation on humans, the radon problem. Prerequisites: PHYS 264 and MATH 115. Offered alternate years only. Consult Department for course scheduling.

PHYS 372 Quantum Mechanics A

★3 (fi 6) (second term, 3-0-0). Origins of quantum mechanics; wave functions; Schrodinger equation and its application to one dimensional systems, postulates and physical interpretation of quantum mechanics; orbital angular momentum, central potentials and three-dimensional systems. Prerequisites: PHYS 271, and PHYS 230 or 281, and MATH 121 or 225 (or 102 for Engineering students). Corequisite: MATH 337 or equivalent.

PHYS 381 Electromagnetic Theory I

★3 (fi 6) (second term, 3-0-0). Review of scalar and vector fields; Gauss and Stokes theorems; curvilinear coordinates; Dirac delta function; electrostatic field and potential; electrostatic energy; conductors, capacitors; Laplace's equation; boundary value problems; methods of images; multipoles; electrostatic field in matter; polarization; displacement; linear dielectrics; magnetostatic field; Biot-Savart and Ampere's law; vector potential; magnetostatic field in matter; magnetization; linear and nonlinear magnetic media. Prerequisites: PHYS 230 or 281, MATH 334 or equivalent. Corequisite: MATH 337 or equivalent.

PHYS 395 Electronics

★3 (fi 6) (either term, 3-0-3). DC and AC circuits; filter, diode, and transistor circuits; operational amplifiers, digital circuits, data acquisition, and computers. Lab component of the course provides practical experience in electronics. Prerequisites: PHYS 230 or 281, MATH 120 or 125, and MATH 215. Credit in PHYS 292 or 294 or 295 is strongly recommended. Offered alternate years only. Consult Department for course scheduling.

PHYS 397 Projects in Experimental Physics

★3 (fi 6) (either term, 0-0-6). Projects in optics, electricity, magnetism, and modern physics. Prerequisite: PHYS 292 or 295 or 297. Corequisite: PHYS 381 and MATH 337 or equivalent.

PHYS 400 Industrial Internship Practicum

★3 (fi 6) (first term, 0-3s-0). Required by all students who have just completed a physics Industrial Internship Program. Must be completed during the first academic term following return to full-time studies. Note: A grade of F to 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 to learn from the experiences of the Internship as demonstrated in an oral presentation. Prerequisite: WKEXP 422 or 423.

PHYS 415 Introduction to Condensed Matter Physics I

★3 (fi 6) (first term, 3-0-0). Lattice structure and binding; lattice vibrations; electrons in solids, band structure of metals, Fermi surface; semiconductors and junctions; paramagnetism and diamagnetism; introduction to lattice defects. Prerequisites: PHYS 311 and 372, and MATH 337 or equivalent.

PHYS 420 Computational Physics

★3 (fi 6) (first term, 3-0-3). Basic principles; computational methods selected from matrix manipulation, variational techniques, Monte Carlo, random walks, fast Fourier transform, lattice methods; as applied to topics selected from mechanics, nonlinear systems, chaos; electrodynamics; wave propagation; statistical physics; quantum mechanics; condensed matter. Prerequisites: PHYS 244, PHYS 381, MATH 337 or equivalent. Recommended: MA PH 343, PHYS 311, PHYS 372, PHYS 472, and PHYS 481. Familiarity with FORTRAN and/or C programming language strongly recommended.

PHYS 461 Photonics

★3 (fi 6) (second term, 3-0-0). Principles and applications of ultrafast lasers; nonlinear optics; quantum optics; light emitting materials; photodetectors; fibre and integrated optics; photonic bandgap structures; optical traps; selected current topics. Prerequisites: PHYS 362, 372, 481; MATH 311, and 337 or equivalent. Recommended: PHYS 415.

PHYS 472 Quantum Mechanics B

★3 (fi 6) (first term, 3-0-0). Review of the postulates of quantum mechanics; quantization of angular momentum; matrix representations, spin and parity; approximation methods; perturbation theory; variational and other methods; applications; scattering theory; systems of identical particles. Prerequisites: PHYS 372, and MATH 337 or equivalent, and MATH 311.

PHYS 481 Electromagnetic Theory II

★3 (fi 6) (first term, 3-0-0). Electromotive force; Faraday's law; inductance; Maxwell's equations in free space and in matter; electromagnetic potentials; gauges; energy and momentum conservation laws; plane waves in vacuum, in non-conducting and in conducting media; reflection and refraction of electromagnetic waves; dispersion, wave guides; dipole radiation; radiation due to moving charge; radiation reaction. Prerequisite: PHYS 381; MATH 311, 337 or equivalent.

PHYS 484 Nuclear Physics

★3 (fi 6) (first term, 3-0-0). Nuclear forces and the two nucleon system. Bulk properties of nuclei. Nuclear excitation and decay. Shell and collective models of nuclear structure. Nuclear reactions and gamma and beta decay. Nuclear reactions in astrophysics. Prerequisites: PHYS 372 and MATH 337 or equivalent, and MATH 121 or 225 (or 102 for Engineering students).

PHYS 485 Introductory Particle Physics

★3 (fi 6) (second term, 3-0-0). Particles and forces; relativistic kinematics; symmetries and conservation laws; bound states, heavy flavours, and the quark model; Dirac equation and the electrodynamics of leptons; electrodynamics of quarks and the parton model; quantum chromodynamics and the strong interactions; weak interactions and electroweak unification. Prerequisites: PHYS 472, 351; MATH 337 or equivalent, and MATH 121 or 225.

PHYS 499 Special Projects

★3 (fi 6) (either term, 0-0-6). Experimental or reading project under the direction of a staff member. Prerequisites: A 300-level Physics course and consent of Department. Credit for this course may be obtained more than once.

Graduate Courses

Note: The following undergraduate courses may be taken for credit by graduate students: ASTRO 429, 430, 465; PHYS 415, 420, 461, 481, 484, 485, 499.

PHYS 511 Advanced Quantum Mechanics I

★3 (fi 6) (first term, 3-0-0). Principles of quantum mechanics; central force problems; angular momentum; approximation methods for stationary states; time-dependent perturbation theory; scattering theory; identical particles and second quantization; quantum statistical mechanics.

PHYS 512 Advanced Quantum Mechanics II

★3 (fi 6) (second term, 3-0-0). Time-dependent scattering theory; relativistic quantum mechanics; Klein-Gordon and Dirac equations; introduction to quantum field theory.

PHYS 520 Classical Electrodynamics I

★3 (fi 6) (first term, 3-0-0). Boundary value problems in electrostatics, Green's functions, electrostatics in dielectrics; magnetostatics, time varying fields and Maxwell's equations, gauge transformations; plane electromagnetic waves.

PHYS 524 Classical Electrodynamics II

★3 (fi 6) (second term, 3-0-0). Wave guides, radiating systems; special relativity, dynamics of relativistic particles and electromagnetic fields; radiation by moving charges; multiple fields. Additional special topics will be discussed.

PHYS 530 Statistical Mechanics

★3 (fi 6) (either term, 3-0-0). Fundamentals of classical and quantum statistical mechanics, with selected applications.

PHYS 541 Condensed Matter Physics I

★3 (fi 6) (either term, 3-0-0). Crystal structure and symmetries; electrons and band structure; semiconductors and heterostructures; lattice vibrations and thermal properties.

PHYS 543 Condensed Matter Physics II

★3 (fi 6) (either term, 3-0-0). Dielectric and optical properties of solids; magnetism; electronic transport; disordered systems; electron-phonon interaction and superconductivity; strongly correlated electronic systems.

PHYS 574 Experimental Methods in Physics

★3 (fi 6) (either term, 3-0-3/2). Statistics and data analysis: S/N considerations; interactions of photons, neutrons, and charged particles with matter; detectors; vacuum technology. Other topics to be selected according to students' needs and instructor's preference.

PHYS 580 Advanced Computational Physics

★3 (fi 6) (either term, 3-0-0). Basic numerical methods and algorithms applied to a selected range of physics areas chosen from: mechanics, electrodynamics and optics, quantum physics, statistical physics, condensed matter, fluids and plasmas, and relativity.

PHYS 590 Particle Physics II

★3 (fi 6) (either term, 3-0-0). Field theory and symmetries; gauge theories;

spontaneous symmetry breaking; electroweak interactions of quarks and leptons; quantum chromodynamics; unified theories.

PHYS 610 Quantum Field Theory I

★3 (fi 6) (first term, 3-0-0).

PHYS 614 Quantum Field Theory II

★3 (fi 6) (second term, 3-0-0).

PHYS 635 Statistical Theory of Plasmas

★3 (fi 6) (either term, 3-0-0).

PHYS 643 Superconductivity

★3 (fi 6) (either term, 3-0-0).

PHYS 644 Analytical Electron Microscopy

★3 (fi 6) (either term, 3-0-0).

PHYS 646 Special Topics in Condensed State Physics

★3 (fi 6) (either term, 3-0-0).

PHYS 673 Special Topics in Subatomic Physics I

★3 (fi 6) (either term, 3-0-0).

PHYS 675 Experimental Topics in Subatomic Physics II

★3 (fi 6) (either term, 3-0-0).

PHYS 696 Black Hole Physics

★3 (fi 6) (either term, 3-0-0).

PHYS 698 Advanced General Relativity

★3 (fi 6) (either term, 3-0-0).

PHYS 699 Special Topics in Theoretical Physics

★3 (fi 6) (either term, 3-0-0).

221.180 Physiologie, PHYSE

Faculté Saint-Jean

Cours de 1er cycle

PHYSE 152 Physiologie

★6 (fi 12) (aux deux semestres, 5-0-0). Introduction à la physiologie humaine. Doit être complété avant l'année 2 du BScIn (bilingue). Notes: La priorité sera accordée aux étudiants du BScIn (bilingue). Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour NURS 150 ou 151.

221.181 Physiology, PHYSL

Department of Physiology
Faculty of Medicine and Dentistry

Note: Details on the BSc Program in Physiology can be found in the Faculty of Science section.

Undergraduate Courses

PHYSL 161 Elementary Physiology

★6 (fi 12) (two term, 3-0-0). Available only to students who intend to enter the Occupational Therapy or Physical Therapy program if they have completed at least one year of University and if they have the consent of the Department of Physiology.

PHYSL 210 Human Physiology

★6 (fi 12) (two term, 3-0-0). Introductory course in human physiology. Prerequisites: BIOL 107 or 108; plus 6 credits in University level Chemistry. Credit may be obtained in only one of PHYSL 210 or 211. See PHYSL 211.

PHYSL 211 Human Physiology

★6 (fi 12) (two term, 3-0-0). Introductory course in human physiology. Required for students in Honors Physiology. Recommended for students in other Honors/Specialization programs. Prerequisites: BIOL 107 or 108; CHEM 101 and 102. Pre- or corequisites: CHEM 161 and 163; or CHEM 261 and 263. Credit may be obtained in only one of PHYSL 210 or 211. Students with credit in PHYSL 210 or 211 may not obtain credit in ZOO 241 or 242. Students in some Honors/Specialization programs may require PHYSL 210 or 211. See your departmental advisor.

PHYSL 372 Systems Neuroscience

★3 (fi 6) (second term, 3-0-0). Introduction to the organization and function of vertebrate nervous systems. Major topics will be neural development, control of movement, integration of sensory information, and the neuronal mechanisms underlying memory and learning. Prerequisite: PHYSL 210 or 211, or ZOO 242.

PHYSL 401 Molecular and Cellular Physiology

★3 (fi 6) (first term, 3-0-0). The molecular and cellular aspects of physiological

processes. Main areas include the structure and functions of plasma membranes emphasizing transport processes and their regulation. The mechanism of action of hormones (hormone-receptor interactions, receptor regulation and interactions of intracellular mediators). The physiological significance of these processes will be stressed throughout. Prerequisites: PHYSL 210, or 211 and consent of Instructor.

PHYSL 402 Homeostatic Physiology

★3 (fi 6) (second term, 3-0-0). Principles of regulatory mechanisms in human and mammalian physiology. The interrelationships between different organ systems in the maintenance of homeostasis, some theoretical modelling. Prerequisites: PHYSL 210, or 211 and consent of Instructor.

PHYSL 403 Neuroendocrinology

★3 (fi 6) (first term, 3-0-0). The physiological and pathophysiological interrelationships between the nervous, endocrine and immune systems. Prerequisites: PHYSL 210 or equivalent.

PHYSL 404 Cardiovascular Physiology

★3 (fi 6) (first term, 3-0-0). General concepts in human cardiovascular physiology: properties of the myocardium, hemodynamics and control of the cardiovascular system; limited discussion of relevant clinical situations. Prerequisite: PHYSL 210, or 211 or equivalent.

PHYSL 444 Advanced Topics in Neurophysiology

★3 (fi 6) (first term, 3-0-0). A lecture course emphasizing contemporary aspects of developmental, cellular, systems and cognitive neurophysiology. Topics will include experience-dependent processes in the development of the nervous system, the molecular and cellular mechanisms for learning and memory, and voluntary movement, the representation and transformation of information in the nervous system, and the neuronal events associated with conscious experience. Students will be expected to demonstrate a thorough understanding of selected readings from current and classical literature. Suitable for honours students in Physiology, Pharmacology, Psychology and Neuroscience. Prerequisites: PMCOL 371 and PHYSL 372 and permission of course coordinator.

PHYSL 465 Undergraduate Research Project

★3 (fi 6) (either term, 0-0-6). Individual study. Restricted to students in the Physiology Honors Program. Students will spend one term in the laboratory of a faculty member and carry out a laboratory research project. Successful completion of an oral presentation is required at the conclusion of the project. Credit for this course may be obtained more than once.

PHYSL 466 Undergraduate Tutorial

★3 (fi 6) (either term, 3-0-0). Individual study. Restricted to students in the Physiology Honors Program. Students will select a faculty member who will guide them through a course of reading at an advanced level on a specialized topic. Successful completion of an oral presentation is required at the conclusion of the project. Credit for this course may be obtained more than once.

PHYSL 501 Topics in Cardiovascular Physiology

★3 (fi 6) (second term, 3-0-0). The goal of PHYSL 501 is to develop critical appraisal and presentation skills in advanced undergraduate and graduate students. Through critical review of controversial topics in modern cardiovascular physiology, the participant will learn to appreciate that literature is a dynamic, changing and fallible source of information. Presentation skills are developed through both oral and written assignments and facility with the use of electronic library resources is encouraged. Course content varies from year to year. Prerequisites: PHYSL 210 or 211, PHYSL 404 and consent of Instructor.

PHYSL 502 Problems in Current Research

★3 (fi 6) (either term, 0-0-6). Individual study. Credit for this course may be obtained more than once.

PHYSL 506 Tutorial and Seminar Course

★3 (fi 6) (either term, 3-0-0). Guided reading course. Credit for this course may be obtained more than once.

PHYSL 512 Physiology of the Respiratory System

★3 (fi 6) (first term, 3-1s-0). Cellular and molecular physiology of airways and the lung. Major topics include ion transport mechanisms, fluid balance, epithelial electrophysiology, cystic fibrosis, cellular mechanisms of asthma, neural and chemical control of respiration. Designed for advanced undergraduate and graduate students. Prerequisites: PHYSL 210 or 211 or consent of Department.

PHYSL 513 Fetal Physiology

★3 (fi 6) (second term, 3-0-0). The course stresses experimental approaches to understanding fetal physiology as well as the development and function of the fetus from ovulation to birth and adaptation to independent life. This course also deals with maternal physiology during pregnancy, complications of pregnancy, and newborn health. Prerequisites: PHYSL 210 or PHYSL 211 and consent of Instructor.

PHYSL 527 Experimental Approaches in Neuroscience

★3 (fi 6) (second term, 3-0-0). Lecture course designed to provide an appreciation and understanding of the vast array of experimental approaches used in neurobiological research. Topics will include electrophysiological, neuropharmacological, and anatomical approaches used to understand how the nervous system functions

at the molecular, cellular, and system levels. For advanced undergraduate and graduate students. Prerequisite: PHYSL 372 or PMCOL 371. Offered in alternate years.

PHYSL 545 Physiology of Transport Systems

★3 (fi 6) (second term, 3-0-0). A consideration of transport mechanisms primarily from the physiological rather than biochemical viewpoint. Major models considered are the erythrocyte and a variety of epithelia from vertebrates. Designed for advanced undergraduate and graduate students. Offered in alternate years. Prerequisites: PHYSL 210 or 211, or ZOOL 241 or 242.

Graduate Courses

PHYSL 544 Physiology of Reproduction

★3 (fi 6) (first term, 3-0-0). Selected topics in reproductive physiology. Prerequisite: ZOOL 343 or PHYSL 401.

PHYSL 600 Colloquia in Physiology

★3 (fi 6) (either term, 0-3s-0). This discussion course will provide an opportunity for Provisional PhD candidates in the Department of Physiology, prior to their candidacy examination, to research, present and critique publications in areas relevant to their research, but not their own research. Graded on a pass/fail basis. Prerequisite: consent of Department. Open to other graduate students in the Department of Physiology.

221.182 Physique, PHYSQ

Faculté Saint-Jean

Cours de 1er cycle

PHYSQ 124 Particules et ondes

★3 (fi 6) (premier semestre, 3-0-3). Cours basé sur l'algèbre, pour les étudiants en sciences de la vie et de la santé. Particules: vecteurs, cinématique et dynamique, équilibre, mouvement circulaire, principes de conservation. Ondes: vibrations, ondes élastiques dans la matière, optique, son, photons, modèles de l'atome. Applications en biologie et en médecine. Préalable(s): Mathématiques 30, Physique 20 ou l'équivalent. Physique 30 est fortement recommandé. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour PHYSQ 131, PHYS 144 ou EN PH 131.

PHYSQ 126 Fluides, champs et radiation

★3 (fi 6) (deuxième semestre, 3-0-3). Suite de PHYSQ 124, pour les étudiants en sciences de la vie et de la santé. Statique et dynamique des fluides, gaz, interprétation cinétique. Electrostatique, courants et circuits, champs magnétiques, induction électromagnétique. Radiation nucléaire et ses applications. Préalable(s): PHYSQ 124. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour PHYSQ 130, PHYS 146.

PHYSQ 130 Ondes, optique et son

★3 (fi 6) (premier semestre, 3-0-3/2). Optique géométrique, instruments d'optique, oscillations, ondes, son, interférence, diffraction. Préalable(s): Mathématiques 30, Physique 30. Concomitant(s): MATHQ 100 ou 113, ou l'équivalent. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour PHYSQ 100, 126, PHYS 109 ou 146.

PHYSQ 131 Mécanique

★3 (fi 6) (deuxième semestre, 3-1s-3/2). Cinématique et dynamique des particules; gravitation; travail et énergie; moments linéaire et angulaire; systèmes de particules; dynamique des corps rigides. Préalable(s): MATHQ 100 ou 113, PHYSQ 130. Concomitant(s): MATHQ 115 ou MATH 101. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour PHYSQ 102, 124, PHYS 101, 108, 144 ou EN PH 131.

PHYSQ 271 Introduction à la physique moderne

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Contradictions expérimentales de la physique classique: relativité restreinte, quantification de la charge, de la lumière et de l'énergie. Corps noir, effet photoélectrique, effet Compton. Modèles atomiques, propriétés ondulatoires des particules, principe d'incertitude. Equation de Schrödinger, puits carrés infini et fini, oscillateur harmonique, effet tunnel, atome d'hydrogène. Moment cinétique et spin de l'électron, statistiques de Bose-Einstein et de Fermi-Dirac. Préalable(s): PHYSQ 102 ou 131 ou PHYS 146 et MATHQ 115 ou 101 ou l'équivalent. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour PHYS 208.

221.183 Plant Science, PL SC

Department of Agricultural, Food and Nutritional Science
Faculty of Agriculture, Forestry, and Home Economics

Note: See also Agricultural, Food and Nutritional Science (AFNS), Animal Science (AN SC), Environmental and Conservation Sciences (ENCS), Interdisciplinary

(INT D), Nutrition (NUTR), Nutrition and Food Sciences (NU FS), Renewable Resources (REN R) and Soil Sciences (SOILS) course listings for related courses.

Undergraduate Courses

PL SC 221 Introduction to Plant Science

★3 (fi 6) (either term, 3-0-3). Principles of plant science for use in agriculture, forestry and environmental sciences. Emphasis on vascular plants in an applied context. Topics include: plant structure and function; reproduction and development; and diversity and management of vegetation and crops. Credit will only be given for one of REN R 220, ENCS 204, PL SC 220, PL SC 221 or BOT 205. [Offered jointly by the Departments of Agricultural, Food and Nutritional Science and Renewable Resources].

PL SC 301 Developmental Physiology and Biotechnology of Crop Plants

★3 (fi 6) (first term, 3-0-0). A theoretical approach to plant and plant cell developmental physiology as it relates to crop production and crop improvement through biotechnology, including use of tissue culture and recombinant DNA technologies. Topics covered will include changes through the lifecycle and in response to environmental stress, and genomic and expressional control of these changes. Prerequisites: CHEM 161/163 and BIOL 107.

PL SC 324 Crop Physiology and the Environment

★3 (fi 6) (second term, 3-0-3). Study of crop production as influenced by plant-plant and plant-environment interactions, as well as management practices. Topics may include photosynthetic efficiency, growth analysis, competition and facilitation in monocrops and mixtures, response to climate change and environmental stress, use of genetically modified organisms and contrasting world crop production systems. Prerequisite: PL SC 221 or ★3 200-level plant related course.

PL SC 331 Plant Biochemistry I

★3 (fi 6) (first term, 3-0-0). An introduction to the concepts of biochemistry with an emphasis on the structure, function and metabolism of biological macromolecules. Prerequisites: CHEM 161 and 163.

PL SC 335 Plant Propagation

★3 (fi 6) (first term, 3-0-3). Study of the physiological and practical aspects of sexual and asexual plant propagation. Propagation by seed and cuttings, layering, grafting and micropropagation. Prerequisite: PL SC 221 or consent of Instructor.

PL SC 352 Weeds and Weed Control

★3 (fi 6) (first term, 3-0-3). Crop-weed relationships, methods of control, herbicide properties and uses, weed identification. Prerequisite: PL SC 221 recommended.

PL SC 354 Forage Crops

★3 (fi 6) (second term, 3-0-3). The establishment, management, conservation and utilization of forages. Morphological structure and adaptation of the principal forage grasses and legumes. Prerequisite: PL SC 221 or consent of Instructor.

PL SC 355 Cereal, Oilseed, and Pulse Crops

★3 (fi 6) (first term, 3-0-3/2). The role of cereals, oilseeds, and pulse crops in Western Canadian agricultural systems. Their botanical, physiological, agricultural, and market quality characteristics. Prerequisite: PL SC 221 or consent of Instructor.

PL SC 357 Greenhouse Crops

★3 (fi 6) (second term, 3-0-3). History and present status of protected cropping industry; greenhouse structural design; systems of environmental control; cultural procedures for some commonly grown greenhouse crops. Offered in alternate years beginning in 1998/99. Prerequisite: PL SC 221 or consent of Instructor.

PL SC 380 Principles of Plant Pathology

★3 (fi 6) (first term, 3-0-3). An introduction to plant diseases; the nature of nonparasitic and parasitic causal agents such as air pollutants, temperature, viruses, bacteria, fungi, higher plants and nematodes; principles involved in disease prevention and control. Prerequisite: BIOL 107 recommended.

PL SC 385 Forest Pathology

★3 (fi 6) (first term, 3-0-3). An introduction to forest diseases. Lectures and discussions focus on the biology and management of the major types of tree diseases causing economic loss. Labs focus on disease identification. A basic knowledge of forestry is assumed.

PL SC 432 Plant Biochemistry II

★3 (fi 6) (second term, 3-0-3). A continuation of PL SC 331. Emphasis is on the use of energy for synthetic processes. Chemistry and biochemistry of cellular structures, isoprenoids and steroids. Photosynthesis. Nitrogen and protein biochemistry. Enzyme kinetics. Regulation and control of chemical reactions in living organisms. Offered in alternate years commencing in 1999/00. Prerequisite: PL SC 331 or ★3 in Biochemistry.

PL SC 465 Principles of Plant Breeding

★3 (fi 6) (first term, 3-0-0). Basic principles of crop improvement by plant breeding. Development of plant breeding methods and their relationship to the major crop

species. Graduate students may not register for credit (see AFNS 565). Credit will only be given for one of AFNS 565 and PL SC 465. Prerequisites: BIOL 207 and ★3 statistics.

PL SC 470 Physiology of Herbicidal Action

★3 (*fi 6*) (first term, 3-0-0). Absorption, translocation, degradation, mechanism of action. Offered in alternate years commencing in 1994-95. Prerequisites: PL SC 352 and BOT 240.

PL SC 481 Diseases of Field and Horticultural Crops

★3 (*fi 6*) (second term, 0-3s-0). Diseases of cereal, oilseed, pulse, forage, vegetable, fruit and ornamental crops. Offered in alternate years commencing in 2002/03. Graduate students may not register for credit (see AFNS 582). Credit will only be given for one of AFNS 582 and PL SC 481. Prerequisite: PL SC 380 or consent of instructor.

PL SC 487 Principles of Insect Pest Management

★3 (*fi 6*) (second term, 3-0-3). The principles and practice of integrated insect pest management, with an emphasis on insect control strategies in field, greenhouse, and forage crops in western Canada. Topics include methods for sampling and monitoring, estimating yield losses, developing economic thresholds, and reducing crop losses by integrating management strategies. Prerequisite: ENT 207 or 280 or equivalent.

PL SC 495 Integrated Crop Protection

★3 (*fi 6*) (second term, 0-3s-0). Integrated agronomic, mechanical, biological, and chemical control of insects, disease organisms and weeds that interfere with field crop and horticultural crop production. Graduate students may not register for credit (see AFNS 595). Prerequisites: At least two of ENT 207, PL SC 352 or 380, and the third as a corequisite.

PL SC 499 Cropping Systems

★3 (*fi 6*) (first term, 3-0-3). The crop rotations, pest management, nutrient cycling, and economic and ecological sustainability of specific Alberta cropping systems will be examined. The lab will consist of a field tour in which students interact with researchers and agronomists from across Alberta. Classes will be a balance of lectures, integrating agronomic principles within the framework of Alberta cropping systems, and team project work. Field tour begins generally 5 days prior to the start of classes. Prerequisites: PL SC 324, 355 and SOILS 210. Open to fourth-year students in the Faculty of Agriculture, Forestry and Home Economics.

Graduate Courses

Notes

- (1) 400-level courses in PL SC and ENCS 407 may be taken for credit by graduate students with approval of the student's supervisor or supervisory committee. 300-level courses may be taken for credit by graduate students with approval of the AFNS Graduate Program Committee. (See §174.1.1(1))
- (2) See Agricultural, Food and Nutritional Science (AFNS) listings for related courses.

221.184 Polish, POLSH

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 Polish language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course more suitable to their level of ability. 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 if a course is completed which the student is deemed ineligible to take, based on their prior background. 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 courses offered by the Faculty of Arts.

Undergraduate Courses

PLSH 111 Beginners' Polish I

★3 (*fi 6*) (either term, 5-0-0). Essentials of grammar, reading, pronunciation. Designed to give a working knowledge of the Polish language. Note: not to be taken by students with credit in POLSH 100, or with native or near native proficiency, or with Polish 30 or its equivalents in Canada and other countries

PLSH 112 Beginners' Polish II

★3 (*fi 6*) (either term, 5-0-0). Prerequisite: POLSH 111 or consent of Department. Note: not to be taken by students with credit in POLSH 100, or with native or near native proficiency, or with Polish 30 or its equivalents in Canada and other countries.

PLSH 211 Second-Year Polish I

★3 (*fi 6*) (either term, 4-0-0). Intermediate grammar, composition, and oral practice based on selected texts of Polish classical and contemporary literature. Prerequisite: POLSH 112 or consent of Department. Note: not to be taken by students with credit in POLSH 201 or 202.

PLSH 212 Second-Year Polish II

★3 (*fi 6*) (either term, 4-0-0). A continuation of POLSH 201, with greater emphasis on reading and composition. Prerequisite: POLSH 211. Note: not to be taken by students with credit in POLSH 202.

PLSH 303 Advanced Polish I

★3 (*fi 6*) (either term, 3-0-0). Films, short literary texts and journalistic prose serve as the basis for composition and discussion. Prerequisite: POLSH 202 or consent of Department.

PLSH 304 Advanced Polish II

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: POLSH 303 or consent of Department.

PLSH 407 Business Polish

★3 (*fi 6*) (either term, 3-0-0). Specialized language of business in Polish, especially its managing and marketing aspects. Prerequisite: POLSH 304 or consent of Department. Note: not to be taken by students with credit in POLSH 307.

PLSH 414 Polish Literature of Renaissance, Baroque, and Classicism

★3 (*fi 6*) (either term, 3-0-0). Survey of Polish literature and culture from its origins to the end of the eighteenth century. Masterpieces of the Polish renaissance, baroque, and classicism read in the original and/or with the aid of English translations. Prerequisite: POLSH 202 or consent of Department. Note: Not open to students with credit in POLSH 411.

PLSH 416 20th-Century Polish Literature

★3 (*fi 6*) (either term, 3-0-0). Principal literary movements with emphasis on contemporary Polish literature, including the post-communist era. Polish literary criticism and literary theory before and after the war. Prerequisite: POLSH 415 or consent of Department. Note: Not open to students with credit in POLSH 412.

PLSH 443 Polish-English Translation

★3 (*fi 6*) (either term, 3-0-0). Introduction to translation theories and practice as applied to Polish. Exercises in translation of minimal textual units (written and oral) with emphasis on nonliterary texts. Prerequisite: POLSH 202 or consent of Department. Note: Formerly POLSH 441. Not open to students with credit in POLSH 441.

PLSH 444 English-Polish Translation

★3 (*fi 6*) (either term, 3-0-0). Semantic-syntactic theories of translation and practice. Exercises in translation of written and oral textual units with emphasis on literary and artistic texts. Prerequisite: POLSH 202 or consent of Department. Note: Formerly POLSH 442. Not open to students with credit in POLSH 442.

PLSH 499 Special Topics

★3 (*fi 6*) (either term, 3-0-0).

221.185 Political Science, POLS

Department of Political Science
Faculty of Arts

Note: See also INT D 393, a course offered by more than one Department which may be taken as an options or as a course in this discipline.

Undergraduate Courses

POL S 101 Introduction to Politics

★3 (*fi 6*) (either term, 3-0-0). An introduction to major political concepts and to the study of politics. Note: Not open to students with credit in POL S 100 or 103. Beginning 2005-2006, this course will be the prerequisite for most 200-level POL S courses.

POL S 210 History of Political Thought

★6 (*fi 12*) (two term, 3-0-0). An historical and critical survey of the development of political and social philosophy from ancient Greece to the present time, with selected readings from major political writers. Note: This is the core course in the field of political philosophy and the prerequisite for 400-level courses in the field. Prerequisite: POL S 101 or consent of Department.

POL S 220 Canadian National Government and Politics

★6 (*fi 12*) (two term, 3-0-0). The structure and function of the government of Canada, especially of the Commons, Senate, Cabinet System, Civil Service, and

the role of political parties. Note: This is the core course in the field of Canadian government and politics and a prerequisite for most 400-level courses in the field. Prerequisite: POL S 101 or consent of Department.

0 POL S 221 Canadian Political Realities

★3 (fi 6) (either term, 3-0-0). This introduction to Canadian politics is designed for students who do not intend to take more senior courses in Canadian politics. It provides an overview of Canadian political development, the key institutions and actors in Canadian politics, and a survey of Canada's most pressing and persistent political challenges. Not open to students with credit in POL S 220.

0 POL S 223 City Government and Politics

★3 (fi 6) (either term, 3-0-0). Selected public policies of city governments and the political and administrative processes through which they are produced. Prerequisite, beginning 2005-2006: POL S 101 or consent of Department.

POL S 230 Introduction to Comparative Politics: Global North

★3 (fi 6) (either term, 3-0-0). Historical and contemporary comparisons among selected Northern countries. Political institutions, social change, development, and democratization. Note: This is a core course in the field comparative politics and the prerequisite for many 300- and 400-level courses in the field. Not open to students with credit in POL S 200. Prerequisite: POL S 101 or consent of Department.

POL S 240 Introduction to Comparative Politics: Global South

★3 (fi 6) (either term, 3-0-0). Historical and contemporary comparisons among selected Southern countries. Political institutions, social change, development, and democratization. Note: This is a core course in the field of comparative politics and the prerequisite for many 300- and 400-level courses in the field. Not open to students with credit in POL S 200. Prerequisite: POL S 101 or consent of Department.

1 POL S 260 International Relations

★6 (fi 12) (two term, 3-0-0). An introduction to contemporary international relations that attempts to develop an understanding of political events at the international level. The course covers the nature of foreign policy, the dynamics of interactions between states, the causes of war, imperialism and the role of non-state actors. Note: This is the core course in the field of international relations and a prerequisite for most 400-level courses in the field. Prerequisite: POL S 101 or consent of Department.

POL S 266 Politics of Globalization

★3 (fi 6) (either term, 3-0-0). Myths and realities of political, economic, and cultural globalization. Implications for nation-states, communities, citizens, and markets. Not open to students with credit in POL S 110. Prerequisite: POL S 101 or consent of Department.

0 POL S 290 Introduction to Political Behavior

★3 (fi 6) (either term, 3-0-0). An introduction to the behavioral approach to the study of politics and its application in selected substantive research areas. Formerly POL S 390. Prerequisite, beginning 2005-2006: POL S 101 or consent of Department.

POL S 299 Citizenship for Democracy

★3 (fi 6) (either term, 3-0-0). Power, politics and political activism. Approaches to participatory and democratic citizenship.

POL S 302 Classic Works of Political Thought

★3 (fi 6) (either term, 3-0-0). Critical examination of some major works in Political Philosophy not normally covered in POL S 210. Prerequisite: POL S 210 or consent of Department.

POL S 303 The Politics of Financial Crises

★3 (fi 6) (either term, 3-0-0). Role of governments and institutions of governance in global finance. Prerequisite: POL S 230 or 240 or 260 or consent of Department.

POL S 306 Rights, Equality and Democracy

★3 (fi 6) (either term, 3-0-0). Analysis of selected leading principles and concepts of rights and equality in democratic theory. Prerequisite: POL S 210 or consent of Department.

POL S 307 Liberalism and Its Critics

★3 (fi 6) (either term, 3-0-0). Recent critiques of the liberal tradition, including feminist, anti-racist, post-colonial and Marxist criticism. Prerequisite: POL S 210 or consent of Department.

POL S 315 Analysis of Political Science

★6 (fi 12) (two term, 3-0-0). A philosophical investigation of the basic issues involved in the scientific study of politics. Prerequisite: POL S 210 or consent of Department. Formerly POL S 313 and 314.

POL S 321 The Politics of Health Care in Canada I

★1.5 (fi 3) (either term, 18 hours). The development of Canada's health care system, its legislative and philosophical grounds, as well as financing and delivery. Note: Open only to students in the Faculty of Nursing. Not open to students with credit in SC PO 320.

POL S 322 The Politics of Health Care in Canada II

★1.5 (fi 3) (either term, 18 hours). Current stresses in the health care system

such as challenges to universality; alternative health delivery system from a comparative perspective. Note: Open only to students in the Faculty of Nursing. Not open to students with credit in SC PO 320. Prerequisite: POL S 321.

POL S 324 Topics in Canadian Politics

★3 (fi 6) (either term, 3-0-0). Prerequisite: POL S 220 or consent of Department.

POL S 325 Canadian Political Economy

★3 (fi 6) (either term, 3-0-0). This course explores the political economy tradition in Canada, which emphasizes the historical interrelationships among the international political economy, Canadian public policy, political conflict and political movements. Prerequisite: POL S 220 or consent of the Department.

POL S 327 Aboriginal Peoples and the Canadian State

★3 (fi 6) (either term, 3-0-0). This course examines the recent history of relationships between Canada's Aboriginal peoples and the Canadian State. It examines the ways that European political practices and public institutions were imposed upon the First Nations and Aboriginal reactions and resistance to these legal and political changes. Prerequisite: One of POL S 220, NS 210, or 211.

POL S 328 Managing Modern Government

★3 (fi 6) (either term, 3-0-0). Topics include government organization and administration, budgets, policy making, and democratic control and accountability. The focus is on Canada, but other countries are also considered. Prerequisite: POL S 220 or 230 or consent of Department.

POL S 332 Introduction to United States Politics and Government

★3 (fi 6) (either term, 3-0-0). The actors, institutions, and processes of American politics and governance, and the forces that influence them. Prerequisite: Any of the 200-level POL S core courses or consent of Department.

POL S 333 Ecology and Politics

★3 (fi 6) (either term, 3-0-0). This course examines different approaches to understanding the links between politics, society and ecology. Prerequisites: POL S 230 or 240 or consent of Department.

POL S 334 North American Politics

★3 (fi 6) (either term, 3-0-0). Comparative study of political institutions of Canada, Mexico, and the United States, and their interaction with NAFTA. Prerequisite: POL S 230 or 240 or 260 or consent of Department.

POL S 345 Issues in Globalization and Governance

★3 (fi 6) (either term, 3-0-0). Prerequisite: POL S 230 or 240 or 260 or consent of Department.

POL S 350 The Politics of Gender

★3 (fi 6) (either term, 3-0-0). Relationships between gender, politics and power. From ballot box to bedroom to boardroom, how political and social institutions shape and are shaped by the categories of gender and sex. Prerequisite: Any of the 200-level POL S core courses or consent of Department.

POL S 354 Topics in Comparative Politics

★3 (fi 6) (either term, 3-0-0). The focus of this course changes yearly to reflect current issues in comparative politics and faculty research interests. Information about the specific topics can be obtained from the Department. Prerequisite: POL S 230 or 240 or consent of Department.

POL S 357 The Third World in Global Politics

★3 (fi 6) (either term, 3-0-0). Explores the opportunities and constraints imposed on third world governments in an era of globalization and trade liberalization. Of particular interest are the politics of African and South American countries. Prerequisite: POL S 240 or 260 or consent of Department.

POL S 359 Topics in International Politics

★3 (fi 6) (either term, 3-0-0). This course examines contemporary controversies in international politics. Information about specific topics are available from the Department. Prerequisite: POL S 260 or consent of Department.

POL S 361 Pacific Rim Relations

★3 (fi 6) (either term, 3-0-0). An introduction to the politics and economics of the Asia-Pacific region, and of Canada's relations with the area. Prerequisite: POL S 260 or consent of Department. No prerequisite for students in the BA East Asian Studies program specializing in Political Science.

POL S 364 Introduction to International Political Economy

★3 (fi 6) (either term, 3-0-0). This course provides an introduction to the ideas, institutions, and forces which are shaping the new international political economy. It examines the politics of trading blocks such as NAFTA and the EU, North-South relations, and the interactions of markets and states in the global economy. Prerequisite: POL S 230 or 240 or 260.

POL S 365 Canadian Foreign Policy

★3 (fi 6) (either term, 3-0-0). Major trends and developments in Canadian foreign policy since 1945. Prerequisite: POL S 260.

POL S 370 Politics of the European Union

★3 (fi 6) (either term, 3-0-0). An examination of European Union institutions, processes, politics, and policy issues. Prerequisite: POL S 230 or 240 or 260 or consent of Department.

POL S 374 Politics and Society of Postcolonial Africa

★3 (fi 6) (either term, 3-0-0). An intensive survey of selected African politics and societies from colonialism to globalization. Prerequisite: POL S 240 or MEAS major/minor or consent of Department.

POL S 375 Politics of East Asia

★3 (fi 6) (either term, 3-0-0). A comprehensive introduction to East Asian politics in the postwar period, covering Greater China (Mainland, Taiwan and Hong Kong), Japan and the two Koreas. Prerequisite: POL S 240 or East Asian Studies Major/Minor or consent of Department.

POL S 376 Issues in Development Studies

★3 (fi 6) (either term, 3-0-0). This course examines the politics of development, focusing specifically on Latin America, Africa, and Asia. It reviews various approaches to development undertaken by national governments and international agencies such as the United Nations, the World Bank and the International Monetary Fund as well as alternative models advanced by popular political movements. Issues of democratization, ecology, gender equality, and the rights of indigenous peoples also are examined. Prerequisite: POL S 240 or consent of Department.

POL S 379 Latin American Politics and Society

★3 (fi 6) (either term, 3-0-0). An intermediate survey of Latin American politics and society. Prerequisite: POL S 240 or consent of Department.

POL S 380 Politics in the Middle East

★3 (fi 6) (either term, 3-0-0). Evolution, future, and global significance of Middle Eastern regional politics. Prerequisite: POL S 240 or consent of Department.

POL S 385 Regional Politics in Western Canada

★3 (fi 6) (either term, 3-0-0). Political issues, including rural impacts of globalization, urbanization, economic diversification, First Nations' aspirations, government downsizing. Prerequisite: POL S 220 or consent of Department.

POL S 390 Law and Politics

★3 (fi 6) (either term, 3-0-0). Relationships between law and politics in Canada and the United States including dispute resolution, societal and governmental influences on the judiciary, the policy-making role of courts, and the criminal process. Prerequisite: POL S 220 or 230 or 332 or consent of Department.

POL S 391 Canadian Political Parties

★3 (fi 6) (either term, 3-0-0). Topics include party systems; ideologies and programs, members and supporters, organization and resources, and electoral and governmental activities. Prerequisite: POL S 220 or consent of Department.

POL S 392 Interests, Power and Influence in Canadian Politics

★3 (fi 6) (either term, 3-0-0). This course examines how influence is asserted in Canadian politics and the policy-making process outside the formal democratic institutions of political parties, elections, and legislative representation. Among the topics included are social movements, interest groups, business interests, the media and international organizations. Prerequisite: POL S 220 or consent of Department.

POL S 395 Political Attitudes and Ideologies

★3 (fi 6) (either term, 3-0-0). A study of the cognitive psychology of political attitudes and ideologies and their impact on the individual citizen's involvement in politics. Not to be taken by students with credit in POL S 495. Prerequisite: POL S 220 or 230 or consent of Department.

POL S 396 Human Rights and World Politics

★3 (fi 6) (either term, 3-0-0). This course examines the evolution of the concept of human rights and the current debates on related issues in world politics. Prerequisite: POL S 230 or 240 or 260 or consent of Department.

POL S 397 Elections and Voting Behavior

★3 (fi 6) (either term, 3-0-0). Analysis of contemporary politics; the various factors that shape party competition and voting behavior and determine election outcomes, and the consequences of these outcomes focusing mainly on recent Canadian federal elections. Prerequisite: POL S 220 or 230 or consent of Department.

POL S 398 Mass Media and Politics

★3 (fi 6) (either term, 3-0-0). Mass media influence in democratic political processes and social movements, Canada or globally. Prerequisite: Any of the 200-level POL S core courses or consent of Department.

POL S 399 Third-Year Honors Seminar

★3 (fi 6) (either term, 0-3s-0). Note: Restricted to Honors Students in Third Year.

POL S 404 Topics in Political Philosophy

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 210 or equivalent.

POL S 406 Topics in the History of Political Thought I

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 210 or equivalent.

POL S 407 Topics in the History of Political Thought II

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 210 or equivalent.

POL S 408 Topics in Modern Political Theory I

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 210 or equivalent.

POL S 409 Topics in Modern Political Theory II

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 210 or equivalent.

POL S 410 Topics in Contemporary Political Philosophy

★3 (fi 6) (either term, 0-3s-0). A critical examination of contemporary trends in political philosophy. Prerequisite: POL S 210 or equivalent.

POL S 411 Topics in Contemporary Continental Political Philosophy

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 210 or equivalent.

POL S 412 Topics in Post-Hegelian Political Philosophy

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 210 or consent of Department.

POL S 415 Marx and Marxism

★3 (fi 6) (either term, 0-3s-0). An introduction to Marx's political thought and recent debates in Marxism. Prerequisite: POL S 210 or consent of Department. Not open to students with credit in POL S 305.

POL S 419 Politics of the Canadian Constitution

★3 (fi 6) (either term, 0-3s-0). The political implications of judicial decisions in the areas of civil liberties, federal-provincial relations and international agreements. Prerequisite: POL S 220, or consent of Department.

POL S 421 Issues in Canadian Politics

★3 (fi 6) (either term, 0-3s-0). The focus of this seminar changes yearly to reflect current issues in Canadian politics and faculty research interests. Information about the specific topic is available from the department. Prerequisite: POL S 220 or consent of Department.

POL S 423 Canadian Federalism

★3 (fi 6) (either term, 0-3s-0). The analysis of the development and theories of Canadian Federalism. Attention will be given to current problems of the federal system. Prerequisite: POL S 220 or consent of Department.

POL S 424 Canadian Political Behavior

★3 (fi 6) (either term, 0-3s-0). An advanced seminar on current topics and controversies regarding political behavior among elites and the mass public in Canada. Information about the specific topic is available from the department. Prerequisite: POL S 220 or 230 or consent of Department.

POL S 428 Provincial Government and Politics

★3 (fi 6) (either term, 0-3s-0). A study of structures, functions and processes of selected provincial governments in Canada. Prerequisite: POL S 220 or consent of Department.

POL S 429 Government and Politics of Alberta

★3 (fi 6) (either term, 0-3s-0). The study of selected aspects of Alberta government and politics. Topics may range from political institutions, through political parties, to areas of public policy. Prerequisite: POL S 220 or consent of Department.

POL S 431 Globalization and the Canadian Political Economy

★3 (fi 6) (either term, 0-3s-0). Canada's entry into a continental trading bloc, NAFTA, and its obligation to comply with international trading regulations, have fundamentally altered both the domestic policy environment and governmental practices. This course examines these changes as they affect governmental organization, federal-provincial relations, social equity, national sovereignty and democratic processes. Prerequisite: POL S 220 or POL S 260 or consent of Department.

POL S 432 Politics of the Canadian North

★3 (fi 6) (either term, 0-3s-0). An analysis of the politics of native claims, constitutional change and the non-renewable and renewable resource economics of Canada north of 60 degrees. Prerequisite: POL S 220 or consent of Department.

POL S 433 City Politics

★3 (fi 6) (either term, 0-3s-0). The theory and practice of city politics in modern Canada. The course will normally employ as resource persons senior elected and appointed officials from governments. Prerequisite: POL S 223 or permission of the instructor.

POL S 434 Cities and Globalization

★3 (fi 6) (either term, 0-3s-0). The global forces shaping urban economies, geographies, and cultures; urban social movements; the privatization of urban space and politics; and shifting conceptions of locality, community, and urbanity. Prerequisite: POL S 220 or 223 or 230 or consent of Department.

POL S 435 Metropolitan Government

★3 (fi 6) (either term, 0-3s-0). The comparative study of the political economy of metropolitan government. Prerequisite: POL S 223 or 230 or 240 or consent of Department.

POL S 437 Politics of Canadian Cultural Industries

★3 (fi 6) (either term, 0-3s-0). Canadian cultural politics and policy after NAFTA; impacts of trade agreements for cultural industries (publishing, music, television). Prerequisite: POL S 220 or 230 or consent of Department.

POL S 440 Topics in Canadian Public Policy

★3 (fi 6) (either term, 0-3s-0). Selected topics of contemporary interest in Canadian public policy. Information about the specific topic is available from the Department. Prerequisite: POL S 220 or consent of Department.

POL S 441 Gender and Public Policy

★3 (fi 6) (either term, 0-3s-0). The relationship between gender and public policy

in Canada. Of particular concern are effects of restructuring, decentralization, privatization and deregulation on women. Prerequisite: POL S 220 or 350 or consent of Department.

POL S 442 The Canadian State and Identity Politics

★3 (fi 6) (either term, 0-3s-0). The relative power, impact and interconnections of both territorial (regional) divisions and other non-territorial divisions (e.g., gender, race, ethnicity, and class). Prerequisite: POL S 220 or consent of Instructor.

POL S 443 Globalization, Ethnic Politics and the Nation-State

★3 (fi 6) (either term, 0-3s-0). Theories of nationalism and the nation-state in an era of globalization. Prerequisite: POL S 230 or 240 or consent of Department.

POL S 445 Topics in Globalization and Governance

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 230 or 240 or 260 or consent of Department.

POL S 446 Nation-States in the New International Political Economy

★3 (fi 6) (either term, 0-3s-0). Pressures faced by nation-states in the new international political economy, especially in relation to macro-economic politics, national sovereignty, economic development, and democratic processes. Prerequisite: POL S 230 or 240 or 260 or consent of Department.

POL S 450 Topics in Comparative Theory

★3 (fi 6) (either term, 0-3s-0). Seminar in major areas of comparative theory such as political economy and the politics of collective action. Prerequisite: POL S 230 or 240 or consent of Department.

POL S 454 Feminism and Social Change

★3 (fi 6) (either term, 0-3s-0). This course looks at the interaction between feminism(s) and a variety of areas of social theory. A background in feminist theory is recommended. Topics may include: psychoanalysis, sociology, political economy, epistemology, social science methodology, cultural theory, and comparative development. Prerequisites: POL S 230 or 240 or 350 or consent of Department.

POL S 455 Topics in Gender and Politics

★3 (fi 6) (either term, 0-3s-0). Prerequisite: Any of the POL S 200-level core courses or consent of Department.

POL S 457 Foreign Policy Analysis

★3 (fi 6) (either term, 0-3s-0). Analysis of those main variables contributing to the formation of the foreign policies of selected nations. Prerequisite: POL S 260 or consent of Department.

POL S 458 United States Foreign Policy

★3 (fi 6) (either term, 0-3s-0). The contemporary foreign policies of the United States and their causes. Prerequisite: POL S 260 or consent of Department.

POL S 459 Topics in International Politics

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 260.

POL S 460 Global Security

★3 (fi 6) (either term, 0-3s-0). Historical and contemporary political issues of global security are examined from various theoretical perspectives. Prerequisite: POL S 260 or consent of Department.

POL S 462 Political Economy of Global Governance

★3 (fi 6) (either term, 0-3s-0). Competing analytical frameworks within international political economy; social and ideological dimensions of governance in a globalized world. Prerequisite: POL S 364 or consent of Department.

POL S 463 War and International Conflict

★3 (fi 6) (either term, 0-3s-0). A survey covering theorists and theories of war, conventional strategy, and revolutionary strategy. Prerequisite: POL S 260.

POL S 468 International Organization

★3 (fi 6) (either term, 0-3s-0). An examination of theoretical debates on international cooperation and international institutions and their application to contemporary international politics. Prerequisite: POL S 260 or consent of Department.

POL S 469 Ethics in International Relations

★3 (fi 6) (either term, 0-3s-0). Sources of and debates on ethical issues in international relations, especially surrounding human rights, economic justice and war. Prerequisite: POL S 260 or consent of Department.

POL S 470 Selected Topics in Comparative Politics

★3 (fi 6) (either term, 0-3s-0). Selected topics of current interest in comparative politics and government. Prerequisite: POL S 230 or 240 or consent of Department.

POL S 474 Topics in African Political Economy

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 240 or MEAS major/minor or consent of Department.

POL S 475 Politics of China and Japan

★3 (fi 6) (either term, 0-3s-0). Domestic politics and foreign policy of China and/or Japan. Note: Not open to students with credit in POL S 473. Prerequisite: Pol S 240 or 375 or East Asian Studies major/minor or consent of Department.

POL S 477 Issues in Islamic Politics

★3 (fi 6) (either term, 3-0-0). Political ideas and practice in Islamic countries, including historical and contemporary constructions of Islam. Prerequisite: POL S 240 or 380 or consent of Department.

POL S 478 Topics in Latin American Politics

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 240 or consent of Department.

POL S 483 United States Constitutional Law

★3 (fi 6) (either term, 0-3s-0). Individual liberties and the equal protection of groups in the United States, focusing on court rulings about the Bill of Rights and 14th Amendment, controversies over constitutional interpretation, and the political of rights. Prerequisite: POL S 390 or POL S 419 or consent of Department; also open to Law students.

POL S 484 Issues in United States Politics and Policy

★3 (fi 6) (either term, 0-3s-0). Prerequisite: POL S 232 or 332, or consent of Department.

POL S 486 Topics in European Politics

★3 (fi 6) (either term, 0-3s-0). Current debates in Europe, including the emergence of new radical right parties, green parties and movements, market liberalization and political change in Eastern and Central Europe, and the resurgence of nationalist discourses. Prerequisite: POL S 230 or consent of Department.

POL S 488 The Politics of Mexico

★3 (fi 6) (either term, 0-3s-0). Mexico's post-revolutionary politics, its current dynamics, and their continental impacts. Not open to students with credit in POL S 478. Prerequisite: POL S 230 or 240 or consent of Department.

POL S 492 Psychology of Politics

★3 (fi 6) (either term, 0-3s-0). Advanced study of the role of cognitive processes in the psychology of politics. Prerequisites: POL S 220 or 230 or consent of Department.

POL S 496 Representation and Electoral Systems

★3 (fi 6) (either term, 0-3s-0). An examination of the institutional framework within which the electoral process operates under representative government, with emphasis on voting as a mechanism of social choice. Prerequisite: POL S 220 or 230 or consent of Department.

POL S 499 Honors Essay: Fourth-Year Honors Political Science

★6 (fi 12) (two term, 0-3s-0). Preparation of the Honors essay, required in the fourth year of the Honors program.

Graduate Courses

Notes

- (1) See also INT D 546 and 593 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) Consent of Department is required for all 500- and 600-level courses.

POL S 501 Comparative Institutions and Processes

★3 (fi 6) (either term, 0-3s-0).

POL S 508 Nature of Political Science I

★3 (fi 6) (either term, 0-3s-0). An examination of the classical (e.g., Aristotelian) conception of political science, and of the modern conception which replaced it (including some of the political and theoretical problems connected with this modern view).

POL S 509 Nature of Political Science II

★3 (fi 6) (either term, 0-3s-0). An examination of some particular problems involved in attempting to understand political life (including language and history) scientifically. Prerequisite: POL S 508.

POL S 512 Early Modern Political Theory

★3 (fi 6) (either term, 0-3s-0). Concentration on one or more works by major political theorists in the early modern period.

POL S 513 Ancient Political Philosophy

★3 (fi 6) (either term, 0-3s-0). Examination of one or more texts by ancient (primarily Greek or Roman) political philosophers.

POL S 514 Topics in Contemporary Political Philosophy

★3 (fi 6) (either term, 0-3s-0).

POL S 515 Topics in Political Philosophy

★3 (fi 6) (either term, 0-3s-0).

POL S 516 Problems in Marxist Political Theory

★3 (fi 6) (either term, 3-0-0).

POL S 520 Topics in Canadian Politics

★3 (fi 6) (either term, 0-3s-0).

POL S 522 Canadian Federalism

★3 (fi 6) (either term, 0-3s-0).

POL S 524 Canadian Political Culture

★3 (fi 6) (either term, 0-3s-0).

POL S 526 Selected Topics in Urban Politics

★3 (fi 6) (either term, 0-3s-0).

POL S 540 Topics in Public Policy

★3 (fi 6) (either term, 0-3s-0).

POL S 542 The Canadian State and Identity Politics

★3 (fi 6) (either term, 0-3s-0). The relative power, impact and interconnections of both territorial (regional) divisions and other non-territorial divisions (e.g., gender, race, ethnicity, and class).

POL S 543 Globalization, Ethnic Politics and the Nation-State

★3 (fi 6) (either term, 0-3s-0). Theories of nationalism and the nation-state in an era of globalization.

POL S 551 Topics in Comparative Politics: Industrialized Countries

★3 (fi 6) (either term, 0-3s-0).

POL S 552 Readings in Comparative Politics: Industrialized Countries

★3 (fi 6) (either term, 0-3s-0).

POL S 562 Canadian Foreign Policy

★3 (fi 6) (either term, 0-3s-0). An assessment of contemporary Canadian foreign policy and competing approaches to its study.

POL S 563 International Security

★3 (fi 6) (either term, 0-3s-0). A review of analytical approaches to traditional and non-traditional international security issues.

POL S 565 Topics in Foreign Policy Analysis

★3 (fi 6) (either term, 0-3s-0). Current approaches to the study of foreign policy that focuses the explanations upon factors within the state.

POL S 566 Topics in International Political Economy

★3 (fi 6) (either term, 0-3s-0).

POL S 567 The Political Economy of Global Finance

★3 (fi 6) (either term, 0-3s-0). The role of states and political institutions of governance in the new international financial architecture.

POL S 571 Topics in Comparative Politics: Comparative Development

★3 (fi 6) (either term, 0-3s-0).

POL S 572 Readings in Comparative Politics: Comparative Development

★3 (fi 6) (either term, 0-3s-0).

POL S 578 Asian Systems

★3 (fi 6) (either term, 0-3s-0).

POL S 580 Western European Systems

★3 (fi 6) (either term, 0-3s-0).

POL S 581 Studies in United States Politics

★3 (fi 6) (either term, 0-3s-0).

POL S 592 Political Psychology

★3 (fi 6) (either term, 3-0-0).

POL S 595 Feminist Theory

★3 (fi 6) (either term, 0-3s-0). An intensive examination of feminist theory in western political thought, as well as critiques provided by the non-western and post-colonial literatures.

POL S 596 Topics in Gender and Politics

★3 (fi 6) (either term, 0-3s-0).

POL S 600 Theories and Methods of Comparative Politics

★3 (fi 6) (either term, 0-3s-0). Traditional and critical perspectives.

POL S 612 Classical Political Philosophy

★3 (fi 6) (either term, 0-3s-0). Texts selected for doctoral students preparing for comprehensive exams in political philosophy.

POL S 613 Modern Political Philosophy

★3 (fi 6) (either term, 0-3s-0). Survey of major works in Western political philosophy.

POL S 619 Readings in Political Philosophy

★3 (fi 6) (either term, 0-3s-0).

POL S 621 Canadian Government and Politics

★3 (fi 6) (either term, 0-3s-0). The advanced study of politics, government and political science in Canada.

POL S 622 Contemporary Canadian Political Issues

★3 (fi 6) (either term, 0-3s-0). Current debates in Canadian politics and public policy.

POL S 629 Readings in Canadian Politics

★3 (fi 6) (either term, 0-3s-0).

POL S 650 Comparative Studies in Industrialized Countries

★3 (fi 6) (either term, 0-3s-0). A survey of the study of the politics of industrialized

countries. Concepts, theories, and analyses of various state and society issues will be examined.

POL S 660 Theories of International Politics I

★3 (fi 6) (either term, 0-3s-0). A review and critique of the traditional theories of international politics and their contemporary challenges.

POL S 661 Theories of International Politics II

★3 (fi 6) (either term, 0-3s-0). Contemporary and critical approaches to the study of international politics.

POL S 668 Readings in International Studies

★3 (fi 6) (either term, 0-3s-0).

POL S 670 Studies in Comparative Development

★3 (fi 6) (either term, 0-3s-0). A survey of the critical concepts and theories in development politics.

POL S 690 Gender and Politics

★3 (fi 6) (either term, 0-3s-0). A survey of various theoretical perspectives on gender, ranging from liberal to postmodern, as well as issues and debates in gender research. Also addressed are questions of difference, identity, and conflict arising from, among others, race, class, sexuality, and north-south relations.

POL S 696 Readings in Gender and Politics

★3 (fi 6) (either term, 0-3s-0).

POL S 900 Directed Research Project

★3 (fi 6) (variable, unassigned).

221.186 Portuguese, PORT

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 Portuguese language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course more suitable to their level of ability. 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 if a course is completed which the student is deemed ineligible to take, based on their prior background. 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) Student who have or will attain advanced standing in Spanish equivalent to SPAN 300 are not permitted to claim more than ★6 credit for the study of Portuguese.

Undergraduate Courses

0 PORT 111 Beginners' Portuguese I

★3 (fi 6) (either term, 5-0-0). A basic course for students with no previous knowledge of Portuguese. Note: not to be taken by students with credit in PORT 100, or with native or near native proficiency or with Portuguese 30 or its equivalents in Canada and other countries.

0 PORT 112 Beginners' Portuguese II

★3 (fi 6) (either term, 5-0-0). Prerequisite: PORT 111 or consent of Department. Note: not to be taken by students with credit in PORT 100, or with native or near native proficiency or with Portuguese 30 or its equivalents in Canada and other countries.

0 PORT 211 Intermediate Portuguese I

★3 (fi 6) (either term, 3-0-0). Intended to consolidate a basic understanding of Portuguese through a systematic grammar review and practice in various language skills. Prerequisite: Portuguese 30 (or equivalent), PORT 112 or SPAN 212 or consent of Department.

0 PORT 212 Intermediate Portuguese II

★3 (fi 6) (either term, 3-0-0). Prerequisite: PORT 211 or consent of Department.

PORT 303 Advanced Portuguese I

★3 (fi 6) (either term, 3-0-0). Further development of language skills and introduction to different forms of cultural expression in the Luso-Brazilian world.

PORT 304 Advanced Portuguese II

★3 (fi 6) (either term, 3-0-0). Continuation of the study of language and culture at an advanced level.

221.187 Postgraduate Medical Education, PGME

Faculty of Medicine and Dentistry

Undergraduate Courses

PGME 901 One-Month Medical Traineeship

★0 (fi 1) (either term, 4 weeks). This represents a contract period of registration with variable start and end dates for MD graduates who are completing training either as a Resident or as a Fellow. The focus of the traineeship is based upon the area of specialization. Prerequisites: MD degree and approval by the Division of Postgraduate Medical Education.

PGME 902 Two-Month Medical Traineeship

★0 (fi 2) (either term, 8 weeks). This represents a contract period of registration with variable start and end dates for MD graduates who are completing training either as a Resident or as a Fellow. The focus of the traineeship is based upon the area of specialization. Prerequisites: MD degree and approval by the Division of Postgraduate Medical Education.

PGME 903 Three-Month Medical Traineeship

★0 (fi 3) (either term, 12 weeks). This represents a contract period of registration with variable start and end dates for MD graduates who are completing training either as a Resident or as a Fellow. The focus of the traineeship is based upon the area of specialization. Prerequisites: MD degree and approval by the Division of Postgraduate Medical Education.

PGME 904 Four-Month Medical Traineeship

★0 (fi 4) (either term, 16 weeks). This represents a contract period of registration with variable start and end dates for MD graduates who are completing training either as a Resident or as a Fellow. The focus of the traineeship is based upon the area of specialization. Prerequisites: MD degree and approval by the Division of Postgraduate Medical Education.

PGME 912 Twelve-Month Medical Traineeship

★0 (fi 12) (two term, 52 weeks). This represents a contract period of registration with variable start and end dates for MD graduates who are completing training either as a Resident or as a Fellow. The focus of the traineeship is based upon the area of specialization. Prerequisites: MD degree and approval by the Division of Postgraduate Medical Education.

221.188 Psychiatry, PSYCI

Department of Psychiatry
Faculty of Medicine and Dentistry

Undergraduate Courses

PSYCI 546 Psychiatry Student Internship

★6 (fi 12) (either term, 6 weeks). Student internship in psychiatry for students registered in the MD program.

PSYCI 556 Psychiatry Student Internship

★3 (fi 6) (either term, 3 weeks). Student internship in psychiatry for students registered in the MD Program.

Graduate Courses

PSYCI 511 Biological Aspects of Psychiatry

★3 (fi 6) (second term, 3-0-0). Lectures and seminars on: classification, description and measurement of psychiatric disorders; sleep disorders; biochemical theories of psychiatric disorders, and discussions of how the actions of the drugs used to treat these disorders relate to these theories; practical aspects of drug treatment; biological markers; brain imaging; women's health issues; herbal products and psychiatry. Prerequisite: Permission of Department.

PSYCI 601 Theory and Practice of Psychiatry

★3 (fi 6) (either term, 3-0-0). An in-depth analysis of current psychiatric practice in relation to diagnosis, choice of treatment and evaluation of clinical responses. Emphasis will be placed on current research in selected areas of psychiatry. Prerequisite: consent of Department.

PSYCI 602 Advanced Topics in Psychiatry

★3 (fi 6) (either term, 3-0-0). A discussion of selected topics of current interest in psychiatry including neurobiological and psychosocial aspects of the etiology and treatment of mental disorders. Prerequisite: consent of Department.

PSYCI 603 Psychiatry Tutorial, Research and Reading Course

★3 (fi 6) (either term, 3-0-0). This course allows a student to study an area of psychiatry in much greater detail than usual. Format is usually a reading/tutorial in which the student carries out directed reading and meets with the tutor

regularly. Term papers will be used for evaluation purposes. The course requires independent study. Students who have a particular interest in any specific area in psychiatry are encouraged to meet with Faculty members to explore the possibility of arranging a suitable topic. Prerequisite: consent of Department.

PSYCI 688 Graduate Seminar

★0 (fi 2) (two term, 0-1s-0). Graduate students in the Department of Psychiatry will be required to attend this weekly seminar series. Each student will be required to present two seminars per two-term period; one related directly to his/her own research, and one on another topic.

221.189 Psychologie, PSYCE

Faculté Saint-Jean

Cours de 1er cycle

221.189.1 Domaine des Arts

PSYCE 105 Comportement social et individuel

★3 (variable) (deuxième semestre, 3-0-1/4). Introduction à l'étude de l'individualité humaine, de la personnalité et des processus sociaux. Le cours peut inclure l'étude de quelques aspects du développement humain normal et anormal, du jugement et du traitement psychologiques. Préalable(s): PSYCE 104. Cours à distance. Voir \$200. [Domaine des Arts]

PSYCE 106 Principes psychologiques pour les infirmières

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Principes et processus psychologiques pertinents aux sciences infirmières incluant les devis et l'analyse de la recherche, le développement au cours de la vie, les processus cognitifs et de mémoire, les processus socio-psychologiques, la personnalité, les troubles psychologiques et leur traitement. Notes : La priorité sera accordée aux étudiants du BScnf (bilingue). Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour PSYCE 104, 105; PSYCO 104, 105 ou 106

PSYCE 223 Psychologie de la croissance

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Les aspects biologiques, cognitifs et sociaux du développement psychologique au cours de la petite enfance, de l'enfance et de l'adolescence. Préalable(s): PSYCE 104 et 105 ou l'équivalent. [Domaine des Arts]

PSYCE 233 Psychologie de la personnalité

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction aux différentes approches théoriques et à la recherche dans le domaine de la personnalité. Préalable(s): PSYCE 104 et 105 ou l'équivalent. [Domaine des Arts]

PSYCE 241 Psychologie sociale

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction aux théories et à la recherche sur l'individu dans un contexte social. Préalable(s): PSYCE 104 et 105 ou l'équivalent. Note: PSYCE 241 et SOC 241 ne peuvent pas être suivis tous les deux pour crédits. [Domaine des Arts]

PSYCE 258 Psychologie cognitive

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Une introduction à l'étude des processus cognitifs. Les principaux sujets abordés: la perception, l'attention, la représentation des connaissances, la mémoire, l'apprentissage, le langage, le raisonnement, et la résolution de problèmes. Préalable(s): PSYCE 104 et un parmi STATQ 151 ou SCSCOC 322. [Domaine des Arts]

PSYCE 339 Psychopathologie

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction générale à l'histoire, à la classification, au diagnostic et au traitement des troubles psychopathologiques. Préalable(s): PSYCE 233. [Domaine des Arts]

PSYCE 498 Etude personnelle II

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Cours destiné à permettre aux étudiants au niveau du baccalauréat d'approfondir personnellement un sujet de leur choix. Sous forme de bibliographie dirigée ou de travaux de laboratoire. Préalable(s): l'approbation du Vice-doyen aux affaires académiques. [Domaine des Arts]

221.189.2 Domaine des Sciences

PSYCE 104 Procédés psychologiques de base

★3 (variable) (premier semestre, 3-0-1/4). Principes et développement de la perception, motivation, apprentissage et réflexion et leur relation avec le fonctionnement psychologique de l'individu. Ce cours est un préalable pour la plupart des cours de psychologie et est normalement suivi de PSYCE 105. Cours à distance. Voir \$200. [Domaine des Sciences]

PSYCE 267 Perception

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Une introduction aux théories et à la recherche dans le domaine de la perception. Préalable(s): PSYCE 104 et un parmi STATQ 151 ou SCSCOC 322. [Domaine des Sciences]

PSYCE 275 Cerveau et comportement

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction à la fonction du cerveau et à son rapport à la sensation, à la perception, au mouvement, à l'apprentissage, à la motivation et à la pensée. Préalable(s): PSYCE 104 et Biologie 30 ou l'équivalent. [Domaine des Sciences]

PSYCE 281 Principes du changement de comportement

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction aux techniques de changement de comportement. Le cours examinera l'origine de telles techniques dans l'expérimentation sur les animaux et la théorie de l'apprentissage, et fera une évaluation de leur efficacité quand elles sont appliquées aux populations qui ont des problèmes spécifiques. Préalable(s): PSYCE 104. [Domaine des Sciences]

PSYCE 377 Neuropsychologie humaine

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction à la neuropsychologie et à l'organisation fonctionnelle du cerveau. Dommages cérébraux et leurs effets sur les fonctions mentales, le langage et le comportement moteur. Préalable(s): PSYCE 275. [Domaine des Sciences]

PSYCE 458 Psychologie avancée de la cognition

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude plus approfondie d'un ou de plusieurs thèmes dans le domaine de la cognition humaine. Préalable(s): PSYCE 258. [Domaine des Sciences]

221.190 Psychologie de l'éducation, PS ED

Faculté Saint-Jean

Cours de 1er cycle**PS ED 200 Introduction à la psychologie du développement**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude du comportement humain à travers les différentes étapes de son développement. Les notions de développement physique, intellectuel, social et moral sont abordées en relation avec le comportement en milieu scolaire.

PS ED 201 Psychopédagogie de l'apprentissage

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Théories générales de l'apprentissage et les différents facteurs qui influencent l'apprentissage en milieu scolaire. Etude des applications de ces théories dans l'enseignement avec une insistance particulière sur la mesure et l'évaluation.

PS ED 250 La communication et relations interpersonnelles

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Saisir le rôle précis de chacun des éléments impliqués dans la communication interpersonnelle et leur interdépendance dans la construction d'un message. Le processus de la communication humaine et ses principaux éléments. Les effets de la communication ainsi que la création des différentes versions du réel.

PS ED 300 L'adaptation scolaire

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction aux diverses dimensions de l'adaptation scolaire: aspects cognitif, socio-affectif, culturel, scolaire; dépistage et identification des problèmes de l'adaptation scolaire; modèles d'intervention; politiques d'intégration et guides pédagogiques du ministère de l'Éducation. Préalable(s) ou concomitant(s): PS ED 200 et PS ED 201 ou l'accord du Vice-doyen aux affaires académiques.

PS ED 482 Sensibilisation aux difficultés d'apprentissage chez l'enfant d'âge scolaire

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Concepts d'apprentissage et de difficultés d'apprentissage. Etude des difficultés d'apprentissage les plus fréquentes en milieu scolaire. Impact de ces difficultés sur la vie émotive de l'enfant, sur sa vie à l'école, sur les parents, et sur la famille en général. Possibilités d'interaction et d'aide de l'enseignant face à ces difficultés.

221.191 Psychology, PSYCO

Department of Psychology
Faculties of Arts and Science

Undergraduate Courses**221.191.1 Faculty of Arts Courses**

Note: Prerequisites to some Arts courses in the Department may be found in the following Science section of this listing.

PSYCO 105 Individual and Social Behavior

★3 (fi 6) (either term, 3-0-1/4). Introduction to the study of human individuality, personality, and social psychological processes. Some aspects of normal and abnormal human development, psychological assessment and treatment may be

reviewed. Fulfillment of the 1/4 laboratory credit typically entails serving as a research participant but alternatively can be fulfilled through a directed written assignment. Prerequisite: PSYCO 104.

PSYCO 106 Psychological Principles for Nursing

★3 (fi 6) (second term, 3-0-0). Psychological principles and processes as they relate to nursing, including research design and analysis, lifespan development, memory and cognitive processing, social psychological processes, personality, psychological disorders and their treatment. Note: Open only to students enrolled in Nursing. Not open to students with credit in PSYCO 104 or 105.

PSYCO 212 Introduction to Research Methods in Psychology

★3 (fi 6) (either term, 3-0-0). Experimental and nonexperimental methods in psychology. Topics covered include philosophy of science; measurement; reliability and validity of methods, measures, and effects; experimental, quasi-experimental, and single-subject designs; biases in experimentation; and research ethics. Prerequisites: PSYCO 104, 105, and STAT 151 or former PSYCO 211.

PSYCO 223 Developmental Psychology

★3 (fi 6) (either term, 3-0-0). Biological, cognitive and social aspects of psychological development, with special emphasis on infancy, childhood and adolescence. Prerequisites: PSYCO 104 and 105 or equivalent.

PSYCO 233 Personality

★3 (fi 6) (either term, 3-0-0). An introductory survey including representative theoretical points of view and research relevant to the major problems of the study of personality. Prerequisites: PSYCO 104 and 105 or equivalent.

PSYCO 241 Social Psychology

★3 (fi 6) (either term, 3-0-0). A survey of theories and research on the individual in a social context. Prerequisites: PSYCO 104 and 105 or equivalent. Note: PSYCO 241 and SOC 241 may not both be taken for credit.

PSYCO 258 Cognitive Psychology

★3 (fi 6) (either term, 3-0-0). A survey of findings of theoretical issues in the study of cognition, such as perception, attention, knowledge representation, memory, learning, language, reasoning, and problem solving. Prerequisites: PSYCO 104 and STAT 151 or former PSYCO 211.

PSYCO 300 Honors Seminar I

★3 (fi 6) (two term, 3-0-0). A range of conceptual and methodological issues in psychology are considered, and students receive intensive training and practice in both written and oral communications. The seminar meets once a week for the full Fall/Winter period. Restricted to, and required of, third-year students in the Honors Psychology program.

PSYCO 301 History of Psychology

★3 (fi 6) (either term, 3-0-0). History of psychology, with an emphasis on 19th and early 20th century (i.e. pre-1950) developments. Significant trends in contemporary psychology will also be discussed. Prerequisites: PSYCO 104 and 105; one of PSYCO 223, 233, 241, 258; and one of PSYCO 267, 275, 281.

PSYCO 303 History of Ideas in Psychology

★3 (fi 6) (either term, 3-0-0). History of psychological thought from ancient times to the recognition of psychology as an academic discipline in the mid 19th century. Prerequisite: PSYCO 104, 105; one 200-level PSYCO offered by the Faculty of Arts; one 200-level PSYCO offered by the Faculty of Science. Note: Not to be taken by students with credit in PSYCO 301.

PSYCO 305 Special Topics in Psychology I

★3 (fi 6) (either term, 3-0-0). Review and discussion of special topics or methods in one or more of the areas of contemporary psychology such as developmental, social, personality, cognitive. Prerequisites: PSYCO 104 and 105 and consent of Department. Note: Students are encouraged to check with the Department for the topic for the current year.

PSYCO 323 Perceptual and Cognitive Development

★3 (fi 6) (either term, 3-0-0). The development of the ability to process information from the environment including topics such as attention, memory, and concept formation in infants and young children. Prerequisite: PSYCO 223.

PSYCO 325 Applied Research in Developmental Psychology

★3 (fi 6) (either term, 3-0-0). Relations between research in developmental psychology and practical problems in human development. To gain insights about development, students work with infants, children, or adolescents as volunteers in local agencies and schools. Prerequisites: PSYCO 223, and STAT 151 or former PSYCO 211.

PSYCO 327 Adolescent Development

★3 (fi 6) (either term, 3-0-0). Biological, cognitive, and social aspects of development that occur during the period from early to late adolescence. Prerequisite: PSYCO 223.

PSYCO 339 Abnormal Psychology

★3 (fi 6) (either term, 3-0-0). Nature and treatment of psychological disorders, such as cross-disciplinary perspectives and an emphasis on improving understanding of psychopathology in everyday life. Prerequisite: At least one 200-level PSYCO (PSYCO 233 and 275 recommended).

PSYCO 341 Cultural Psychology

★3 (fi 6) (either term, 3-0-0). An introduction to psychological approaches to the

study of culture, including cross-cultural psychology, cultural psychology, indigenous psychologies, and the psychology of ethnicity and intercultural contact. Prerequisites: one of PSYCO 223, 233, or 241.

PSYCO 350 Human Memory

★3 (fi 6) (either term, 3-0-0). An introduction to the study of human memory. Topics include verbal learning and interference theory, the short-term/long-term memory distinction, semantic memory, working memory, sensory memory, autobiographical memory, amnesia, and implicit memory. The emphasis will be on developing coherent theoretical accounts of the evidence. Prerequisite: PSYCO 258.

PSYCO 357 Language Processing

★3 (fi 6) (either term, 3-0-0). A survey of theories and research on the production and comprehension of spoken and written language. Topics include speech perception, printed word recognition, sentence production and comprehension, discourse processing, reading, language development, and language pathologies. The focus will be on the processing mechanisms implicated by findings in the area. Prerequisite: PSYCO 258.

PSYCO 400 Honors Seminar II

★3 (fi 6) (two term, 3-0-0). A continuation of PSYCO 300, with an emphasis on the development of professional skills. Topics include the new information technologies, the publication process, ethical issues, and the application of research findings to real-world problems. The seminar meets once a week for the full Fall/Winter period. Prerequisite: PSYCO 300. Restricted to, and required of, fourth-year students in the Honors Psychology program.

PSYCO 405 Special Topics in Psychology II

★3 (fi 6) (either term, 3-0-0). Review and discussion of special theoretical or methodological topics, or a novel or emerging research areas in contemporary psychology. Prerequisites: PSYCO 104 and 105, and STAT 151 or former PSYCO 211, and consent of Department. Note: Students are encouraged to check with the Department for the topic for the current year.

PSYCO 411 Cooperative Program Practicum

★3 (fi 6) (first term, 0-3s-0). Required by all students who have just completed the on-site portion of the Psychology Cooperative Program. The course will involve completion and defense of the practicum report and discussion of related issues. Prerequisites: WKEXP 961, WKEXP 962, and WKEXP 963.

PSYCO 412 Quantitative Methods in Sociocultural Psychology

★3 (fi 6) (either term, 3-0-2). The assumptions that inform the design of experimental, quasi-experimental, and field studies in sociocultural psychology; the development of scales, questionnaires, and survey instruments, and the coordination of quantitative and qualitative research methods. Prerequisites: PSYCO 212, and one of PSYCO 223, 233, 241, or 341.

PSYCO 415 Qualitative Methods in Sociocultural Psychology

★3 (fi 6) (either term, 3-0-2). The assumptions that inform the design of qualitative research in sociocultural psychology; the procedures for gathering meaningful information through interviews, conversation, observed interaction, and textual archives; and the analysis of such information. Prerequisites: STAT 151, PSYCO 212, and either PSYCO 223, 233, 241, or 341.

PSYCO 423 Advanced Topics in Developmental Psychology

★3 (fi 6) (either term, 3-0-0). An in-depth review and analysis of research in an area of developmental psychology. Prerequisites: STAT 151 or former PSYCO 211, and PSYCO 323 or consent of Department. Note: Students are encouraged to check with the Department for the topic for the current year.

PSYCO 431 Theory and Practice of Psychometrics

★3 (fi 6) (either term, 3-0-3). The nature of psychological tests; survey of the various types of standardized tests; some practical work in administration, scoring and interpretation of tests. Prerequisites: STAT 151 or former PSYCO 211, and PSYCO 339.

PSYCO 432 Psychological Studies of Dreaming

★3 (fi 6) (either term, 3-0-0). An overview of dream studies, including the psychobiology of dreaming, dreaming and cognition, personality and dreaming, therapeutic dream use, and dreams in art and culture. Prerequisites: one of PSYCO 223, 233, 241, or 341.

PSYCO 435 Introduction to Clinical Psychology

★3 (fi 6) (either term, 3-0-0). The study of the profession of clinical psychology, including topics such as using case studies to examine diagnosis and assessment, judgement and decision making, and psychotherapeutic and community interventions. Prerequisite: PSYCO 339.

PSYCO 436 Psychology of Self-Estrangement

★3 (fi 6) (either term, 3-0-0). Basic description of self-deception and self-estrangement in psychoanalytic and existential humanistic theories. Discussion of basic determinants of self-deception and, alternatively, self-awareness, as well as considerations of the methods of inquiry appropriate to the area. Prerequisite: PSYCO 339.

PSYCO 443 Social Cognition

★3 (fi 6) (either term, 3-0-0). Advanced treatment of topics in the study of how we think about the world of persons and events. Topics may include the role of

categories, schemas, theories, and heuristics in social cognition, factors underlying the stereotyping of persons and groups, and the question of motivated bias in social perception. Prerequisites: STAT 151 or former PSYCO 211, and PSYCO 241.

PSYCO 450 Topics in Memory and Problem Solving

★3 (fi 6) (either term, 3-0-0). Examines theoretical and empirical issues in human memory and problem solving. Topics include memory representations, real-world memory, memory-based decision making, expert-novice differences in memory and problem solving. Prerequisite: PSYCO 350.

PSYCO 490 Honors Thesis II: Thesis Research

★3 (fi 6) (two term, 0-0-6). Under the direction of a faculty member, students conduct an empirical research project culminating in the Honors Thesis. Prerequisite: PSYCO 390. Restricted to, and required of, fourth-year students in the honors psychology program.

PSYCO 495 Psychology of Aesthetics

★3 (fi 6) (either term, 3-0-0). An introduction to the psychological analysis of response to art. Consideration is both theoretical and empirical. Illustrative materials are drawn from several arts, including painting, sculpture and literature. The contribution of aesthetic behavior to personality development is considered. Prerequisites: PSYCO 233 or 241; a senior level course in C LIT, DES, DRAMA, ENGL, F ST, or MUSIC.

PSYCO 498 Individual Study

★3 (fi 6) (either term, 0-3s-3). A course intended to allow the senior undergraduate student the opportunity to pursue a research topic in greater depth than the classroom structure permits. This pursuit may take the form of directed reading, library research, and/or laboratory experience. A formal paper, research proposal, research report, annotated bibliography, lab notes, and/or essay is required. Cannot be taken more than twice. Prerequisites: A 300-level psychology course and consent of Department.

221.191.2 Faculty of Science Courses

PSYCO 104 Basic Psychological Processes

★3 (fi 6) (either term, 3-0-1/4). Principles and development of perception, motivation, learning, and thinking and their relationship to the psychological functioning of the individual. Fulfillment of the 1/4 laboratory credit typically entails serving as a research participant but alternatively can be fulfilled through a directed written assignment. The course is a prerequisite to all courses in the department and is normally followed by PSYCO 105 (see §201.185.1).

PSYCO 267 Perception

★3 (fi 6) (either term, 3-0-0). An introduction to theoretical and experimental issues associated with sensory and perceptual experience. Prerequisites: PSYCO 104 and STAT 151 or the former PSYCO 211.

PSYCO 275 Brain and Behavior

★3 (fi 6) (either term, 3-0-0). An introduction to brain mechanisms involved in sensation, perception, movement, motivation, learning, and cognition, as studied in both humans and lower animals. Prerequisites: PSYCO 104 and Biology 30 or equivalent.

PSYCO 281 Principles of Behavior

★3 (fi 6) (either term, 3-0-0). An introduction to behavior change techniques. The course will examine how contingencies of the environment affect the behavior of organisms. Prerequisite: PSYCO 104.

PSYCO 302 Special Topics in Psychological Research

★3 (fi 6) (either term, 3-0-0). Review and discussion of special topics or methods in one or more of the areas of contemporary psychology such as experimental, perception, physiological, learning, memory, behavior, quantitative. Prerequisites: PSYCO 104, 105, and consent of Department. Note: Students are encouraged to check with the Department for the topic and prerequisites for the current year.

PSYCO 304 History of Modern Psychology

★3 (fi 6) (either term, 3-0-0). An overview of the scientific discipline of psychology since the mid 19th century. The focus will be on theories methods, schools, and professions. Prerequisites: PSYCO 104, 105; one 200-level PSYCO offered by the faculty of Arts; one 200-level PSYCO offered by the Faculty of Science. Note: Not to be taken by students with credit in PSYCO 301.

PSYCO 354 Foundations of Cognitive Science

★3 (fi 6) (either term, 3-0-0). An introduction to the theories and research practices of cognitive science by examining contributions of cognitive psychology, artificial intelligence, linguistics, and neuroscience to a variety of research areas. Prerequisites: STAT 151 or the former PSYCO 211, and PSYCO 258.

PSYCO 356 Research Methods in Cognition

★3 (fi 6) (either term, 3-0-3). A detailed examination of some of the common methods used for investigating cognitive processes. Topics include response time methods, priming paradigms, tachistoscopic presentation techniques, reading time measurement, and the use of recognition and recall tests. The focus of the course will be on the application of these methods to current theories and issues in cognitive psychology. Laboratories will provide students with first-hand experience at applying these methods to research problems. Prerequisite: PSYCO 258.

PSYCO 365 Advanced Perception

★3 (fi 6) (either term, 3-0-0). Covers the origin and current status of several major problem areas within the study of perception. Topics may include the historical background and knowledge of recent theoretical and experimental contributions required to understand current conceptual schemes and disputes. Prerequisite: PSYCO 267.

PSYCO 371 The Neurobiology of Learning and Memory

★3 (fi 6) (either term, 3-0-0). The aim of this course is to provide students with an introduction to the neural basis of learning and memory. The course begins with a review of the historical background, experimental methods, and principles of neurobiology. Learning and memory are then analyzed at different levels of biological organization, including molecular, cellular, neural circuit, neural system, and behavioral levels. Prerequisite: PSYCO 275.

PSYCO 372 Behavior in Relation to Genetics

★3 (fi 6) (either term, 3-0-0). An examination of the influence of genetic variations on behavioral differences in infra-human and human populations. Prerequisites: PSYCO 104 and 105 and STAT 151 or the former PSYCO 211, and BIOL 207.

PSYCO 377 Human Neuropsychology

★3 (fi 6) (either term, 3-0-0). Changes in mood, motivation, perception, attention, memory and language as revealed by studies of structural alterations in the human brain. Prerequisite: PSYCO 275.

PSYCO 381 Principles of Learning

★3 (fi 6) (either term, 3-0-0). Principles and processes of learning including a consideration of classical conditioning, instrumental learning, and memory. Research involving non-human animals will be emphasized. Prerequisites: STAT 151 or the former PSYCO 211, and PSYCO 281.

PSYCO 385 Applications of Learning

★3 (fi 6) (either term, 3-0-0). An examination of the ways in which principles of conditioning and learning have been applied to areas of human concern. Biomedical and behavioral implications of learning principles will be examined in terms of the empirical foundations of the principles, and the successes or problems encountered in applying the principles to the understanding or treatment of human behavior. Prerequisite: PSYCO 381.

PSYCO 390 Honors Thesis I: Research Apprenticeship

★3 (fi 6) (two term, 0-0-6). Under the direction of a Faculty member, students pursue a topic of interest leading to the development of a thesis proposal and, during their fourth year, the thesis research. The work normally involves both directed readings and empirical research experience. Restricted to, and required of, third-year students in the Honors Psychology program.

PSYCO 402 Recent Advances in Experimental Psychology: Methods and Phenomena

★3 (fi 6) (either term, 3-0-2). Discussion and demonstration of the techniques and discoveries of selected fields within experimental psychology. The course will provide laboratory experience with the empirical findings of these fields. Students are encouraged to check with the Department regarding the topic for the current year. Prerequisites: STAT 151 or the former PSYCO 211, a 300-level Psychology course and consent of Department.

PSYCO 403 Recent Advances in Experimental Psychology: Models and Theories

★3 (fi 6) (either term, 3-0-0). Discussion of advanced concepts and theories developed by selected fields within experimental psychology. The course will examine the relation between theory and data in these fields. Students are encouraged to check with the Department regarding the topic for the current year. Prerequisites: STAT 151 or the former PSYCO 211, a 300-level Psychology course and consent of Department.

PSYCO 410 Industrial Internship Practicum

★3 (fi 6) (first term, 0-3s-0). Required by all students who have just completed the on-site portion of the Science Psychology Industrial Internship Program. The course will involve completion and defence of the practicum report and discussion of related issues. Prerequisites: WKEXP 931, 932, and 933.

PSYCO 452 Minds and Machines

★3 (fi 6) (either term, 3-0-2). Computational models are playing an increasingly important role in cognitive psychology. The purpose of this course is to provide students with the theoretical background for using such models, as well as some hands-on experience. Students will learn about the history of these models in cognitive psychology, how one might characterize good and bad models, and how cognitive psychologists attempt to experimentally validate their models. Prerequisite: PSYCO 354.

PSYCO 458 Advanced Topics in Cognition

★3 (fi 6) (either term, 3-0-0). In depth examination of one or more topics in cognitive psychology. Topics may include knowledge representation, visual cognition, memory, learning, decision making, language, reasoning and problem-solving. Prerequisites: one of PSYCO 350, 354, 356, 357, or 365.

PSYCO 459 Human Aging: Cognitive Processes

★3 (fi 6) (either term, 3-0-0). A survey of the sensory, perceptual, memory, and cognitive changes in normal aging. Topics may include the relationship of

psychological, environmental, social and health factors to cognitive processes. Prerequisites: PSYCO 258 and a 300-level Psychology course.

PSYCO 475 Biological Bases of Behavior

★3 (fi 6) (first term, 0-0-6). Basic neuroanatomy and neuropsychology of sensory and motor systems. Prerequisite or corequisite: PSYCO 371 or 377.

PSYCO 478 Behavior and Brain Chemistry

★3 (fi 6) (either term, 3-0-0). The influence of environmental and genetic factors on the relationship between chemistry of the brain and the behavior of humans and animals. Prerequisite: PSYCO 371 or 377.

PSYCO 485 Theory in Learning and Comparative Cognition

★3 (fi 6) (either term, 3-0-0). A theoretical analysis of topics such as Pavlovian conditioning, instrumental learning, working memory, timing, concept learning, and order and numerical competence. Also discussed will be the purposes and nature of theories and the historical development of theory in learning and comparative cognition. Prerequisite: PSYCO 381.

PSYCO 486 Advanced Topics in Learning

★3 (fi 6) (either term, 3-0-0). An in-depth review and analysis of research and issues on specific advanced topics in the area of learning. Prerequisite: PSYCO 381. Note: Students are encouraged to check with the Department for the topics for the current year.

PSYCO 496 Individual Research

★3 (fi 6) (either term, 0-3s-3). A course designed to allow the senior undergraduate student the opportunity to pursue a research topic in greater depth than the classroom structure permits. This pursuit may take the form of directed reading, library research, and/or laboratory experience. A formal paper, research proposal, research report, annotated bibliography, lab notes, and/or essay is required. Cannot be taken more than twice. Prerequisite: A 300-level psychology course and consent of Department.

Graduate Courses**221.91.3 Faculty of Arts Courses****PSYCO 502 Professional and Ethical Issues**

★2 (fi 4) (either term, 3-0-0).

PSYCO 541 Advanced Social Psychology

★3 (fi 6) (either term, 3-0-0).

PSYCO 600 Individual Studies

★3 (fi 6) (either term, 3-0-0).

PSYCO 620 Topics in Cognition

★3 (fi 6) (either term, 3-0-0).

PSYCO 622 Topics in Developmental Psychology

★3 (fi 6) (either term, 3-0-0).

221.191.4 Faculty of Science Courses**PSYCO 505 Conference Course in Psychology**

★3 (fi 6) (either term, 3-0-3).

PSYCO 531 Design and Analysis in Psychological Research I

★3 (fi 6) (first term, 3-0-1).

PSYCO 532 Design and Analysis in Psychological Research II

★3 (fi 6) (second term, 3-0-1). Prerequisite: PSYCO 531 or equivalent.

PSYCO 560 Memory and Cognition

★3 (fi 6) (either term, 3-0-0).

PSYCO 561 Advanced Learning and Comparative Cognition

★3 (fi 6) (either term, 3-0-0).

PSYCO 567 Psychology of Development

★3 (fi 6) (either term, 3-0-0).

PSYCO 575 Advanced Physiological Psychology

★3 (fi 6) (either term, 3-0-0).

PSYCO 576 Cognitive Neuroscience

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

PSYCO 590 First-Year Research Project

★6 (fi 12) (two term, 0-0-6).

PSYCO 604 Topics in Quantitative Methods

★3 (fi 6) (either term, 3-0-0).

PSYCO 610 Topics Learning and Comparative Cognition

★3 (fi 6) (either term, 3-0-0).

PSYCO 690 Second-Year Research Project

★6 (fi 12) (two term, 0-0-6).

221.192 Public Health Sciences, PHS

Department of Public Health Sciences
Faculty of Medicine and Dentistry

Graduate Courses

PHS 500 Introduction to Health Systems and Health Policy

★3 (fi 6) (first term, 3-0-0). A review and development of the Canadian health and welfare system and its structure and functions. An analysis of selected issues in the delivery of health and welfare services.

PHS 505 Fundamentals of Public Health

★3 (fi 6) (first term, 3-0-0). This course provides an overview of the various disciplines making up and impacting on public health. Discussions will cover the Canadian health care system, infectious and chronic disease epidemiology and control, environmental health, occupational health, health care evaluation, disease prevention, health promotion, and disease and exposure assessment.

PHS 509 Field Practicum

★6 (fi 12) (Spring/Summer, 16 weeks). Prerequisite: Completion of first year course requirements.

PHS 510 Chemical Principles, Fate, and Behavior of Environmental Contaminants

★3 (fi 6) (either term, 3-0-0). Concepts of chemical speciation, equilibrium, phase distribution, and biodegradation. Application of chemical principles to study speciation, distribution, transformation, biodegradation, and bioaccumulation of environmental contaminants. Introduction to human exposure to contaminants.

PHS 511 Environmental Contaminant Exposure Assessment

★3 (fi 6) (either term, 3-0-0). Principles and practice of monitoring exposure to environmental contaminants, external and internal dose. Biomarkers for environmental contaminant dose estimation. Environmental and biological sampling. Routes of exposure, absorption, and distribution.

PHS 512 Environmental Risk Assessment and Management

★3 (fi 6) (either term, 3-0-0). Concepts of risk to health and environment, assessment, management and communication of risk, hazard identification, links to exposure assessment, toxicology and epidemiology, dose response assessment, risk characterization, regulatory and policy science.

PHS 520 Occupational and Environmental Diseases

★3 (fi 6) (either term, 0-3s-0). This course is designed to provide students with an overview of the pathophysiology and epidemiology of selected occupational and environmental diseases. Prerequisite: consent of Instructor.

PHS 521 Occupational Hygiene

★3 (fi 6) (either term, 3-0-0). This course is an introduction to occupational hygiene theory, principles, and practice. It covers the recognition, evaluation, and control of common occupational health hazards including chemicals, biological agents, physical agents, and ergonomic issues. The course is not designed to prepare hygienists for practice. Prerequisite: consent of Instructor.

PHS 522 Principles of Toxicology

★3 (fi 6) (either term, 3-0-0). This course is geared to health care professionals who need to understand the basic principles of toxicology, to appreciate the physiological and/or biochemical mechanisms underlying target organ toxicity, and to be able to make initial qualitative risk assessments on the potential toxicity of agents. It will emphasize toxins in the work and home environment. Prerequisite: consent of Instructor.

PHS 530 Data Analysis in Public Health Sciences

★3 (fi 6) (either term, 3-0-1). Introduction to data management and analysis. Statistical software for data capture, editing and management; as a basis for the design of research including sample size and power; as well as data presentation, including graphics; to culminate in intermediate level ability to apply a range of statistical analytical techniques. No previous computer experience is needed. Prerequisite: Consent of instructor.

PHS 531 Statistical Methods in Health Research

★3 (fi 6) (second term, 3-0-1). Statistical methods used to analyze health research data including analysis of variance, multiple regression, analysis of covariance, analysis of contingency table, introduction to logistic regression, and non-parametric methods. Prerequisite: PHS 530 or consent of instructor.

PHS 540 Population Health Research Methods: Qualitative and Participatory Approaches

★3 (fi 6) (either term, 3-0-0). This course will provide the student with a theoretical understanding of qualitative research design. A range of techniques will be discussed, and examples of each examined for strengths, weaknesses and appropriateness. The student will become thoroughly familiar with community-based health research methods through a review of reports, articles and research documents.

PHS 541 Population Health I: Determinants of Health

★3 (fi 6) (either term, 3-0-0). The course will enable the student to understand, explain, and address through action the social determinants of health. The topics

range from the effects on health of such proximal factors as the family, work situation, and the community environment, to the more pervasive and distal influences of social stratification, political economy and culture. We will examine population-based intervention strategies to address these determinants.

PHS 542 Case Studies in International Primary Health Care

★3 (fi 6) (first term, 3-0-0). This introductory course helps students to understand the approaches used by various countries in solving their health and medical problems. Some of the current important issues in international health will be analyzed and discussed, using examples from selected developing countries. The relevance to countries in the developed world (or Canadian context) is also examined. This course introduces interventions to some of the major diseases and health problems in developing countries. Students also become familiar with the role of major international health organizations.

PHS 543 Health Ethics, Law and Policy

★3 (fi 6) (either term, 0-3s-0). Students will understand the connections and distinctions among ethics, law and public policy in health contexts, and should be able to reason critically about legal and policy influences on public health and health care. Several different approaches to ethical analysis are studied, as are brief introductions to policy-making processes and legal principles and structures in Canada. Special attention is paid to justification (rather than mere opinion or imposition) and the limits of ethics, laws and policies to identify or enforce the best practices in health contexts. Several problem areas (e.g., health care system reform, health research, organization and management ethics, human rights and multiculturalism) are examined in light of the theoretical foundations in pursuit of effective and justified health policy.

PHS 550 Introduction to Health Care Finance

★3 (fi 6) (either term, 3-0-0). Financial structure of the health care system. Introduction to managerial accounting with special emphasis on the management of health care agencies. Principles of costing. Multiproduct and case mix measures. Resource use decisions, budgeting and control, and pricing analysis for health care organizations.

PHS 570 Introduction to Health Care Economics

★3 (fi 6) (either term, 3-0-0). A survey of health economic theory and empirical studies, topics and areas covered include: (1) demand, supply, and utilization; (2) production and costs (3) resource allocation in health care labor markets; (4) selected facets of health care planning; (5) benefit cost analysis. The empirical studies examined in the course require an understanding of simple and multiple regression techniques.

PHS 580 Management and Design of Health Care Organizations

★3 (fi 6) (first term, 3-0-0). The purpose of this course is to prepare students to become effective managers and leaders in the health service organizations and health care systems. It facilitates this objective by providing a foundation for the acquisition of the knowledge of the managerial process through an analysis and understanding of the psychological, sociological and political basis of complex social systems, as well as providing a basis for acquiring conceptual and practical skills in the effective management and design of health service organizations and health care networks.

PHS 593 Issues in Injury Control

★3 (fi 6) (either term, 3-0-0). An introductory course that highlights injuries as a major and neglected public health problem. Leading causes of injuries, including motor vehicle, falls, fires, violence, drowning, occupational, and recreational will be addressed in informal lectures and class discussions. The biomechanics of injury and the structure of emergency medical systems will also be covered. Prevention strategies and evaluation of various interventions will be introduced. Prerequisite: consent of Instructor.

PHS 596 Epidemiology Methods I

★3 (fi 6) (first term, 3-0-0). An introduction to the theory of epidemiology with an emphasis on study design. Topics include the nature of epidemiologic reasoning, indices used to describe and measure health status, evaluation of statistical associations, causation, descriptive studies, analytic studies, intervention studies, bias, confounding, screening and ethics. Students cannot receive credit for both PHS 590 and 596.

PHS 598 Biostatistics I

★3 (fi 6) (either term, 3-0-1). An introduction to elementary biostatistical methods used to analyze epidemiologic data. Topics will include analysis of 2 x 2 tables, nonparametric methods, linear regression, analysis of variance, direct and indirect standardization, and analysis of censored data. Prerequisite: Introductory statistics course or consent of Instructor.

PHS 600 Health Policy Development

★3 (fi 6) (second term, 0-3s-0). An overview of the principles and methods underlying the analysis of health policy. Application of health policy principles to selected issues and problems in health policy. Prerequisite: PHS 500 or consent of instructor.

PHS 630 Health Care Research Methods

★3 (fi 6) (either term, 3-0-0). An overview of research methods for the health and social sciences fields. Content includes both quantitative and qualitative approaches to theoretical foundations, reliability, validity, research design, sampling, data collection, and data processing. Discussions on survey research, measurement

issues, statistical analyses, and current and relevant publications in public health sciences complete this course. Prerequisites: introductory statistics course and consent of Instructor.

PHS 631 Health Program Evaluation

★3 (fi 6) (either term, 3-0-0). Deals with the application of program evaluation for the health and social sciences fields. Emphasis is on the theory of program evaluation using various models, research design, and the application of these concepts by performing a program evaluation. Discussions will be centred around the ethics, reliability, validity, process, outcomes, and implications of various program evaluation models. Current and relevant publications in public health sciences complete this course. Prerequisite: PHS 630 or consent of Instructor.

PHS 670 Health Care Economics

★3 (fi 6) (either term, 3-0-0). A detailed analysis of the use of economic tools to selected economic issues including health care funding policies, the introduction of user fees, and the introduction of managed care.

PHS 671 The Economic Evaluation of Health Care

★3 (fi 6) (either term, 3-0-0). The application of economic principles to the evaluation of health care practices. The use of various outcome measures. Cost effectiveness and cost benefit analysis.

PHS 673 Technology Assessment for Health Care

★3 (fi 6) (first term, 3-0-0). An overview of the nature, science and practicalities of health technology assessment (HTA), which can then be used as the basis for further work and research. Issues covered will include health care technologies and their management, methods used for assessment, sources of information and application of HTA findings to policy and administrative decisions. Emphasis placed on assessments that have been undertaken by national and regional agencies in Canada and other countries to provide information to governments, health care providers and others. Diagnostic, screening, rehabilitation and information technologies will be considered.

PHS 680 Health Care Marketing and Planning

★3 (fi 6) (second term, 3-0-0). Health care marketing and planning involves the analysis, evaluation, implementation and control of carefully formulated programs designed to bring about voluntary exchanges with a target audience for the purpose of achieving organizational objectives. The purpose of this course is to provide the students with a general understanding of the contribution of marketing and strategic planning to the effective management of health care institutions and public health programs. The course facilitates this objective by providing a foundation for the acquisition of marketing concepts, terms, and skills relevant for understanding the role that marketing and planning play in health care institutions and health systems, the design of health care programs, and as a vehicle for social change.

PHS 693 Critical Appraisal of Health Science Literature in Epidemiology

★3 (fi 6) (second term, 0-3s-0). Methods for efficiently and critically identifying, appraising, and applying the health sciences literature are learned in an interactive group setting. Topics include studies of prognosis, diagnosis, therapy, causation outcomes research, economic analysis, and systematic reviews. Prerequisite: PHS 590 or consent of Instructor.

PHS 695 Epidemiology of Injuries/Design and Evaluation of Injury Interventions

★3 (fi 6) (either term, 3-0-0). An advanced course focusing on the review of current epidemiologic knowledge of injuries relating to the leading causes of injury, morbidity, and mortality. Strategies for data acquisition and use in injury research will be introduced. Tools will be presented that will allow students to develop the practical skills needed to design, implement, and evaluate injury prevention programs. Prerequisite: PHS 593.

PHS 696 Epidemiology Methods II

★3 (fi 6) (second term, 3-0-0). Epidemiologic methods related to specific study designs and general issues relating to the conduct of epidemiologic studies at an advanced level. Topics covered include confounding, interaction, misclassification, matching, ecologic studies, justification of the odds ratio in case-control studies, and age-period-cohort analysis. Prerequisite: PHS 596 and 598, or consent of Instructor.

PHS 698 Biostatistics II

★3 (fi 6) (either term, 3-0-1). Advanced biostatistical methods used to analyze epidemiologic data with an emphasis on multivariate regression. Topics include multiple regression, unconditional and conditional logistic regression, proportional hazards regression, and Poisson regression. Prerequisite: PHS 598 or consent of Instructor.

PHS 701 Project in Public Health Sciences

★6 (fi 12) (two term, 0-3s-0).

PHS 709 Individual Directed Reading and Research in Health Services Administration

★3 (fi 6) (either term, 0-3s-0).

PHS 719 Individual Directed Reading and Research in Environmental Health

★3 (fi 6) (either term, 0-3s-0).

PHS 729 Individual Directed Reading and Research in Occupational Health

★3 (fi 6) (either term, 0-3s-0).

PHS 749 Individual Directed Reading and Research in Population Health

★3 (fi 6) (either term, 0-3s-0).

PHS 799 Individual Directed Reading and Research in Epidemiology

★3 (fi 6) (either term, 0-3s-0).

221.193 Radiology and Diagnostic Imaging, RADDI

Department of Radiology and Diagnostic Imaging
Faculty of Medicine and Dentistry

Notes

- (1) Undergraduate training in radiology is included in ANAT 411; MED 422, 423, 431; and NEURO 421.
- (2) See also Oncological (ONCOL) listing.

Graduate Courses

RADDI 511 Physics of Diagnostic Imaging: Fundamentals

★3 (fi 6) (two term, 2-0-1). This course is divided into two main sections: (1) Basic Radiation Physics which deals with nuclear and atomic structure using the Bohr model; Radiation Dose, Risk and Safety from low-level ionizing radiation to Diagnostic Radiology, Radiobiology; and (2) General Radiography: production and clinical use of X-rays; the radiographic image and image parameters; patient radiation/imaging concepts. There will be also a lab component where the student will spend an average of one hour per week in a diagnostic procedure room completing specified imaging tasks/lessons. These labs will not be held at specific times, but will be arranged individually for each student. This course will be offered in alternate years to RADDI 512. Prerequisite or corequisite: PHYS 475/477 or consent of Department.

RADDI 512 Physics of Diagnostic Imaging: Imaging Modalities

★3 (fi 6) (two term, 2-0-0). This course will build on the curriculum presented in RADDI 511 and will discuss in detail the physics involved in the following imaging modalities: Fluoroscopy, Conventional Tomography, Digital Techniques (DSA), Computed Tomography (CT), Mammography, Nuclear Medicine, Ultrasound, Magnetic Resonance Imaging (MRI). This course will be offered in alternate years to RADDI 511. Prerequisites or corequisites: RADDI 511, PHYS 475/477 or consent of Department.

RADDI 600 Special Topics in Radiology Research

★2 (fi 4) (second term, 0-2s-0). A seminar course for advanced students covering selected topics from the current literature in the fields of medical imaging, radiological physics, radiation biology and radiation biophysics.

221.194 Recreation and Leisure Studies, RLS

Faculty of Physical Education and Recreation

Notes

- (1) See also INT D listings 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) Priority will be given to recreation students in all recreation courses that are required for the BA (Recreation and Leisure Studies) degree program.
- (3) All out-of-Faculty students are recommended to complete RLS 100 in order to take any other recreation course.
- (4) Where an appropriate background can be demonstrated, prerequisites may be waived, with the consent of the Faculty.

Undergraduate Courses

RLS 100 Life, Leisure, and the Pursuit of Happiness

★3 (fi 6) (either term, 3-0-0). Examination of the nature, characteristics, and functions of leisure in modern Canada. Review of relationships between leisure and time, play, work, family, education, ethnicity, gender, and environment. Discussion of ideas about conventional leisure, serious leisure, and deviant leisure. Overview of the structure of the Canadian recreation and tourism delivery systems.

RLS 122 Leadership in Recreation and Leisure Organizations

★3 (fi 6) (either term, 2-0-2). Introduction to leadership and followership as they apply to recreation and leisure organizations. Emphasis is on practical skills including oral and written communication, group dynamics, conflict management, organizational ethics and politics, professional careers, and other topics as relevant.

RLS 123 Leisure and Human Behavior

★3 (fi 6) (either term, 3-0-0). A social psychological examination of leisure experiences and leisure behaviors. Focus is on the individual in dynamic interactions with other individuals, groups or cultures within a leisure context. Note: credit will be granted for only one of RLS 123 or 223.

RLS 133 The Human-Nature Relationship in Leisure

★3 (fi 6) (either term, 3-0-1). This course will explore the relationship between leisure/recreation and natural spaces. The topics will include perspectives by nature writers, environmental audits of recreation facilities, and facets of outdoor recreation (e.g., benefits of outdoor recreation, adventure therapy, and outdoor leadership competencies).

RLS 210 Recreation and Leisure Scholarship

★3 (fi 6) (either term, 3-0-1). This course will examine systematic processes of recreation and leisure scholarship. Topics may include the nature of inquiry, paradigmatic questions, quantitative and qualitative methodologies, evaluation and applied research, and other topics as relevant to the areas of recreation and leisure. Prerequisite: RLS 100.

RLS 225 Program Planning for Leisure

★3 (fi 6) (either term, 3-0-0). This course involves an examination of the planning process with a particular focus on programming for recreation, sport and tourism. Consideration will be given to program planning for leisure in the context of the not-for-profit, commercial and public sectors. Prerequisite: RLS 100.

RLS 230 Recreation and Community Development

★3 (fi 6) (either term, 3-0-0). Analysis of the social and political processes through which groups and individuals work to mobilize resources and establish relationships to fulfil community needs. Prerequisite: RLS 100.

RLS 232 Marketing for Recreation, Sport and Tourism

★3 (fi 6) (either term, 3-0-0). Marketing is examined from the unique perspectives of recreation, sport and tourism. Emphasis is placed on marketing in the not-for-profit sector although commercial perspectives are also considered. Major topics include market positioning, research, segmentation, product, price, distribution, and promotion. This course will normally include a practicum component. Prerequisite: PERLS 105.

RLS 263 Principles of Tourism

★3 (fi 6) (either term, 3-0-1). This course presents an overview and explores the basic principles of the tourism system (tourist, travel, destinations, and marketing), underlying influences such as cultural, social, economic, and psychological aspects, areas of major tourist activity such as natural spaces, constructed facilities, and cultural events, and the impact of tourism upon the attraction, local communities, and national arenas.

RLS 331 Leisure Education

★3 (fi 6) (either term, 3-0-0). A total development process through which individuals develop an understanding of self, leisure, and the relationship of leisure to their own lifestyles and the fabric of society. Examination of determining the place and significance leisure has in one's life. Prerequisite: RLS 100.

RLS 400 Philosophies of Leisure

★3 (fi 6) (either term, 3-0-0). This course examines selected philosophical perspectives related to leisure, recreation, work, play, and quality of life. The course explores the philosophical implications for the recreation profession in Canada and issues related to the future of leisure in Canadian society. Prerequisite: any PHIL course. Note: Credit will be granted for only one of RLS 300 or 400.

RLS 441 Practicum Seminar

★3 (fi 6) (either term, 0-3s-0). A seminar, taken concurrently with RLS 449, which seeks to relate the professional work experience to the academic and professional preparation elements within the BA program. Students will not be allowed to register in any other course in conjunction with RLS 441/449 unless approved by the Practicum Supervisor.

RLS 444 Issues in Recreation Practice

★3 (fi 6) (either term, 0-3s-0). A seminar for graduating students in Recreation and Leisure Studies centring upon issues relevant to the beginning professional. The seminar seeks to provide a synthesis appropriate to the final-year student. Note: Must be taken in the final term of the student's program.

RLS 449 Professional Practicum

★12 (fi 24) (either term, 14 weeks). Fourteen weeks of professional experience in full-time placement. Must be taken concurrently with RLS 441. Students will not be allowed to register in any other course in conjunction with RLS 441/449 unless approved by the Practicum Supervisor.

RLS 452 Parks Planning, Management, and Maintenance

★3 (fi 6) (either term, 3-0-1). An examination of parks as recreation environments together with an analysis of the relationship between park planning, design and subsequent management and maintenance in terms of meeting the requirements of the park agency, the park user and the resource base. Attention is focused on both the common themes in park management and the specific problems of parks operation and maintenance associated with particular types of parks contained within a comprehensive park system. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details. Prerequisite: RLS 225.

RLS 462 Outdoor Recreation Resources

★3 (fi 6) (either term, 3-0-1). An examination of the principles of resource allocation and land use in a recreational context together with an analysis of the patterns and trends in outdoor recreation and their impact on the resource base. Particular attention is given to evaluating a variety of environmental settings in terms of their suitability for outdoor recreation and the types of recreational experiences associated with them. This course requires the payment of additional fees. §22.2.3 for details. Prerequisite: RLS 225.

RLS 463 Issues in Tourism Development

★3 (fi 6) (either term, 3-0-1). Critical issues in tourism development will be examined within the context of tourism transformation models and fundamental development concepts such as commodification, authenticity, globalization, sense of place, economic impact, socio-cultural impact and environmental impact. This course requires the payment of additional miscellaneous fees (see §22.2.3). Prerequisite: RLS 263.

RLS 464 Commercial Recreation

★3 (fi 6) (either term, 3-0-0). This course will examine the provision of leisure-related products or services by private enterprise. The course is also intended to provide insight into the applicability and implications of entrepreneurial practices in the public and non-profit sectors of the leisure delivery system. Prerequisite: RLS 232 or PERLS 350.

RLS 465 Natural Area Tourism

★3 (fi 6) (either term, 3-0-0). This course examines the different types of tourism that can occur in natural areas (e.g., adventure, nature based, wildlife, ecotourism) from the perspective of tourists, trip organizers and guides, planners and managers, local residents, and indigenous people. Prerequisite: RLS 263.

RLS 473 Principles and Processes in Therapeutic Recreation

★3 (fi 6) (either term, 2-0-2). The therapeutic recreation programming process is emphasized. Primary focus is on specialized programs in therapeutic recreation settings. The relationship between therapeutic recreation services and recreation and special populations is addressed. Therapeutic recreation service methods, such as systems approach programming, activity analysis, leisure assessment techniques and instruments, as well as treatment approaches and facilitation strategies employed in therapeutic recreation settings are presented. Professional issues such as client rights, standards of practice, and credentialing will also be addressed. Prerequisite: PERLS 207.

RLS 497 Selected Topics in Recreation and Leisure

★3 (fi 6) (variable, variable). Topics of current interest in leisure and recreation. These may vary from year to year. Prerequisite: consent of Faculty.

RLS 499 Directed Studies

★3 (fi 6) (variable, variable). A course designed to meet the needs of individual students. Prerequisite: consent of Faculty.

Graduate Courses**RLS 510 Concepts and Theories of Leisure and Recreation**

★3 (fi 6) (either term, 3-0-0).

RLS 531 Socio-Psychological Dimensions of Recreation Involvement

★3 (fi 6) (either term, 3-0-0).

RLS 541 Parks, Protected Areas, and Outdoor Recreation Environments: Planning and Management

★3 (fi 6) (either term, 3-0-0). An interdisciplinary perspective on policy, planning, and management issues associated with parks, protected areas, and the stewardship of natural and cultural heritage resources within working landscapes. The provision and management of outdoor recreation opportunities within these different environments is also examined.

221.195 Rehabilitation Medicine, REHAB

Faculty of Rehabilitation Medicine

Note: Normally all REHAB courses are restricted to students in Rehabilitation Medicine. Students from other faculties require consent of the instructor offering the course.

Undergraduate Courses**REHAB 350 Structural Human Anatomy**

★3 (fi 6) (either term, 3-0-0). An in-depth study of the gross anatomy of the upper and lower extremities, trunk, head and neck.

REHAB 362 Human Systems #2 Applied and Clinical Work Physiology for Rehabilitation

★3 (fi 6) (either term, 3-0-0). The acute and chronic physiological responses to physical work and its impact on the practice of occupational therapy as it relates to self-care, productivity and leisure activities in health, injury and disease. Prerequisite: PHYSYL 161 or equivalent.

REHAB 383 Human Systems #1 Applied and Clinical Anatomy for Rehabilitation

★4 (*fi 8*) (either term, 3-0-1). An anatomical study of the structure of tissue in normal and selected pathological conditions as related to the biomechanics of the human musculoskeletal system. Prerequisite: consent of Department.

REHAB 454 Clinical Neurology

★3 (*fi 6*) (either term). An overview of neurological conditions encountered in rehabilitation. Prerequisite: REHAB 455. Corequisite: OCCTH 415 or 512. [Note: Corequisite applicable to Occupational Therapy students only.]

REHAB 455 Human Systems #3 Neuroanatomy and Neuroscience for Rehabilitation

★3 (*fi 6*) (either term). Structures and functions of the human nervous system and the mechanisms of neural activity and signalling. Emphasis is on integration and function. Prerequisite: REHAB 362 and 383, or PHER 459 and 516.

REHAB 464 Administration

★3 (*fi 6*) (either term, 2-1s-0). An introduction to health care policy and delivery and business administration in rehabilitation.

REHAB 468 Research in Rehabilitation

★3 (*fi 6*) (either term). The theory and principles of scientific method and research design procedures, from both qualitative and quantitative perspectives. Application to rehabilitation in practice settings will be explored. Prerequisite: OCCTH 362.

REHAB 476 Ergonomics

★3 (*fi 6*) (either term, 2-0-1). Ergonomics from an industrial and health care perspective.

REHAB 498 Special Seminars

★3 (*fi 6*) (either term, 0-3s-0). Content varies from year to year. Topics will be announced prior to registration period. Prerequisite: consent of Department.

Graduate Courses**REHAB 500 Conducting Rehabilitation Research**

★3 (*fi 6*) (either term, 0-3s-0). Preparation of a plan to conduct research including writing a proposal. Students will discuss critically various aspects, such as the selection of the problem, the review of the literature, the research hypothesis, the collection and analysis of the data, and the significance of the research.

REHAB 510 Assistive Technologies in Rehabilitation

★3 (*fi 6*) (either term, 0-2s-1). A study of assistive technologies used to ameliorate the problems of persons who have disabilities. The integration of assistive technologies into rehabilitation practice is discussed. Assistive technologies for augmentative communication, computer access, sensory (auditory, visual and tactile) assistance, seating and positioning, mobility and manipulation are included. Case studies, interactive demonstrations and review of current literature are included. Prerequisites: A background in assistive technologies such as provided by OCCTH 312, PHER 486 or 490, or SPA 523 or equivalent is recommended. For students without this background, a set of self-study competency modules must be completed during the first few weeks of the term.

REHAB 599 Directed Individual Reading and Research

★3 (*fi 6*) (either term, 0-3s-0). May be repeated. Open to graduate students in Master's and PhD degree programs in the Faculty of Rehabilitation Medicine or any of the other health sciences Faculties who wish to pursue individual reading and research studies with an academic staff member within the Faculty of Rehabilitation Medicine. Prerequisites: consent of student's graduate supervisor and instructor of record.

REHAB 600 Theory and Issues in Rehabilitation Science

★3 (*fi 6*) (either term, 0-3s-0). The course will provide an orientation to the theoretical base of rehabilitation science and its historical development. Students will critically examine existing theory and compare the theoretical base of rehabilitation science to other health related fields. Methods of theory development will be addressed, as well as a variety of ways of testing theoretical approaches. Students will study the field of rehabilitation science through selected readings, discussion, and research seminars.

REHAB 601 Research Design in Rehabilitation Science

★3 (*fi 6*) (either term, 0-3s-0). An orientation to the unique features of rehabilitation science that impact on research methodology, design, ethical issues, measurement, and statistical analyses. Issues such as chronicity of disease, low incidence of specific conditions resulting in small sample sizes, small increments of change over long periods of time, ordinal data, wide variability in patient characteristics, group data versus single subject data, etc. will be studied in terms of appropriate research design, measurement, and analyses.

REHAB 603 Seminars in Rehabilitation Science

★3 (*fi 6*) (two term, 0-1.5s-0). This seminar is designed to allow students in the doctoral program to learn more about the scope of research in rehabilitation science. Students attend a weekly seminar presented by staff and graduate students in the Faculty of Rehabilitation Medicine and other health science faculties. Students registered in the PhD program in Rehabilitation Science must enrol in this seminar within the first two years of their doctoral programs and

must present at least one seminar during each of the terms in which they are enrolled.

REHAB 899 Directed Individual Research

★3 (*fi 6*) (either term, 0-3s-0). May be repeated once. Restricted to students in the PhD program in Rehabilitation Science who did not write a master's thesis and for whom an in-lieu-of thesis experience is required in the plan of study. Prerequisite: Recommendation of PhD supervisor.

221.196 Religious Studies, RELIG

Office of Interdisciplinary Studies
Faculty of Arts

Note: Students who have completed RELIG 100 may substitute that course for RELIG 101 for prerequisite purposes.

Undergraduate Courses**RELIG 101 Introduction to the Religions of the World**

★6 (*fi 12*) (two term, 3-0-0). An introduction to the major religious traditions of the past and present.

RELIG 200 Introduction to Religious Studies

★3 (*fi 6*) (either term, 3-0-0). Survey of the history of Religious Studies; introduction to main disciplinary approaches. Required for Honors, Majors, and Minors.

RELIG 201 Introduction to Biblical Hebrew

★6 (*fi 12*) (two term, 3-0-2). This is an introduction to Hebrew alphabet, grammar, vocabulary, and syntax. The goal is to enable the student to read parts of the Hebrew Bible/Old Testament. The course serves also as foundation for the study of Mishnaic, Medieval, and Modern Hebrew. Designed for students with no previous knowledge of Hebrew.

RELIG 202 Introduction to Old Testament/Hebrew Bible

★3 (*fi 6*) (either term, 3-0-0). An introduction to the critical study of the Old Testament/Hebrew Bible. Note: Not open to students with credit in RELIG 231.

RELIG 205 Introduction to Judaism

★3 (*fi 6*) (either term, 3-0-0). An introduction to the varied world of Judaism: its ways of life, beliefs, history and thought. Note: Not open to students with credit in RELIG 235.

RELIG 209 Coptic Language and Literature

★3 (*fi 6*) (either term, 3-0-0). The coptic alphabet, grammar, syntax and vocabulary. The goal is to enable students to read parts of the early Christian (Sahidic) Coptic writings. Note: not open to students who have received credit in RELIG 297 Topic: Coptic Language and Literature.

RELIG 211 Introduction to Early Christian Writings

★3 (*fi 6*) (either term, 3-0-0). Critical introduction to the New Testament and other early Christian Writings in their historical cultural context.

RELIG 212 Christian Traditions

★3 (*fi 6*) (either term, 3-0-0). A survey of the Christian traditions in historical context. Note: Not open to students with credit in HIST 297.

RELIG 215 Introduction to Community Action and Christianity

★3 (*fi 6*) (either term, 3-0-0). Explores the link between Christian traditions and community action and considers the latter as a significant expression of faith. In addition to normal academic requirements, there will be relevant field trips.

RELIG 220 Introducing Islam, from Prophetic Origins to World Tradition

★3 (*fi 6*) (either term, 3-0-0). A survey of the main elements of the Muslim tradition and their role in the formation of Islamic culture. Note: Not open to students with credit in RELIG 221.

RELIG 225 The Life of the Prophet Muhammad: Muslim and Western Approaches

★3 (*fi 6*) (either term, 3-0-0). Selected readings on and approaches to the life of the Prophet.

RELIG 230 Introduction to Hinduism

★3 (*fi 6*) (either term, 3-0-0). A study of the major traditions of classical Hinduism, and of the religious thinking and experience formed through these traditions. Note: Not open to students with credit in RELIG 208 or 301.

RELIG 239 Introduction to Sanskrit I

★3 (*fi 6*) (either term, 3-0-2). Fundamentals of the Sanskrit language for reading and translation purposes. Designed for students with no previous knowledge of Sanskrit.

RELIG 240 Introduction to Buddhism

★3 (*fi 6*) (either term, 3-0-0). A study of the emergence of Buddhism as a religion, its basic ideas, spirituality, and literature.

RELIG 249 Introduction to Sanskrit II

★3 (*fi 6*) (either term, 3-0-2). Prerequisite: RELIG 239 or consent of Department.

0 RELIG 252 Introduction to Chinese Religions

★3 (fi 6) (either term, 3-0-0).

0 RELIG 270 Contemporary Issues in Religion

★3 (fi 6) (either term, 3-0-0).

0 RELIG 274 Studies in Witchcraft and the Occult

★3 (fi 6) (either term, 3-0-0).

0 RELIG 277 Women and World Religions

★3 (fi 6) (either term, 3-0-0). Attitudes towards women in selected world religious traditions, specifically with respect to their participation in ritual and religious leadership.

0 RELIG 279 Religion and Literature

★3 (fi 6) (either term, 3-0-0). A discussion of selected works of literature that express and articulate religious experiences. The range of selected works, varying from year to year, may contain specimens from the classical ages to the present, and from Asian to North American cultures (e.g. Dostojewski, H Hesse, U Le Guin).

0 RELIG 285 Religions of Western Canada

★3 (fi 6) (either term, 3-0-0). A survey of the history, structure, and socio-cultural impact of religious groups in Western Canada.

0 RELIG 297 Special Topics in Religious Studies

★3 (fi 6) (either term, 0-3s-0).

0 RELIG 301 Readings in Hebrew Literature

★3 (fi 6) (either term, 3-0-0). Readings in Hebrew literature of religious character. Prerequisite: RELIG 201 or consent of Department. Note: Only one of RELIG 301 or C LIT 490 can be taken for credit.

0 RELIG 302 Studies in the Old Testament/Hebrew Bible

★3 (fi 6) (either term, 3-0-0). An intermediate level study of the Old Testament/Hebrew Bible, focusing on a variety of genres and critical approaches.

0 RELIG 303 Biblical Narrative

★3 (fi 6) (either term, 3-0-0). Narrative art in the Old Testament/Hebrew Bible.

0 RELIG 304 Poets, Prophets, and Sages

★3 (fi 6) (either term, 3-0-0). Literary-critical reading of the poetic books of the Old Testament/Hebrew Bible.

0 RELIG 305 Ancient Near East I

★3 (fi 6) (either term, 3-0-0). Religion, society and culture in Sumer, Babylon, Assyria and ancient Israel. Note: not open to students with credit in CLASS 376.

0 RELIG 306 Ancient Near East II

★3 (fi 6) (either term, 3-0-0). Religion, society and culture in Egypt, the Hittite Empire and Phoenicia. Note: Not open to students with credit in CLASS 377.

0 RELIG 307 The Kabbalah

★3 (fi 6) (either term, 3-0-0). Studies in Jewish mysticism from the earliest period to modern times. Note: Not open to students with credit in RELIG 340.

0 RELIG 308 From Cyrus to Jesus

★3 (fi 6) (either term, 3-0-0). Religion, society and culture in Palestine from the Persian conquest to the time of Jesus. Note: Not open to students with credit in CLASS 380.

0 RELIG 312 Eastern Orthodoxy

★3 (fi 6) (either term, 3-0-0). History, sacral art, liturgy, spirituality and distinguishing points of doctrine.

0 RELIG 313 Studies in Early Christian Writings

★3 (fi 6) (either term, 3-0-0). Social and literary study of select early Christian texts.

0 RELIG 314 Jesus

★3 (fi 6) (either term, 3-0-0). A study of representations of Jesus in various historical and social contexts.

0 RELIG 315 Christianity in the Age of the Reformation

★3 (fi 6) (either term, 3-0-0). A study of the main thinkers of the Reformation.

0 RELIG 320 Qur'anic Studies

★3 (fi 6) (either term, 3-0-0). An examination of the style, structure, and doctrine of the Qur'an in the light of the Western critical evaluation of the text. Note: Not open to students with credit in RELIG 327.

0 RELIG 322 Contemporary Movements in Islam

★3 (fi 6) (either term, 3-0-0). Recent developments in the philosophical, social, and religious life of Islam throughout the world. Note: Not open to students with credit in RELIG 328.

0 RELIG 331 Devotional Hinduism (bhakti)

★3 (fi 6) (either term, 3-0-0). A study of the various strands of devotional and mystical Hinduism (such as Vishnuism, Shivaism, Shaktism).

0 RELIG 337 Contemporary Hinduism

★3 (fi 6) (either term, 3-0-0). A critical examination of the responses of Hinduism

to the challenges of colonialism, modernity, and religious pluralism, and of its ensuing transformation.

0 RELIG 343 Zen/Ch'an Buddhism

★3 (fi 6) (either term, 3-0-0). A study of the history of Zen/Ch'an Buddhism in China, Tibet, and Japan in terms on the major movements, their main figures, and samples of the representative texts.

0 RELIG 344 Buddhism in Tibet and in the Himalayas

★3 (fi 6) (either term, 3-0-0). A study of the dissemination of Buddhism in the Himalayas and in Tibet, its incorporation of local beliefs, the formation of monasticism, religious thought and literature.

0 RELIG 375 Thanatology

★3 (fi 6) (either term, 3-0-0). A consideration of death and dying in the great religious traditions, with particular emphasis on the recent literature.

0 RELIG 378 Shamanism

★3 (fi 6) (either term, 3-0-0). A study of shamanism in the history of religions with special attention to myths, rituals, symbols, and the ecstatic experience. Note: Not open to students with credit in RELIG 366.

0 RELIG 379 The Religions of Aboriginal North-Americans

★3 (fi 6) (either term, 3-0-0). A critical analysis of native North-American beliefs of the past and present. Note: Not open to students with credit in RELIG 280.

0 RELIG 390 Readings of Sacred Texts of Asia in the Original Language II

★3 (fi 6) (either term, 3-0-0). Intermediate readings of the sacred texts of Asia in any one of the sacred languages of Asian religions.

0 RELIG 397 Special Topics in Religious Studies

★3 (fi 6) (either term, 0-3s-0).

0 RELIG 402 Historical and Textual Studies in the Old Testament/Hebrew Bible

★3 (fi 6) (either term, 3-0-0). Detailed studies of the individual books of the Old Testament/Hebrew Bible and related themes. Prerequisite: One course in the Old Testament/Hebrew Bible or consent of Program Coordinator.

0 RELIG 404 Literary Studies in Old Testament/Hebrew Bible

★3 (fi 6) (either term, 3-0-0). Prerequisite: One course in Old Testament/Hebrew Bible or consent of Program Coordinator.

0 RELIG 409 Midrash and Literature

★3 (fi 6) (either term, 3-0-0). Rabbinic Midrash (exposition of Scripture) in relation to contemporary literary theory and the construction of religious community, with textual examples. Prerequisite: one course in Judaism, Hebrew Bible, or consent of Program Coordinator.

0 RELIG 415 Advanced Studies in Christianity

★3 (fi 6) (either term, 3-0-0). Prerequisite: one course in Christianity or consent of Program Coordinator.

0 RELIG 422 Advanced Studies in Islam

★3 (fi 6) (either term, 3-0-0). Prerequisite: one course in Islam or consent of Program Coordinator.

0 RELIG 442 Advanced Studies in Buddhism

★3 (fi 6) (either term, 3-0-0). Prerequisite: one course in Buddhism or consent of Program Coordinator.

0 RELIG 445 Hermeneutics

★3 (fi 6) (either term, 3-0-0). History and development of hermeneutics with emphasis on its relevance to the study of literary and religious texts. Prerequisite: consent of Program Coordinator.

0 RELIG 475 Theories and Methods in Religious Studies

★3 (fi 6) (either term, 3-0-0). Theories and disciplinary approaches in the study of religion, religions, and religious practices. Required for Honors and Majors. Prerequisite: consent of Program Coordinator.

RELIG 480 Directed Reading in Religious Studies

★3-6 (variable) (variable, 3-0-0). Prerequisite: consent of Program Coordinator.

0 RELIG 497 Special Topics in Religious Studies

★3 (fi 6) (either term, 0-3s-0).

RELIG 499 Honors Essay in Religious Studies

★6 (fi 12) (two term, 0-3s-0). Preparation of the Honors essay. Formerly RELIG 501.

Graduate Courses**RELIG 502 Historical and Textual Studies in the Old Testament/Hebrew Bible**

★3 (fi 6) (either term, 3-0-0).

RELIG 504 Literary Studies in the Old Testament/Hebrew Bible

★3 (fi 6) (either term, 3-0-0).

RELIG 509 Advanced Studies in Midrash and Literature

★3 (fi 6) (either term, 3-0-0).

RELIG 510 Selected Topics in Religious Studies

★3 (fi 6) (either term, 3-0-0).

RELIG 516 Special Topics in Early Christianity

★3 (fi 6) (either term, 3-0-0).

RELIG 520 Specialized Studies in Islam

★3 (fi 6) (either term, 3-0-0). An in-depth study of the problems of Islamic Studies.

RELIG 540 Specialized Studies in Tibetan Buddhism

★3 (fi 6) (either term, 3-0-0). The course addresses the problems of academic study of Tibetan Buddhism and it does not require competence in Tibetan language.

RELIG 545 Specialized Studies in Tibetan Texts

★3 (fi 6) (either term, 3-0-0). An in-depth reading of Tibetan Buddhist texts in Tibetan and their explication.

RELIG 575 Theories and Methods in Religious Studies

★3 (fi 6) (either term, 3-0-0).

RELIG 580 Directed Reading Course I

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

RELIG 581 Directed Reading Course II

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

221.197 Renewable Resources, REN R

Department of Renewable Resources
Faculty of Agriculture, Forestry, and Home Economics

Note: See also Agricultural and Resource Economics (AREC), Animal Science (AN SC), Environmental and Conservation Sciences (ENCS), Forest Economics (FOREC), Forest Engineering (FOREN), Forest Science (FOR), Plant Science (PL SC), Soil Science (SOILS), and Interdisciplinary (INT D) Undergraduate Course listings for related courses.

Undergraduate Courses

REN R 110 Natural Resource Measurement

★3 (fi 6) (second term, 3-0-3). Designed to introduce students to the principles and practices of measuring a variety of wildland resources including: timber, water, range, wildlife, and recreation.

REN R 120 Woody Plants I

★3 (fi 6) (first term, 3-0-4). Identification, classification, distribution, habitat, and basic ecology of trees, important shrubs and herbaceous species in forests of Alberta and Canada. There will be field trips to sites where living specimens can be examined. This course requires the payment of additional miscellaneous fees. See §22.2.3 for details.

REN R 201 Introduction to Geomatic Techniques, in Natural Resource Management

★3 (fi 6) (first term, 3-0-3). Methods and applications of surveying, global positioning systems (GPS), geographic information systems (GIS), photogrammetry, air photo interpretation and meteorological technologies as they relate to natural resource management.

REN R 250 Water Resource Management

★3 (fi 6) (second term, 3-0-0). Global perspective of supply of and demand for water, basic hydrologic principles, concepts in water management, human intervention in the hydrologic cycle, and environmental issues related to this intervention. Prerequisite: ★30 at the university level with at least ★6 in the life or natural sciences. Credit will be given for only one of ENCS 203 and REN R 250.

REN R 321 Tree Physiology

★3 (fi 6) (first term, 3-0-3). Study of physiological processes in trees. Emphasis on primary and secondary metabolism, gas exchange, transport processes, growth, and environmental effects. ★3 Chemistry and one of BIOL 107 or REN R 220 are strongly recommended.

REN R 350 Physical Hydrology

★3 (fi 6) (second term, 3-0-3). Principles of physical and land-use hydrology. The interaction of vegetation, soils, and storage processes with physiography and climate in regulation of hydrologic processes and hydrologic response of watersheds including effects of disturbance on these functions. Prerequisite: SOILS 210 or written consent of Instructor. Credit will only be given for one of FOR 350 and REN R 350.

REN R 401 Special Topics in Renewable Resources

★3-6 (variable) (either term, variable). Directed study in the multiple aspects of renewable resources. Open to third or fourth year students upon consent of instructor.

REN R 410 Principles of Remote Sensing

★3 (fi 6) (first term, 3-0-3). Basic principles of spectral reflectance and emittance, and atmospheric effects as they apply to the acquisition and analysis of imagery; digital image analysis for geographical information systems; application to renewable resource inventory and management and environmental impact assessment. Prerequisite: A 300-level course in at least one of the natural sciences.

REN R 421 Advanced Tree Physiology

★3 (fi 6) (second term, 3-0-0). Stress physiology of trees and tree seedlings; mechanisms of stress action and stress resistance; effects of silvicultural practices on growth and physiology; planting stress. Prerequisite: consent of Instructor. Offered in alternate years.

REN R 426 Geographical Information Systems Applications in Renewable Resources

★3 (fi 6) (second term, 0-0-3). A combination of computer lab instruction and directed studies in applied GIS. The focus of the course is an individual project of the student's choosing. Prerequisites: EAS 221, FOREN 201, or REN R 425 or consent of Instructor.

REN R 430 Forest Resources Management

★3 (fi 6) (first term, 3-0-3). Analytical techniques used by renewable resource managers for management of wildland areas for single or multiple outputs; problems of defining optimality when confronted with competing uses and multiple outputs. Corequisite: FOREC 345; FOR 210 strongly recommended.

REN R 435 Operations Research for Natural Resource Management

★3 (fi 6) (second term, 3-0-0). Mathematical programming, decision analysis and computer simulation applied to natural resource management problems. Prerequisites: AREC 214 or MATH 120 and at least ★60 credit in university courses.

REN R 439 Forest Management Planning

★3 (fi 6) (second term, 0-3s-0). Seminar presentations and discussions by students of contemporary forest management planning. Prerequisite: REN R 430.

REN R 450 Environmentally Sustainable Agriculture

★3 (fi 6) (second term, 3-0-0). Land-management issues that influence the sustainability of both agriculture and the land resource. Role of ecological processes in determining sustainability and the development and adoption of practices that facilitate long-term viability of both agriculture and biophysical resources. The concept of the agro-ecosystem and application of ecological principles to agricultural land management. Use of environmental indicators to measure and predict long-term sustainability of agricultural land management. Prerequisites: ★60 at university level including SOILS 210, and (BIOL 208 or PL SC 221).

REN R 452 Forest Watershed Management

★3 (fi 6) (first term, 0-3s-0). Seminar discussions/presentations on issues and methods in forest management and the production, protection, and regulation of wildland water resources. Relationship between disturbance (natural/anthropogenic) and water yield, regime, water quality. Watershed management as a component of integrated wildland management (ECA procedures, hydrologic modeling, stream protection zones (SPZs), best management practices (BMPs) and cumulative effects assessment). Prerequisite: ★60 at university level. Credit will only be given for one of FOR 450 and REN R 452.

REN R 468 Management and Conservation of Genetic Resources

★3 (fi 6) (second term, 3-0-0). Principles and issues in conserving and managing plant and animal genetic resources from the global perspective. Lectures will be supplemented with case studies. Students are assigned tasks, individually and in groups. Prerequisite: consent of Instructor.

REN R 475 Revegetation

★3 (fi 6) (first term, 3-3s-0). Principles, practices, and philosophy of revegetation of disturbed lands. Topics include site preparation, seed mix design, planting methods, species selection, monitoring, determining success, plant community ecology and change, bioengineering, phytoremediation, vegetative reclamation, restoration. Illustrated with case studies. Revegetation project plan required. Prerequisites: ★90 university credit including introductory courses in soil science, hydrology, and ecology; and ★6 in vegetation science at the 300- or 400-level (e.g. botany, forestry, plant ecology, plant resources, plant science, range science, weed science); and ★3 in soil science at the 300- or 400-level. ENCS 406 recommended.

REN R 477 Wildlife-Human Activities: Conflicts, Assessment and Mitigation

★3 (fi 6) (second term, 3-0-0). Behavioral and ecological responses of wildlife species to human activities, including forestry operations, oil and gas exploration, recreational developments and agriculture-related activities. Topics include harassment and disturbance, habitat loss, habituation, assessment of impacts and mitigation, and cumulative impacts. Identification of ecological and social issues associated with human activities. Prerequisite: fourth-year standing or consent of Instructor.

REN R 485 Land Reclamation

★3 (fi 6) (second term, 3-3s-0). Principles, practices and philosophy of land reclamation; types of land disturbances and regulations governing their reclamation. Team project-based course. Should be taken in students' last year as the

Capstone Course for the land reclamation major. Prerequisite: ★90 university credit including introductory courses in soils, hydrology, ecology, and vegetation science; and ★9 in soil science at the 300- or 400-level. REN R 475 and ENCS 455 recommended.

Note: 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)).

Graduate Courses

REN R 501 Special Topics in Renewable Resources

★3-6 (*variable*) (either term, variable). Directed study in the multiple aspects of renewable resources. Open to fourth year or graduate students upon consent of instructor.

REN R 510 Advanced Remote Sensing

★3 (*fi 6*) (second term, 3-0-3). A quantitative approach to remote sensing for land resource studies; specialized techniques for hard copy and digital image analyses; remote sensing and soil-vegetation-landscape models; literature review and laboratory project on a selected problem. Prerequisite: REN R 410.

REN R 545 Small Watershed Hydrology

★3 (*fi 6*) (first term, 0-3s-0). An examination of land use and management practices affecting water quantity and quality in rural watersheds. Considerations of snowmelt hydrology. Current hydrologic models and their treatment of infiltration, runoff, and evapotranspiration. Model calibration and validation with field data. Prerequisite: A course in hydrology or water resources. Facility with computers an asset. Offered in alternate years.

REN R 561 Ecosystem Modelling

★3 (*fi 6*) (first term, 3-0-3). Ecosystem modeling now has a central role in large-scale research projects designed to study ecosystem function. Examines how scientific theory of carbon, water and nutrient cycling in terrestrial ecosystems is expressed in mathematical models, and how these models are tested against results from field experiments. Laboratory sessions provide practical experience in the operation of ecosystem models to study terrestrial ecosystem responses to changes in land use and climate.

REN R 580 Biometrical Techniques in Agri-food, Environmental and Forest Sciences

★3 (*fi 6*) (second term, 3-0-3). Application of biometrical techniques in agri-food, environmental, and forest sciences with emphasis on experimental design, analysis of variance and covariance, and categorical data analysis. Prerequisite: ★90 of university-level course work or higher. ★3 introductory statistics recommended. (Offered jointly by the Departments of Agricultural, Food and Nutritional Science and Renewable Resources.)

REN R 601 Forest Biology

★3 (*fi 6*) (first term, 0-3s-0). Seminar presentations and discussions by students on the biology and environment of forest ecosystems. The objective of this course is to develop a broader and greater holistic understanding of the biota and physical environments of forest ecosystems. Course team taught by Department of Renewable Resources staff. Prerequisite: consent of Department.

REN R 602 Forest Resources Management

★3 (*fi 6*) (second term, 0-3s-0). Seminar presentations and discussions by students on the management of forest ecosystems for traditional and non-traditional values. The objective is to examine human, resource, economic, and policy problems of integrated forest management. Course team taught by Department of Renewable Resources staff. Prerequisite: consent of Department.

REN R 603 Graduate Research Skills

★1 (*fi 2*) (first term, 1.5-0-0). Prepares graduate students to function in a research environment. Focuses on the development of communication and presentation skills, the publication process, and proposal preparation. The grade is credit/no credit.

REN R 604 Graduate Research Seminar

★1 (*fi 2*) (second term, 0-1.5s-0). Prepares graduate students to function in a research environment. Focus is applied communication of research. All students are required to present a seminar, present a research poster, and critique a seminar. The grade is credit/no credit.

REN R 610 Seminar in Research Methods

★3 (*fi 6*) (second term, 3-2s-0). Use of the scientific method in research, formulation of hypotheses, design of experiments, interpretation of data. Prerequisite: consent of Instructor.

REN R 635 Computer-based Modeling for Forest Resources Management

★3 (*fi 6*) (second term, 3-0-0). Exploration of computer-based models as decision aids for forest resources management, in the contexts of landscape and integrated resource management. Topics include timber supply modeling, wildlife habitat supply modeling and trade-off analysis, in both simulation and optimization frameworks. The underlying assumptions and practical application of models will

be emphasized. Prerequisite: consent of instructor. Credit may not be obtained in this course if previous credit has been obtained for REN R 535.

REN R 900 Research Project

★6 (*fi 12*) (variable, unassigned). Required of all Soils MAg candidates in their final year. It does not usually involve collection of original data but makes use of published or unpublished data from other sources. The report is to be defended before a committee of three staff members, one member being from outside the Department of Renewable Resources.

221.198 Rural Sociology, R SOC

Department of Rural Economy

Faculty of Agriculture, Forestry, and Home Economics

Note: See also Agricultural and Resource Economics (AREC), Environmental and Conservation Sciences (ENCS), Forest Economics (FOREC), Interdisciplinary Undergraduate Courses (INT D) listings for related courses.

Undergraduate Courses

R SOC 310 Women in Development

★3 (*fi 6*) (either term, 3-0-0). This course deals with development issues, such as work, health, environment, and human rights among women in developing countries. Prerequisite: consent of Department. Not available to students with credit in W ST 310.

R SOC 355 Principles of Rural Sociology

★3 (*fi 6*) (either term, 3-0-0). The historic and contemporary role of rural regions as extractive economies in the global marketplace is discussed from a macro-sociological perspective. Sociological concepts are applied to the study of the structural constraints and opportunities facing social and economic systems in rural regions. Prerequisite: ★30 or more of university level course work.

R SOC 365 Sociology of Environment and Development

★3 (*fi 6*) (either term, 3-0-0). Examines the relationship between development and environment at the local, regional, national and international levels. Critically discusses development strategies, the environmental and social forces promoting them, and the distribution of environmental and social impacts. Also examines alternative development strategies, sustainable development experiences and relevant international policy.

R SOC 400 Special Topics

★3 (*fi 6*) (either term, 0-3s-0). Individual study. Study of selected topic or problem requiring both written and oral reports. Prerequisite: consent of the Department Chair.

R SOC 450 Environmental Sociology

★3 (*fi 6*) (either term, 3-0-0). Introduction to a field in sociological inquiry that addresses how individuals and groups influence, and are influenced by, natural resources and environmental conditions. Examination of individual-level influences, such as beliefs, attitudes, and behaviors, as well as broader social-level influences at the institutional and organizational level. Focus is on providing an understanding and appreciation for the interaction between human attitudes, behaviors, and organizations with other components of the ecosystem. Prerequisite: ★60 or more. An introductory Sociology course is strongly recommended.

Graduate Courses

Note: The following undergraduate courses may be taken for credit by graduate students in Rural Economy: R SOC 400, 450.

R SOC 500 Research Projects in Rural Sociology

★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 the Department Chair.

R SOC 555 Natural Resource Sociology

★3 (*fi 6*) (second term, 3-0-0). Examines social problems and challenges in natural resource dependent regions. Covers social theories of development, public participation, social impacts, institutional arrangements, and social capacity for natural resource management and community development. Prerequisite: R SOC 450 or equivalent.

R SOC 558 The Sociology of Environmental Risk: Theory and Applications

★3 (*fi 6*) (either term, 0-3s-0). Theoretical and empirical research on the study of environmental risk in the social sciences, and their application in various institutional areas. Divergent theoretical perspectives on risk within the social sciences, directions taken by empirical researchers in the analysis of the construction and perception of environmental risk, as well as current institutional mechanisms for risk management and social impact assessment. Prerequisite: consent of Instructor.

R SOC 559 States, Social Movements and the Environment

★3 (*fi 6*) (either term, 3-0-0). Covers classic and contemporary theories of states

and social movements and their application to environmental and ecological issues. Topics include the Environmental State; relationships among state and societal forces; sub-national, national, and international environmental politics; political distinctions among environmental and ecological issues; and the potential for sustainability governance. Prerequisite: consent of Instructor.

R SOC 600 Directed Studies

★3 (fi 6) (either term, 0-3s-0). Analysis of selected research problems and design of research projects in rural, resource, environmental and development sociology. Prerequisite: Consent of Department Chair.

R SOC 900 Directed Research Project

★3 (fi 6) (variable, unassigned).

221.199 Russian, RUSS

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 Russian language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course more suitable to their level of ability. 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) Students requiring information about program planning and course selections for the Dalhousie University-University of Alberta Russian Studies Program in the USSR (see Arts section) should consult an undergraduate advisor in the Department of Modern Languages and Cultural Studies.
- (5) RUSS 100 and 160 are not open to students with credit in matriculation-level Russian.
- (6) See also INT D courses offered by the Faculty of Arts.

Undergraduate Courses

0 RUSS 111 Beginners' Russian I

★3 (fi 6) (either term, 5-0-0). Essentials of grammar, reading, and pronunciation. Designed to give a working knowledge of the Russian language. Note: not to be taken by students with credit in RUSS 100, or with native or near native proficiency, or with Russian 30 or its equivalents in Canada and other countries.

0 RUSS 112 Beginners' Russian II

★3 (fi 6) (either term, 5-0-0). Prerequisite: RUSS 111 or consent of Department. Note: not to be taken by students with credit in RUSS 100, or with native or near native proficiency, or with Russian 30 or its equivalents in Canada and other countries.

0 RUSS 211 Second-Year Russian I

★3 (fi 6) (first term, 4-0-0). Russian grammar, composition, oral practice. Prerequisite: RUSS 112 or consent of Department. Note: not to be taken by students with credit in RUSS 201 or 202.

0 RUSS 212 Second-Year Russian II

★3 (fi 6) (second term, 4-0-0). This course is a continuation of RUSS 211. Prerequisite: RUSS 211 or consent of Department. Note: not to be taken by students with credit in RUSS 202.

0 RUSS 303 Russian in Context I

★3 (fi 6) (either term, 3-0-0). The continued development of grammatical and conversational skills, with reading contemporary Russian and viewing and discussing films and television programmes. Prerequisites: RUSS 202 or consent of Department. Note: not to be taken by students with credit in RUSS 401 or 402.

0 RUSS 304 Russian in Context II

★3 (fi 6) (either term, 3-0-0). Debates on topics selected by students. Prerequisite: RUSS 303 or consent of Department. Note: not to be taken by students with credit in RUSS 401 or 402.

0 RUSS 325 Readings in Russian I

★3 (fi 6) (either term, 3-0-0). Study of pre-20th century Russian literature in the original. Prerequisite: RUSS 202 or consent of Department. Note: not to be taken by students with credit in RUSS 215 or 216.

0 RUSS 326 Readings in Russian II

★3 (fi 6) (either term, 3-0-0). Reading and analysis of texts from 20th century

Russian literature in the original. Prerequisite: RUSS 202 or consent of Department. Note: not to be taken by students with credit in RUSS 215 or 216.

0 RUSS 333 Saints and Sinners

★3 (fi 6) (either term, 3-0-0). Religious and anti-religious themes in Russian literature of the 19th and 20th centuries, highlighting the reflection of Russian Orthodox and popular culture in the texts. This course is taught in English and will not fulfill the Language other than English requirement.

0 RUSS 403 Advanced Russian I: Pop Media and Internet

★3 (fi 6) (either term, 3-0-0). Emphasis on the enhancement of language skills in the context of life in today's Russia. Contemporary textual genres of the popular media, including those of the Internet. Intensive reading, critical discussions, and creative writing. Prerequisite: RUSS 304 or consent of Department.

0 RUSS 404 Advanced Russian II: Language and Films

★3 (fi 6) (either term, 3-0-0). Use of contemporary Russian films and television to improve the practical language and literacy skills both orally and in writing. Prerequisite: RUSS 403 or consent of Department.

0 RUSS 408 Russian Style, Expression and Composition

★3 (fi 6) (either term, 3-0-0). For native speakers of Russian who want to improve their writing skills. Introduction to different styles of writing and composition. Prerequisite: consent of Department.

0 RUSS 422 Russian Literature and the Arts

★3 (fi 6) (either term, 3-0-0). A study of the interrelationship between literature and other media: theatre, cinema, and the visual arts. The emphasis will vary from year to year. Russian majors will do a significant part of readings and assignments in Russian; others may do readings and assignments in English. Prerequisite for Russian majors: RUSS 304 or consent of Department.

0 RUSS 427 Themes and Variations in Russian Literature to 1917

★3 (fi 6) (either term, 3-0-0). The superfluous man, the alien, witches and devils, the fantastic and other themes in pre-revolutionary Russian literature. Russian majors will do a significant part of readings and assignments in Russian; others may do readings and assignments in English. Prerequisite for Russian majors: RUSS 304 or consent of Department.

0 RUSS 443 Russian-English Translation

★3 (fi 6) (either term, 3-0-0). Exercises in translation with emphasis on both literary and non-literary texts. Prerequisite: RUSS 202, or consent of Department. Not open to students with credit in RUSS 441 or 442.

0 RUSS 445 Business Russian

★3 (fi 6) (either term, 3-0-0). Advanced modern Russian with emphasis on the vocabulary and communication style of the Russian business world. Prerequisite: RUSS 304 or consent of Department.

0 RUSS 464 Style and Structure of Russian I

★3 (fi 6) (either term, 3-0-0). Contemporary Russian linguistics: sound system, lexis, morphology, and morphosyntax. Prerequisite: RUSS 202 or consent of Department.

0 RUSS 466 Style and Structure of Russian II

★3 (fi 6) (either term, 3-0-0). Contemporary Russian linguistics: the syntactic, semantic, pragmatic and discourse levels. Prerequisite: RUSS 464 or consent of Department.

0 RUSS 483 Brave New Word: Soviet and Post-Soviet Russian Literature and Culture

★3 (fi 6) (either term, 3-0-0). Thematic focus varies from year to year. Russian majors will do a significant part of readings and assignments in Russian; others may do readings and assignments in English. Prerequisite for Russian majors: RUSS 304 or consent of Department.

RUSS 495 Honors Thesis

★3 (fi 6) (either term, 0-3s-0).

0 RUSS 499 Special Topics

★3 (fi 6) (either term, 3-0-0).

Graduate Courses

RUSS 503 Advanced Russian I: Pop Media and Internet

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

RUSS 504 Advanced Russian II: Language and Films

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

RUSS 522 Russian Literature and the Arts

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

RUSS 524 Russian Contemporary Theatre

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

RUSS 525 Nineteenth-Century Russian Literature

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

RUSS 526 Twentieth-Century Russian Literature

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

RUSS 545 Business Russian

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

RUSS 564 Style and Structure of Russian I

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

RUSS 566 Style and Structure of Russian II

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

RUSS 571 History of Russian Criticism

★3 (fi 6) (either term, 3-0-0). A detailed study with emphasis on the 19th and 20th centuries. Prerequisite: consent of Department.

RUSS 582 Contemporary Russian Literature

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

RUSS 599 Directed Reading

★3 (fi 6) (either term, 3-0-0).

RUSS 698 Topics in Russian Linguistics

★3 (fi 6) (either term, 3-0-0).

RUSS 699 Topics in Russian Literature

★3 (fi 6) (either term, 3-0-0).

RUSS 900 Directed Research Project

★6 (fi 12) (variable, unassigned).

221.200 Scandinavian, SCANDDepartment of Modern Languages and Cultural Studies
Faculty of Arts**Note:** See also Danish (DANSK), Norwegian (NORW) and Swedish (SWED) listings.**Undergraduate Courses****0 SCAND 341 Old Norse Mythology and Legends**

★3 (fi 6) (either term, 3-0-0). Survey of Old Scandinavian mythology from the earliest times to the end of the Viking Period. Readings in English from the Poetic and Prose Eddas, including the heroic legends and lays. Also included is a brief look at runic inscriptions and skaldic poetry. This course does not fulfill the language-other-than-English requirement of the BA degree.

0 SCAND 342 Vikings and Sagas

★3 (fi 6) (either term, 3-0-0). Survey of the cultural history of the Viking and Medieval periods in Scandinavia with selections in English from the Old Norse sagas. The course will also include a brief overview of Scandinavian folklore. This course does not fulfill the language-other-than-English requirement of the BA degree.

0 SCAND 345 Literature, Culture, and Civilization from the Reformation to the 20th Century

★3 (fi 6) (either term, 3-0-0). Selections in English of representative authors from each of the major literary periods, with special attention to the cultural and historical background. This course will not fulfil the language-other-than-English requirement of the BA degree.

0 SCAND 353 Henrik Ibsen

★3 (fi 6) (either term, 3-0-0). A selection of the dramas of Henrik Ibsen in English translation with background material on the life of the author and his times. Special emphasis on his social and symbolist plays, including their staging and presentation. This course will not fulfil the language-other-than-English requirement of the BA degree.

0 SCAND 354 August Strindberg

★3 (fi 6) (either term, 3-0-0). A selection of the works of August Strindberg in English translation with background material on the life of the author and his times. Special emphasis on his dramas, including their staging and presentation. This course will not fulfil the language-other-than-English requirement of the BA degree.

0 SCAND 355 The Tales of Hans Christian Andersen

★3 (fi 6) (either term, 3-0-0). This course takes a life-and-letters approach to the author and his times, with special emphasis on his tales (in English translation) and their relationship to the theory and practice of the genre. This course will not fulfil the language-other-than-English requirement of the BA degree.

0 SCAND 356 Women in Scandinavian Literature and Popular Culture

★3 (fi 6) (either term, 3-0-0). Various media which reflect women's lives and voices in Denmark, Norway, Sweden, Finland, Iceland, and Samiland. Note: This course will be taught in English and will not fulfill the Language other than English requirement.

SCAND 410 Comparative Scandinavian Grammar and Stylistics

★6 (fi 12) (two term, 3-0-0). A comparative analysis of modern Norwegian, Swedish and Danish, with special concentration on advanced composition and stylistics in the student's target language. Prerequisite: DANSK 212, or NORW 212, or SWED 212, or consent of Department.

SCAND 420 The Scandinavian Immigrant Experience in Canada

★3 (fi 6) (either term, 3-0-0). A survey of the history of Scandinavian immigration to Canada and its causes. The immigrant experience will be discussed as it is portrayed in works by authors such as Aksel Sandemose, Sven Delblanc, and Stephan G Stephansson. Prerequisite: DANSK 212, or NORW 212, or SWED 212, or consent of Department.

SCAND 499 Special Topics

★3 (fi 6) (either term, 3-0-0).

Graduate Courses**SCAND 551 Old Norse Grammar**

★3 (fi 6) (either term, 3-0-0). A survey of the grammar of Old Icelandic with readings of illustrative texts. This course does not fulfill the language other than English requirement for the BA.

SCAND 552 Readings in Old Norse, Runology and Paleography

★3 (fi 6) (either term, 3-0-0). Readings of illustrative texts in Old Icelandic including a survey of runic writing and Old Norse manuscripts. Texts in modern Icelandic will also be examined. Prerequisite: SCAND 551 or consent of Department. This course does not fulfill the language other than English requirement for the BA.

221.201 Science politique, SC PO

Faculté Saint-Jean

Cours de 1er cycle**0 SC PO 101 Introduction au gouvernement**

★3 (fi 6) (premier semestre, 3-0-0). Une introduction aux institutions gouvernementales du Canada et d'ailleurs. Sujets étudiés: constitutions, assemblées législatives, organes exécutifs, fonction publique, cours de justice, gouvernement fédéral et d'autres sujets choisis. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour POL S 100.

0 SC PO 102 Introduction à la politique

★3 (fi 6) (deuxième semestre, 3-0-0). Une introduction aux concepts et enjeux des phénomènes politiques. Sujets étudiés: pouvoir ou influence, démocratie, droits et libertés, idéologie politique, opinion publique, élections, partis politiques, groupes de pression et autres sujets choisis. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour POL S 100.

0 SC PO 220 Gouvernement et politique du Canada en tant que nation

★6 (fi 12) (aux deux semestres, 3-0-0). Structures et fonctions du Gouvernement du Canada et en particulier les Communes, le Sénat, le Cabinet, la Fonction publique, les partis politiques. Note: ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour POL S 221.

0 SC PO 261 Relations internationales I

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction au rôle de l'Etat au sein du système international ayant pour but de développer une connaissance des événements contemporains internationaux. Ce cours couvre la nature de la politique étrangère et la dynamique d'interaction entre les Etats.

0 SC PO 262 Relations internationales II

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction aux problèmes contemporains de relations internationales ayant pour but de développer une connaissance du système international. Ce cours porte sur le rôle des institutions internationales, des acteurs supra étatiques et non-étatiques, ainsi que certains enjeux liés à la mondialisation.

0 SC PO 270 Politique comparée

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction à des thèmes de politique comparée.

SC PO 320 La politique du système de santé au Canada

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Le développement du système de santé canadien, ses composantes législatives et philosophiques ainsi que son financement et son organisation; l'étude comparative des défis au système de santé canadien posés par les enjeux financiers, l'accès universel et les modes alternatifs. Notes :La priorité sera accordée aux étudiants du BScIn (bilingue).Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour POL S 321 ou 322.

0 SC PO 350 Femmes et politiques

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse de l'action politique des femmes à travers les revendications et la participation aux institutions étatiques. Les politiques et les représentations sociales. Théories féministes. Le cours est principalement axé sur le Canada et comporte un aspect comparatif. Préalable(s): SC PO 101 ou SC PO 102, ou l'approbation du Vice-doyen aux affaires académiques.

SC PO 423 Fédéralisme canadien

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse du développement et des théories du fédéralisme canadien. On étudiera en particulier les problèmes actuels du système fédéral. Préalable(s): SC PO 220 ou l'approbation du Vice-doyen aux affaires académiques.

SC PO 428 Gouvernement et politique des provinces

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude des structures, des fonctions et des processus de certains gouvernements provinciaux au Canada. Préalable(s): SC PO 220 ou POL S 221, ou l'approbation du Vice-doyen aux affaires académiques.

221.202 Science, Technology, and Society, STS

Office of Interdisciplinary Studies
Faculty of Arts

Undergraduate Courses

STS 200 Introduction to Studies in Science, Technology and Society

★3 (fi 6) (either term, 3-0-0). An examination of the interrelations of science, technology, society and environment, emphasizing an interdisciplinary humanities and social sciences perspective. Note: not to be taken by students with credit in INT D 200. [Faculty of Arts, Office for Interdisciplinary Studies]

STS 400 Advanced Topics in Science, Technology and Society

★3 (fi 6) (either term, 0-3s-0). This capstone course for the major in Science, Technology, and Society will approach selected topics in an interdisciplinary manner, applying the approaches of the social sciences and humanities. Prerequisites: STS 200, ANTHR 230, HIST 294, PHIL 265, C LIT 342 or consent of Instructor. [Faculty of Arts, Office for Interdisciplinary Studies]

STS 498 Historiography of Science and Technology: Problems and Methods

★3 (fi 6) (either term, 0-3s-0). Note: not to be taken by students with credit in INT D 498. [Faculty of Arts, Office for Interdisciplinary Studies]

221.203 Sciences de la Terre et de l'atmosphère, SCTA

Faculté Saint-Jean

Cours de 1er cycle

SCTA 101 Introduction à la géologie et à la géographie physique

★3 (fi 6) (premier semestre, 3-0-3). Introduction à l'origine de la Terre et du système solaire. Minéraux et roches; évolution géologique; plaques tectoniques et géologie structurale. Environnements géomorphologiques et processus de surfaces: eaux, minéraux et ressources énergétiques. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour EAS 101 ou l'équivalent.

SCTA 102 Introduction aux sciences de l'environnement

★3 (fi 6) (deuxième semestre, 3-0-3). Bilan énergétique de la Terre, étude du système de la circulation atmosphérique et de son influence sur la température, la précipitation, l'humidité et le vent. Circulation des courants marins et de l'atmosphère. Étude des océans, de l'hydrosphère, de la cryosphère et de la biosphère. Changements climatiques et étude de l'évolution des climats. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour EAS 102 ou l'équivalent.

SCTA 103 Histoire de la Terre et de la vie

★3 (fi 6) (deuxième semestre, 3-0-3). Processus biologiques et géologiques fondamentaux. Géologie structurale et plaques tectoniques; datation numérique et relative; reliefs; fossiles; origine et évolution de la vie. Histoire de la géologie terrestre: système solaire, formation des continents et océans. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour EAS 103 ou l'équivalent.

SCTA 190 Organisation spatiale de l'activité humaine

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction à la mobilité, à l'interaction spatiale et à l'organisation spatiale de l'activité humaine en milieu rural ou urbain; théories et techniques géographiques.

SCTA 191 Cultures, paysages et sociétés

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Importance de la distribution de la population sur la terre. Lien entre la population et l'environnement physique et le développement de paysages culturels. Populations, peuplement, patrons et procédés culturels. Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour GEOGE 151.

221.204 Sciences infirmières, SC INF

Faculty of Nursing

Undergraduate Courses

SC INF 217 Introduction aux sciences infirmières

★6 (fi 12) (premier semestre, 2-4s-2). Une introduction à l'étude de sciences infirmières centrée sur la pratique professionnelle, et sur les soins communautaires et de longue durée (résidence assistée). L'accent est mis sur les communautés et client(e)s francophones. Préalables: ANATE 140, PHYSE 152. Concomitants: SC INF 218, NURS 306, et MICRE 133. Note: Ce cours est réservé aux étudiant(e)s du programme BSc. inf. bilingue.

SC INF 218 Introduction à la pratique infirmière

★6 (fi 12) (premier semestre, 0-0-14c). Pratique infirmière novice dans la communauté francophone, les centres de soins de longue durée et les résidences assistées. L'accent est mis sur la promotion de la santé des client(e)s dans toutes les phases de la vie. Préalables: ANATE 140, PHYSE 152. Concomitants: SC INF 217, NURS 306, et MICRE 133. Note: Ce cours est réservé aux étudiant(e)s du programme BSc inf. bilingue.

SC INF 406 Pratique infirmière en santé communautaire

★6 (fi 12) (premier semestre, 0-0-16c). Les étudiant(e)s auront l'occasion de mettre en pratique les concepts de sciences infirmières en santé communautaire. La pratique comprendra l'évaluation de la santé et des interventions avec les familles en attente d'un nouveau-né. Les étudiant(e)s développeront des compétences en évaluation de la famille et de la communauté, en communication thérapeutique, et dans la planification, la prestation et l'évaluation des interventions infirmières en santé communautaire. Préalables: NURS 215, 307 et 308. Concomitants: NURS 405. Note: Ce cours est réservé aux étudiant(e)s du programme BSc inf. bilingue. Les étudiant(e)s de ce programme ne doivent pas s'inscrire au cours NURS 406.

SC INF 495 Pratique infirmière VIII

★9 (fi 18) (deuxième semestre, 0-1s-34c en 10 semaines). Approche exhaustive et consolidée à la pratique infirmière professionnelle dans un champ d'intérêt de l'étudiant(e). Concomitant: NURS 494. Ce cours est réservé aux étudiant(e)s du programme BSc. inf. bilingue. Les étudiant(e)s de ce programme ne doivent pas s'inscrire au cours NURS 495.

221.205 Sciences sociales, SCSOC

Faculté Saint-Jean

Cours de 1er cycle

SCSOC 225 Méthodes de recherche en sciences sociales

★3 (fi 6) (l'un ou l'autre semestre, 3-0-2). Initiation à quelques notions d'épistémologie concernant les sciences sociales et à quelques méthodes de recherche; principaux critères de la méthode scientifique et distinction avec les sciences exactes; construction des hypothèses et analyse conceptuelle; planification de la recherche et utilisation des documents; techniques de l'entrevue participante, de l'échantillonnage et de l'analyse de contenu. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour SCSOC 321 ou SOC 315.

SCSOC 311 Histoire de la pensée politique et sociale I

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Survol historique et critique du développement de la pensée politique et sociale, de l'Antiquité à la Renaissance, en utilisant des textes choisis de quelques philosophes présocratiques (Héraclite, Parménide), Platon, Aristote, Boèce, Abélard, Thomas d'Aquin, Machiavel, Erasme.

SCSOC 312 Histoire de la pensée politique et sociale II

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude des principaux aspects de la pensée politique et sociale du XVIIe siècle à nos jours, centrée sur l'évolution du libéralisme, de ses différentes tendances et des réactions d'opposition qu'il a suscitées. Seront abordées les oeuvres de Hobbes, Locke, Montesquieu, Rousseau, Voltaire, Payne, Adam Smith, Tocqueville, Marx, Weber, Durkheim et Louis Hartz.

SCSOC 322 Statistiques pour les sciences sociales

★3 (fi 6) (l'un ou l'autre semestre, 3-0-2). Application des méthodes statistiques à certains problèmes en sciences sociales. Interprétation des données en termes de moyennes, de mesures de variabilité et de mesures de relation: études de la théorie de l'échantillonnage et des tests d'hypothèses statistiques. Note: Ce cours faisait partie de SCSOC 320. Préalable(s): Mathématiques pures 30 et SCSOC 225 ou l'approbation du Vice-doyen aux affaires académiques.

SCSOC 401 Concepts en sciences sociales

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse interdisciplinaire de concepts fondamentaux utilisés pour étudier la personne et les sociétés humaines, comme la culture, le langage, l'ethnie, l'autorité, l'idéologie, la classe, l'organisation, l'espace, la cognition, la production et la pénurie.

SCSOC 460 Recherche appliquée: les média

★6 (fi 12) (aux deux semestres, 208 heures). Stage de recherche appliquée dans les média. Formation en écriture, recherche, technologie de la communication, et autres. Préalable(s): une moyenne de 3.0. Les stagiaires sont sélectionnés en fonction de la qualité de leur dossier et du nombre de places disponibles.

221.206 Sciences socio-politiques, SCSP

Faculté Saint-Jean

Cours de 1er cycle**SCSP 520 Mémoire de Sciences socio-politiques**

★6 (fi 12) (aux deux semestres, 0-3s-0). Préparation du mémoire requis en quatrième année du programme de spécialisation en Sciences socio-politiques.

221.207 Slavic and East European Studies, SLAVDepartment of Modern Languages and Cultural Studies
Faculty of Arts**Notes**

- (1) None of these courses will fulfil the language-other-than-English requirement of the BA degree.
- (2) For related courses see listings under Polish (POLSH), Russian (RUSS) and Ukrainian (UKR).
- (3) For additional courses relating to the Soviet Union and its successor states, and Eastern Europe, see also entries under Comparative Literature (C LIT), Earth and Atmospheric Sciences (EAS), Economics (ECON), History (HIST), Political Science (POL S), and Sociology (SOC).
- (4) See also INT D 201, 202, 343, 344, 347, 439, 443, 444, 445, 447, 479, 487, and 499 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 SLAV 401 The Slavic Language Family**

★3 (fi 6) (either term, 3-0-0). Historical and contrastive study of the Slavic language family with emphasis on Polish, Russian and Ukrainian. Prerequisite: At least one year of a Slavic language.

0 SLAV 420 Old Church Slavic

★3 (fi 6) (either term, 3-0-0). An introduction to the grammar of the oldest Slavic texts, with selected readings. Prerequisite: RUSS 202 or UKR 204 or POLSH 202 or consent of Department.

0 SLAV 467 Slavic Romanticism

★3 (fi 6) (either term, 3-0-0). Romantic movement in Slavic literatures concentrating primarily on the works of Mickiewicz, Pushkin and Shevchenko. English translations of texts available for those not majoring in Slavic.

0 SLAV 468 Nikolai Gogol/Mykola Hohol'

★3 (fi 6) (either term, 3-0-0). Gogol as a cultural icon in the history of Russian and Ukrainian literatures. His life and works against the background of Russian Imperial cultural developments and the processes of nation building in the first half of the 19th century. English translations of texts available for those not majoring in Slavic.

0 SLAV 469 Futurism: East and West

★3 (fi 6) (either term, 3-0-0). A comparative examination of the Futurist movement in Poland, Russia and Ukraine against the background of Italian Futurism. English translations of texts available for those not majoring in Slavic.

0 SLAV 499 Special Topics

★3 (fi 6) (either term, 3-0-0).

Graduate Courses

Note: See also INT D 543 and 544 for courses offered by more than one Department or Faculty and which may be taken as an option or as a course in this discipline.

SLAV 512 Old East Slavic Literature and Culture

★3 (fi 6) (either term, 3-0-0). Reading and analysis of major literary monuments from the 10th to 14th centuries. Prerequisite: consent of Department.

SLAV 519 Comparative and Typological Slavic Linguistics

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

SLAV 520 Old Church Slavic

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

SLAV 564 History and Structure of the East Slavic Languages

★3 (fi 6) (either term, 3-0-0). Specific problems in Russian, Ukrainian, and Belarusian. Prerequisite: consent of Department.

SLAV 565 History and Structure of the West Slavic Languages

★3 (fi 6) (either term, 3-0-0). Specific problems in Polish, Czech, Slovak, and Sorbian. Prerequisite: consent of Department.

SLAV 566 History and Structure of the South Slavic Languages

★3 (fi 6) (either term, 3-0-0). Specific problems in Bulgarian, Macedonian, Slovene, and the successor languages to Serbo-Croatian. Prerequisite: consent of Department.

SLAV 567 Slavic Romanticism

★3 (fi 6) (either term, 3-0-0). Romantic movement in Slavic literatures concentrating primarily on the works of Mickiewicz, Pushkin and Shevchenko. Prerequisite: consent of Department.

SLAV 568 Nikolai Gogol/Mykola Hohol'

★3 (fi 6) (either term, 3-0-0). Gogol as a cultural icon in the history of Russian and Ukrainian literatures. His life and works against the background of Russian Imperial cultural developments and the processes of nation building in the first half of the 19th century. Prerequisite: consent of Department.

SLAV 569 Futurism: East and West

★3 (fi 6) (either term, 3-0-0). A comparative examination of the Futurist movement in Poland, Russia and Ukraine against the background of Italian Futurism. Prerequisite: consent of Department.

SLAV 570 Women's Writing After the Fall of Communism

★3 (fi 6) (either term, 3-0-0). The impact of political and economic changes on women's writing in the Slavic countries since 1989. Prerequisite: consent of Department.

SLAV 599 Directed Reading

★3 (fi 6) (either term, 3-0-0).

SLAV 626 Language, Culture and Nation

★3 (fi 6) (either term, 3-0-0). Competing discourses used by Russians and Ukrainians for constructing their respective cultures in an imperial setting.

SLAV 697 Topics in Slavic Folklore

★3 (fi 6) (either term, 3-0-0).

SLAV 698 Topics in Slavic Linguistics

★3 (fi 6) (either term, 3-0-0).

SLAV 699 Topics in Slavic Literature

★3 (fi 6) (either term, 3-0-0).

SLAV 900 Directed Research Project

★6 (fi 12) (variable, unassigned).

221.208 Sociologie, SOCIE

Faculté Saint-Jean

Cours de 1er cycle**0 SOCIE 100 Introduction à la sociologie**

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Examen de la théorie, des méthodes et de la substance de la sociologie. Étude de la façon dont les sociétés comprennent la culture, la socialisation, la déviance, la stratification et les groupes. Le procès de transformation sociale par les mouvements sociaux, l'industrialisation, etc. Note: Les étudiants en 3e année ou plus avancés devraient prendre SOC 300 plutôt que SOCIE 100.

0 SOCIE 101 La société canadienne

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Le développement de la société canadienne: comprenant des sujets comme les rapports franco-anglais, le régionalisme, les rapports avec les États-Unis, les droits des autochtones, la mosaïque canadienne, les inégalités et les conflits. Préalable(s): SOCIE 100 ou SOC 300.

0 SOCIE 225 Criminologie

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse critique de la notion de crime et examen des diverses tentatives d'explication du crime à travers l'histoire de la criminologie. Analyse des processus de construction sociale sous-jacents à l'identité dite criminelle. Cours à distance. Voir \$200.

0 SOCIE 260 Inégalité et stratification sociales

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Introduction à l'étude des inégalités sociales structurées et de la pauvreté; approches théoriques majeures; conclusions des études empiriques clés, en mettant l'accent sur le Canada. Préalable(s): SOCIE 100 ou SOC 300.

0 SOCIE 301 Sociologie des rapports de sexes

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Etude comparée des rapports entre les femmes et les hommes dans certaines sociétés, en mettant l'accent sur le

Canada contemporain; étude des rôles spécifiques à chaque sexe, et des théories relatives à leurs origines; recherche sociologique récente sur l'importance de la division sexuelle de la société.

01 SOCIE 368 Etude des minorités et des groupes ethniques

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Analyse de processus sociaux qui permettent le développement et la compréhension du statut des minorités. Etude de cas des relations entre les groupes ethniques et minoritaires fondée sur les travaux réalisés à l'échelle nationale. Préalable(s): SOCIE 100 ou SOC 300.

01 SOCIE 402 Choix de sujets en sociologie

★3 (fi 6) (l'un ou l'autre semestre, 3-0-0). Le contenu varie d'une année à l'autre. Les sujets sont annoncés avant la période d'inscription. Préalable(s): SOCIE 101 ou SOC 300.

221.209 Sociology, SOC

Department of Sociology
Faculty of Arts

Note: See also INT D 393 and 394 for courses which are offered by more than one Department or Faculty and which may be taken as options or as a course in this discipline.

Undergraduate Courses

01 SOC 100 Introductory Sociology

★3 (fi 6) (either term, 3-0-0). An examination of the theory, methods, and substance of Sociology. The study of how societies are shaped including economy, culture, socialization, deviance, stratification, and groups. The process of social change through social movements, industrialization, etc. Prerequisite: First or second year standing. Note: Not to be taken by students with credit in SOC 300. Third-year or more advanced students must take SOC 300.

01 SOC 101 Canadian Society

★3 (fi 6) (either term, 3-0-0). Development of Canadian society: including such topics as French-English relations, regionalism, relations with the USA, native rights, Canadian mosaic, inequalities, and conflicts. Prerequisite: One of SOC 100 or 300.

01 SOC 102 Social Problems

★3 (fi 6) (either term, 3-0-0). The definition/development of social problems and an examination of selected structural issues in various societies, including inequality, population growth, environment, and human rights. Prerequisite: One of SOC 100 or 300.

01 SOC 210 Introduction to Social Statistics

★3 (fi 6) (either term, 3-0-2). Statistical reasoning and techniques used by sociologists to summarize data and test hypotheses. Topics include describing distributions, cross-tabulations, scaling, probability, correlation/regression and non-parametric tests. Prerequisite: One of SOC 100 or 300. Note: This course is intended primarily for students concentrating in Sociology.

01 SOC 212 The Sociological Imagination

★3 (fi 6) (either term, 3-0-0). What is society? What is sociology? An introduction to sociological theorizing. Prerequisite: One of SOC 100 or 300.

01 SOC 224 Sociology of Deviance and Conformity

★3 (fi 6) (either term, 3-0-0). Processes involved in defining behavior patterns as deviant; factors which influence conformity and change; examination of such behavior patterns as sexuality, alcoholism, drug use, and selected mental and physical disabilities; public reaction to such behavior. Prerequisite: One of SOC 100 or 300.

01 SOC 225 Criminology

★3 (fi 6) (either term, 3-0-0). Examination and attempted explanation of crime and juvenile delinquency, with an analysis of the social processes leading to criminal behavior. Prerequisite: One of SOC 100 or 300.

01 SOC 231 Introduction to Theories of Society

★3 (fi 6) (either term, 3-0-0). Classical and contemporary perspectives on society and human nature. Problems of comparing and assessing social theories, e.g. issues such as the individual versus society, idealism versus materialism, conflict versus consensus. Prerequisite: One of SOC 100 or 300. Note: Not to be taken by students with credit in SOC 332 or 333 or 334. SOC 231 is not to be taken by Sociology majors, as they are required to take SOC 212 and one of 332 or 333 or 334.

01 SOC 241 Social Psychology

★3 (fi 6) (either term, 3-0-0). An introduction to the study of individual and group behavior observed in social processes. Prerequisites: One of SOC 100 or 300, or PSYCO 104 or 105. Note: SOC 241 and PSYCO 241 may not both be taken for credit.

01 SOC 242 Biologically Coordinated Social Psychology

★3 (fi 6) (either term, 3-0-0). A biologically consistent introduction to the study of individual and group behavior observed in social processes. Prerequisite: One of SOC 100, SOC 300, PSYCO 104, PSYCO 105, EDPY 200.

01 SOC 251 Population and Society

★3 (fi 6) (either term, 3-0-0). Population trends, issues and concerns in Canada and international contexts; social and cultural factors underlying fertility, mortality, and migration; urbanization; population change; population theory; and demographic analysis.

01 SOC 260 Inequality and Social Stratification

★3 (fi 6) (either term, 3-0-0). Introduction to the study of structured social inequalities and poverty; major theoretical approaches; findings from key empirical studies, with emphasis on Canada. Prerequisite: One of SOC 100 or 300.

01 SOC 269 Introductory Sociology of Globalization

★3 (fi 6) (either term, 0-3s-0). Introduces various aspects of globalization and its impact on our lives at local, national, and international levels. Prerequisite: One of SOC 100 or 300.

01 SOC 271 Introduction to the Family

★3 (fi 6) (either term, 3-0-0). An introduction to the study of family relationships and their variant forms with focus on mate selection, couple, kin, age, and gender dynamics, family dissolution or reconstitution and change. A comparative approach with emphasis on families in Canada. Prerequisite: One of SOC 100 or 300.

01 SOC 300 Principles of Sociology

★3 (fi 6) (either term, 3-0-0). Basic concepts and principles of Sociology for students with advanced standing. Prerequisite: Third-year or more advanced standing. Notes: May not be taken for credit by students with credit in SOC 100. First or second-year students must take SOC 100.

01 SOC 301 Sociology of Gender

★3 (fi 6) (either term, 3-0-0). Comparative study of sex roles in selected societies with an emphasis upon contemporary Canada; sex-specific role behaviors and theories regarding their origin; recent sociological research on the social effects of sex roles. Prerequisite: One of SOC 100 or 300.

SOC 308 Honors Seminar

★3 (fi 6) (either term, 0-3s-0). Introduction to specialization areas in Sociology and Department members involved in teaching and research in these areas. Prerequisite: consent of the Honors Advisor. Note: Restricted to Sociology Honors students. Required first term after entering Sociology Honors Program.

01 SOC 315 Introduction to Social Methodology

★3 (fi 6) (either term, 3-0-2). Research design, data collection, and data processing strategies used by sociologists. Topics include research values and ethics, reliability and validity, experimentation, survey research techniques, historical methods, field research, and content analysis. Prerequisite: SOC 210.

01 SOC 321 Youth, Crime and Society

★3 (fi 6) (either term, 3-0-0). A survey of the understanding and treatment of youth in the Canadian criminal justice system. Prerequisite: SOC 225.

01 SOC 327 Criminal Justice Administration in Canada

★3 (fi 6) (either term, 3-0-0). The evolution and evaluation of the theories of punishment; the law, the police and the courts; penal and reformatory institutions; probation and parole; experiments in reform and rehabilitation. Prerequisite: SOC 225.

01 SOC 332 Sociological Theorizing: Modernity

★3 (fi 6) (either term, 3-0-0). Using a range of classical and contemporary theories, examines what, if anything, is 'new' in 'modern' society. Prerequisite: SOC 212 or consent of Department.

01 SOC 333 Sociological Theorizing: The Subject

★3 (fi 6) (either term, 3-0-0). Using a range of classical and contemporary theories, examines the nature of social subjectivities (e.g., male/female, black/white, straight/gay etc.). Prerequisite: SOC 212 or consent of Department.

01 SOC 334 Sociological Theorizing: Power

★3 (fi 6) (either term, 3-0-0). Using a range of classical and contemporary theories, examines power in society. Prerequisite: SOC 212 or consent of Department.

01 SOC 342 Socialization

★3 (fi 6) (either term, 3-0-0). The processes of social development and how socio-cultural influences affect the individual from infancy to old age. Prerequisite: SOC 241 or PSYCO 241.

01 SOC 343 Collective Formations

★3 (fi 6) (either term, 3-0-0). Analyses of how people form loosely collective formations in relation to contested events and social concerns. Prerequisite: One of SOC 100, 300, 241, or PSYCO 241.

01 SOC 344 Media Culture and Society

★3 (fi 6) (either term, 3-0-0). Critical examination of the central issues and debates about the media-society relationship. Emphasis on the cultural, political and economic aspects of various media forms/genres, media theories, and audience considerations. Note: Not to be taken by students with credit in SOC 346 and not to be used as the prerequisite for SOC 444 or 477.

01 SOC 345 Cultural Studies

★3 (fi 6) (either term, 3-0-0). Introduction to theoretical paradigms, methodologies

and fundamental concepts of postmodern sociology and cultural studies. Prerequisite: One of SOC 100 or 300.

0 SOC 346 Media and the Production of Culture

★3 (fi 6) (either term, 3-0-0). Study of the media as cultural industries that contribute to the construction of meaning in contemporary societies. Prerequisite: SOC 212 or 345 or consent of Instructor. Note: This is the prerequisite for SOC 444. SOC 346 may not be taken by students with credit in SOC 344.

0 SOC 352 Population, Social, and Economic Development

★3 (fi 6) (either term, 3-0-0). Principles of growth and development in their historical context with regard to developed countries, such as Canada, and in their contemporary context with regard to underdeveloped countries. The interrelationships of economic, social and demographic variables in the process of development. Problems of urbanization and industrialization; factors influencing social change in the modern West or Asia or Latin America or Africa. Prerequisite: One of SOC 100 or 300.

0 SOC 363 Sociology of Work and Industry

★3 (fi 6) (either term, 3-0-0). Sociological analysis of the changing nature and content of work, its diversity of industrial contexts and organizational forms, and its consequences for individuals and society, from Canadian and comparative perspectives. Prerequisite: One of SOC 100 or 300. Not open to students with credit in SOC 366.

0 SOC 366 People in Industry

★3 (fi 6) (either term, 3-0-0). Introduction to the sociological analysis of the attitudes and behavior of employees in work organizations, with emphasis on the contemporary Canadian situation. Note: Restricted to Engineering students only. Not open to students with credit in SOC 363.

0 SOC 369 Sociology of Globalization

★3 (fi 6) (either term, 0-3s-0). Critically examines various aspects of globalization from the perspective of world-system studies. Prerequisite: SOC 269.

0 SOC 370 Racism and Decolonization

★3 (fi 6) (either term, 0-3s-0). Examines decolonizing cultures with an emphasis on racism and its connection to other forms of social inequality, capitalism, multiculturalism and globalization. Prerequisite: SOC 212 or 269.

0 SOC 372 Sociology of Canadian Development

★3 (fi 6) (either term, 3-0-0). Approaches to understanding the dynamics of Canadian society such as staples, elites, social movements and political economy, and critical theory. Prerequisite: SOC 101.

0 SOC 375 Sociology of Aging

★3 (fi 6) (either term, 3-0-0). Aging as a socio-cultural phenomenon. Includes aging in relation to the self-concept, family, religion, politics, health, retirement and leisure, housing, attitudes toward death, with particular emphasis on Canadian society. Prerequisite: One of SOC 100 or 300.

0 SOC 376 Sociology of Religion

★3 (fi 6) (either term, 3-0-0). Religion as a social phenomenon; theories of religious behavior; religious authority and leadership; the individual's religion and the interplay with other spheres of social life; the role of religion in relation to social change and social integration. Prerequisite: One of SOC 100 or 300.

0 SOC 377 Sociology of Youth

★3 (fi 6) (either term, 3-0-0). The comparative analysis of youth in various types of societies, with special emphasis on Canada including investigation of social structures and processes influencing behavior of young people.

0 SOC 382 Sociology of Health and Illness

★3 (fi 6) (either term, 3-0-0). The distribution of health and illness in human populations, the social psychology of health and illness, and the social organization of health care. Prerequisite: One of SOC 100 or 300.

0 SOC 389 Gender, Families and Policy

★3 (fi 6) (either term, 3-0-0). Theoretical and empirical dimensions of social policies related to gender and families. Prerequisite: SOC 271 or 301 or consent of Instructor.

SOC 399 Field Placement in Criminology

★6 (fi 12) (either term, 0-16s-0). Supervised work experience and seminar sessions. Note: Restricted to BA (Criminology) students.

SOC 401 Honors Individual Study

★3 (fi 6) (either term, 3-0-0). Individual study opportunity on topics for which no specific course is currently offered by the Department. Course may be taken once only. Prerequisites: consent of instructor and Honors Advisor. Note: Restricted to Sociology Honors students. Closed to web registration.

0 SOC 402 Selected Topics in Sociology

★3 (fi 6) (either term, 3-0-0). Content varies from year to year. Topics announced prior to registration period. Prerequisite: One of SOC 100 or 300.

0 SOC 403 Individual Study

★3 (fi 6) (either term, 3-0-0). Individual study opportunity on topics for which no specific course is currently offered by the Department. Prerequisite: Consent of Instructor and the Undergraduate Advisor.

SOC 407 Honors Essay I

★3 (fi 6) (either term, 3-0-0). Literature review and proposal stage of Honors Essay completed in SOC 408. Prerequisites: consent of instructor and Honors Advisor. Note: Restricted to Sociology Honors students. Closed to web registration.

SOC 408 Honors Essay II

★3 (fi 6) (either term, 3-0-0). Prerequisites: SOC 407 and consent of instructor and Honors Advisor. Note: Restricted to Sociology Honors students. Closed to web registration.

0 SOC 410 Multi-Variable Sociological Analysis

★3 (fi 6) (either term, 3-0-2). Further study of the use of multi-variable tabular analysis and multiple correlation/regression in social research. Special emphasis on different types of regression analysis and the causal analysis of social data. Prerequisites: SOC 210 and 315.

0 SOC 418 Qualitative Methods in Social Research

★3 (fi 6) (either term, 3-0-2). Further study of the design and evaluation of qualitative research strategies. Topics include participant observation, ethnomethodology, unobtrusive measures, and document analysis. Prerequisites: SOC 210 and 315.

0 SOC 420 Selected Topics in Criminal Justice

★3 (fi 6) (either term, 3-0-0). Topics may vary annually. Consult Department or instructor prior to registration. Prerequisites: SOC 225 and a 400-level Sociology course in Criminology.

0 SOC 421 Sociology of Punishment

★3 (fi 6) (either term, 3-0-0). Historical and contemporary social underpinnings of punishment in the criminal justice apparatus. Prerequisites: SOC 225 and 327.

0 SOC 422 Native People and the Canadian Criminal Justice System

★3 (fi 6) (either term, 3-0-0). Involvement of Native people as offenders and service-providers in the Canadian criminal justice system. Topics include antecedent conditions, policing, courts, corrections, victimization, crime prevention, and special offender groups. Prerequisite: SOC 327. Note: Not to be taken by students with credit in SOC 402 when dealing with native people and the Canadian criminal justice system.

0 SOC 423 Crime and Public Policy

★3 (fi 6) (either term, 3-0-0). Social responses to criminal behavior, including general public attitudes and government legislation. Topics include police strategies; sentencing options; prediction research, and social prevention. Prerequisites: SOC 225 and 327.

0 SOC 424 Social Structure and Crime

★3 (fi 6) (either term, 3-0-0). Theoretical and empirical analysis of the effects of such variables as urbanization, age, gender and class stratification, the community, and the economy on crime rates; consideration of cross-national differences. Prerequisite: SOC 225 and SOC 315.

0 SOC 425 Research Problems in Criminology

★3 (fi 6) (either term, 3-0-0). Examination of selected research issues in criminology, such as measurement of crime, research design, causal analysis and data interpretation. Prerequisite: SOC 225.

0 SOC 426 Agencies of Social Control

★3 (fi 6) (either term, 3-0-0). The study of the way agencies of social control carry out their tasks, including the dynamics within and the interaction among the agencies themselves. Prerequisite: SOC 225.

0 SOC 428 Social Theory, Crime and Justice

★3 (fi 6) (either term, 3-0-0). Key social theories that describe, explain, challenge or deconstruct 'crime', and theoretical critiques of contemporary crime-control arrangements. Prerequisite: One of SOC 332, 333 or 334.

0 SOC 429 Sociology of Law

★3 (fi 6) (either term, 3-0-0). Conceptual and practical points of convergence between legal and social theory; processes by which legal rules are created, maintained and changed; law as an instrument of social control and change. Prerequisite: SOC 225.

0 SOC 430 Women and Crime

★3 (fi 6) (either term, 0-3s-0). Key concepts, issues and debates with respect to women in the criminal justice system as offenders, defendants, prisoners, and victims. Prerequisite: SOC 225.

0 SOC 437 The Sociology of Knowledge

★3 (fi 6) (either term, 3-0-0). Study of the hypothesis that the forms of social life condition knowledge. Analysis of the versions of this thesis offered by such scholars as: Vico, Marx-Engels, Nietzsche, Scheler, Pareto, Durkheim, Mannheim, and more recent writers. Assessment of their proposed solutions to the social limitations imposed on knowing. Prerequisite: One of SOC 231, 332, 333, 367 or equivalent.

0 SOC 440 Theories in Social Psychology

★3 (fi 6) (either term, 3-0-0). Current theories and related research in social psychology. Prerequisite: SOC 241 or PSYCO 241.

SOC 441 Sociology of Religious Sects

★3 (fi 6) (either term, 3-0-0). Examination of conversion, membership maintenance, member disaffiliation, and resource acquisition strategies among religious sects. Emphasis on Canadian examples. Prerequisites: SOC 224 and SOC 376.

SOC 442 Reinforcement and Social Behavior

★3 (fi 6) (either term, 3-0-1). Operant principles applied to the fundamental processes of social behavior. An examination of critical studies utilizing a reinforcement perspective. Prerequisite: SOC 241 or PSYCO 241.

SOC 443 Ethnomethodology

★3 (fi 6) (either term, 3-0-0). Study of everyday life emphasizing the methods people use to construct a sense of order and meaning. Prerequisite: SOC 241.

SOC 444 Critical Media Studies

★3 (fi 6) (either term, 3-0-0). Analysis of media texts as social forms with emphasis on television, advertising, and emerging media technologies. Prerequisite: SOC 346.

SOC 445 Built Environments

★3 (fi 6) (either term, 0-3s-0). The significance of social spaces as constituted by architecture, design and artifacts of material culture. Prerequisite: SOC 345 or permission of the Instructor.

SOC 446 Social Psychology and Human Factors Research

★3 (fi 6) (either term, 3-0-0). Application of social psychological theories and methods to the investigation of sociological issues in human factors research. Topics include environmental, health care, legal, and organizational analysis. Prerequisites: SOC 241 and 315.

SOC 450 Techniques of Demographic Analysis

★3 (fi 6) (either term, 3-0-0). Methods of demographic analysis as applied to census, vital statistics, and surveys. Prerequisite: SOC 251 or consent of Instructor.

SOC 451 Sociology of Human Fertility

★3 (fi 6) (either term, 3-0-0). Emphasis on the social, social-psychological, and cultural correlates of human fertility in historical and contemporary contexts; reproductive health programs; prediction and control. Prerequisite: SOC 251 or consent of Instructor.

SOC 452 Mortality and Population Health

★3 (fi 6) (either term, 3-0-0). Analysis of variations, trends and patterns of human mortality and morbidity in historical and contemporary contexts; comparisons of the experiences of Canada, other industrialized nations and developing countries with respect to causes of death and illness; demographic aspects of aging and its relationship to morbidity and mortality health surveys and policies. Prerequisite: SOC 251.

SOC 453 The Urban Community

★3 (fi 6) (either term, 3-0-0). An examination of the urban community in Canada and other countries from the ecological, social psychological, and social organizational perspectives. Appraisal of community studies. Introduction to community research priorities and methodologies. Prerequisite: SOC 353.

SOC 455 Sociology of Human Migration

★3 (fi 6) (either term, 3-0-0). Internal and international migration and its relationship to resources, economic opportunities, societal organization, and urbanization in Canada and other countries; determinants and consequences of migration; adjustment of migrants and policy issues. Prerequisite: SOC 251 or consent of Instructor.

SOC 459 The Demography of Marriage and Family

★3 (fi 6) (either term, 3-0-0). Review and analysis of the demographic interrelationships of fertility, mortality, and migration with marriage and the family; a cross-cultural review of historical trends, contemporary patterns and future implications; emphasis on statistical measurement, family planning and policy in the Canadian setting. Prerequisite: SOC 271.

SOC 461 Sociology of Art

★3 (fi 6) (either term, 3-0-0). A sociological study of art forms including painting, literature, music, and architecture; cross-cultural analysis of the roles of the artist; the relationship of art forms and movements to different social conditions and social change. Prerequisite: One of SOC 100, or 300.

SOC 462 Science and Society

★3 (fi 6) (either term, 3-0-0). Factors in the development of the cognitive and organizational domain of science; interrelations between science and major societal institutions and culture; the future of science and the future of society. Prerequisite: One of SOC 231, 332, 333 or 367.

SOC 466 Selected Topics in Comparative Societies

★3 (fi 6) (either term, 3-0-0). Comparative studies of various regions, cultures and societies. Topics may vary annually. Prerequisite: One of SOC 100 or 300.

SOC 469 Selected Topics in Globalization

★3 (fi 6) (either term, 0-3s-0). Topics may vary. Consult department prior to registration. Prerequisite: SOC 369 or consent of Instructor.

SOC 473 Sociology of Death and Dying

★3 (fi 6) (either term, 3-0-0). Comparative examination of death and dying in socio-cultural contexts, including theoretical and methodological issues. Prerequisite: SOC 241 or 375.

SOC 475 Advanced Sociology of Aging

★3 (fi 6) (either term, 3-0-0). In-depth examination of selected theoretical approaches, methodological issues, and topics of substantive concern in the study of aging and the aged. Prerequisite: SOC 375.

SOC 476 Religion and Societies

★3 (fi 6) (either term, 3-0-0). A comparative survey of the major world religions in interaction with the socioeconomic and political structures of various societies. Prerequisite: SOC 376.

SOC 477 Media and Cultural Globalization: Theory and Practice

★3 (fi 6) (either term, 0-3s-0). How global flows of people, information, popular entertainment and consumer culture contribute to collective social identities at the local level. Prerequisites: SOC 212 or 269 or 346 or consent of the instructor. Note: Not open to students with credit in SOC 365.

SOC 483 Social Psychology of Health and Illness

★3 (fi 6) (either term, 3-0-0). Social psychological factors in health and illness and medical care, including attitudes, beliefs, roles, socialization, and interpersonal processes. Prerequisite: SOC 382.

SOC 486 Sociology of Mental Illness

★3 (fi 6) (either term, 3-0-0). Sociological aspects of mental health and illness. Includes historical perspectives, diagnostic issues, and perspectives on causation and treatment. Prerequisite: SOC 224 or 382. Note: Not to be taken by students with credit in SOC 474.

SOC 489 Population and Social Policy

★3 (fi 6) (either term, 3-0-0). The relationship between population phenomena and social policy interventions. Prerequisite: SOC 251 or consent of Instructor.

SOC 490 Sociology and Public Policy

★3 (fi 6) (either term, 3-0-0). Past and present relationship among sociology, social research and social needs, including the impact of sociological research on public policy formation, program development and implementation and program assessment. Prerequisite: ★12 in Sociology.

SOC 491 Gender Studies

★3 (fi 6) (either term, 3-0-0). Advanced study of theoretical and methodological issues in the social stratification of gender roles and statuses. Prerequisite: SOC 301.

SOC 499 Advanced Field Placement in Criminology

★6 (fi 12) (either term, 0-16s-0). Supervised work experience and seminar sessions. Prerequisite: SOC 399. Note: Restricted to BA (Criminology) students.

Graduate Courses

Note: See also INT D 593 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.

SOC 503 Conference Course in Sociology for Graduate Students

★3 (fi 6) (first term, 3-0-0).

SOC 504 Conference Course in Sociology for Graduate Students

★3 (fi 6) (second term, 3-0-0).

SOC 509 Multi-Variable Sociological Analysis

★3 (fi 6) (either term, 3-0-2). Prerequisites: SOC 210 and 315. Note: Not to be taken by students with credit in SOC 411 or 410.

SOC 515 Quantitative Methods in Social Research

★3 (fi 6) (either term, 3-0-2). Prerequisites: SOC 210 and 315 or equivalent. Note: Not to be taken by students with credit in SOC 412 or 417. Not available for credit for students with credit in R SOC 415.

SOC 518 Qualitative Methods in Social Research

★3 (fi 6) (either term, 3-0-2). Prerequisite: SOC 418 or equivalent or permission of Instructor.

SOC 519 Comparative and Historical Methods in Sociological Research

★3 (fi 6) (either term, 3-0-2). Prerequisites: SOC 210 and 315 or equivalent. Note: Not to be taken by students with credit in SOC 419.

SOC 524 Advanced Field Placement in Criminal Justice

★6 (fi 12) (either term, 0-40c-0). Prerequisite: consent of Department. Note: restricted to MA (Criminal Justice) students.

SOC 525 Seminar in Criminal Justice

★3 (fi 6) (either term, 0-3s-0).

SOC 526 Seminar in Criminological Theory

★3 (fi 6) (either term, 0-3s-0).

SOC 531 Seminar in the History of Sociological Thought

★3 (fi 6) (either term, 0-3s-0).

SOC 533 Research Design

★3 (fi 6) (second term, 0-3s-0).

SOC 535 Seminar in Contemporary Sociological Theory

★3 (fi 6) (either term, 0-3s-0). Prerequisite: SOC 333.

SOC 540 Seminar in Social Psychology

★3 (fi 6) (either term, 0-3s-0). Prerequisite: SOC 241.

SOC 543 Culture and Communication

★3 (fi 6) (either term, 0-3s-0).

SOC 545 Biologically Coordinated Sociology

★3 (fi 6) (either term, 0-3s-0).

SOC 552 Mortality and Population Health

★3 (fi 6) (either term, 3-0-0). Prerequisite: SOC 251. Note: Not to be taken by students with credit in SOC 452.

SOC 554 Sociology of Human Migration

★3 (fi 6) (either term, 3-0-0). Prerequisite: SOC 251. Note: Not to be taken by students with credit in SOC 455.

SOC 557 Sociology of Human Fertility

★3 (fi 6) (either term, 3-0-0). Prerequisite: SOC 251. Note: Not to be taken by students with credit in SOC 451.

SOC 558 Techniques of Demographic Analysis

★3 (fi 6) (either term, 3-0-0). Prerequisite: SOC 251. Note: Not to be taken by students with credit in SOC 450.

SOC 559 Seminar in Demography of Marriage and the Family

★3 (fi 6) (either term, 0-3s-0).

SOC 565 Seminar in Work

★3 (fi 6) (either term, 0-3s-0).

SOC 568 Seminar in Ethnic and Minority Relations

★3 (fi 6) (either term, 0-3s-0).

SOC 576 Seminar in Sociology of Religion

★3 (fi 6) (either term, 0-3s-0).

SOC 580 Colonialism, Post-colonialism and Globalization

★3 (fi 6) (either term, 0-3s-0).

SOC 603 Conference Course

★3 (fi 6) (first term, 3-0-0).

SOC 604 Conference Course

★3 (fi 6) (second term, 3-0-0).

SOC 605 Seminar in Teaching and Professional Skills

★0 (fi 1) (either term, unassigned).

SOC 606 Special Topics I

★1.5 (fi 3) (either term, 0-1.5s-0).

SOC 607 Special Topics II

★1.5 (fi 3) (either term, 0-1.5s-0).

SOC 608 Advanced Research Seminar

★1.5 (fi 3) (either term, 0-1.5s-0).

SOC 609 Multivariate Analysis

★3 (fi 6) (first term, 3-0-0). Prerequisites: SOC 509 and 515 or 410 and 417 or equivalent. Note: Formerly SOC 510. Not to be taken by students with credit in SOC 511 or 510.

SOC 616 Structural Equation Modeling with LISREL

★3 (fi 6) (either term, 3-0-0). Prerequisite: SOC 609.

SOC 619 Advanced Methodological Issues

★1.5 (fi 3) (either term, 0-1.5s-0).

SOC 622 Topics in Criminology and Deviance

★3 (fi 6) (either term, 0-3s-0).

SOC 630 Psychoanalytic Social Theory

★3 (fi 6) (either term, 0-3s-0).

SOC 631 Seminar in Advanced Sociological Theory

★3 (fi 6) (either term, 0-3s-0).

SOC 632 Seminar in Theory Construction

★3 (fi 6) (either term, 0-3s-0).

SOC 633 Advanced Theoretical Issues

★1.5 (fi 3) (either term, 0-1.5s-0).

SOC 640 Social Policy

★3 (fi 6) (either term, 0-3s-0).

SOC 656 Topics in Environmental Sociology

★3 (fi 6) (either term, 0-3s-0).

SOC 660 Topics in Canadian Society

★3 (fi 6) (either term, 0-3s-0).

SOC 670 Sociology of Gender and Family

★3 (fi 6) (either term, 0-3s-0).

SOC 672 Social Structure and Public Policy

★3 (fi 6) (either term, 0-3s-0).

SOC 675 Seminar in the Sociology of Aging

★3 (fi 6) (either term, 0-3s-0).

SOC 676 Globalization, Religion and Fundamentalisms

★3 (fi 6) (either term, 0-3s-0).

SOC 683 Seminar in the Sociology of Health and Illness

★3 (fi 6) (either term, 0-3s-0).

SOC 900 Directed Research Project

★3 (fi 6) (variable, unassigned).

221.210 Soil Science, SOILS

Department of Renewable Resources

Faculty of Agriculture, Forestry, and Home Economics

Note: See also Environmental and Conservation Sciences (ENCS), Forest Science (FOR), Plant Science (PL SC), Renewable Resources (REN R), and Interdisciplinary (INT D) Undergraduate Courses listings for related courses.

The following courses were renumbered effective 1996/97:

Old	New	Old	New
SOILS 425	REN R 425	SOILS 545	REN R 545

Undergraduate Courses

SOILS 210 Introduction to Soil Science and Soil Resources

★3 (fi 6) (first term, 3-0-3/2). Elementary aspects of soil formation, soil occurrence in natural landscapes, soil classification, soil resource inventory; basic morphological, biological, chemical, and physical characteristics employed in the identification of soils and predictions of their performance in both managed and natural landscapes. Prerequisite: Must have completed a university-level course in life or natural sciences. A university-level chemistry course is strongly recommended.

SOILS 420 Soil Formation and Landscape Processes

★3 (fi 6) (first term, 3-0-3). Soil formation, with emphasis on landscape processes as factors in soil development; pedogenic processes and their relation to environmental issues; soils; vegetation, and geological associations; kinds and distribution of soils in Canada; soil classification; field examination and computer-assisted learning of soils and their landscape. Field trips. Course requires payment of additional miscellaneous fees (see §22.2.3). Prerequisite: SOILS 210 or any 200-level earth science course.

SOILS 430 Soil Biogeochemistry

★3 (fi 6) (second term, 3-0-3). Introduction to the main components of the soil biota; the metabolic and molecular diversity of microbial populations and their role in soil processes; the microbiology and biochemistry of decomposition of organic matter in soil; biogeochemical cycling of N, P, S, Si, base cations and metals; and the application of soil microbiology to selected environmental problems. Prerequisite: SOILS 210 or consent of instructor.

SOILS 440 Soil Physics

★3 (fi 6) (first term, 3-0-3). Quantitative characterization of soil physical properties. Description and measurement of soil physical properties that determine retention and movement of water in soils, soil temperature, soil aeration, soil strength, soil compaction and consolidation. Particular emphasis will be placed on current in situ techniques and their applications. Examples from areas of land resource management, soil remediation, agriculture, and forestry will be used to illustrate the principles. Prerequisites: SOILS 210 and completion of ★60 university credit in the sciences.

SOILS 450 Soil Environmental Chemistry

★3 (fi 6) (second term, 3-0-3). Chemical processes in soil and related terrestrial environments and the consequences of these processes as they relate to environmental quality and pollution of soil and water, nutrient levels, and mechanical stability or dispersion of clays and soils. The course describes fundamental chemical concepts such as soil solution speciation, precipitation/dissolution, and adsorption exchange and then uses the concepts in the examination and computer modelling of some current environmental, agricultural and engineering problems. The leachate chemistry of certain large volume industrial wastes is also examined in the course. Prerequisite: A chemistry course plus completion of two full years of university.

SOILS 460 Soil Fertility

★3 (fi 6) (second term, 3-0-3). Essential plant nutrients; factors influencing nutrient availability; methods of evaluating soil fertility; correction of soil fertility problems; manufacture, composition, and use of fertilizers. Prerequisite: SOILS 210.

Graduate Courses

Note: 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)).

SOILS 515 Clay Mineralogy

★3 (fi 6) (second term, 3-0-3). Structure and composition of clay minerals. Properties of clay minerals and methods of identification with emphasis on x-ray diffraction techniques. Nature and properties of other secondary soil minerals. Prerequisites: Three undergraduate level courses in the geological, engineering, or soil sciences.

SOILS 520 Advanced Soil Classification

★3 (fi 6) (second term, 3-0-3). Systematics of soil classification throughout the world with special emphasis on pedogenesis, classification, distribution and use of soils outside of Canada. Laboratory consists of a minimum 10-day field trip normally scheduled immediately following the final examination period and conducted regionally in North America. Costs of lodging, meals, and transportation to be borne by students. Offered in alternate years. Prerequisite: SOILS 420. Course requires payment of additional miscellaneous fees (see §22.2.3).

SOILS 530 Advanced Soil Ecology

★3 (fi 6) (second term, 3-0-3). Ecological approach to studying plant, microbial and faunal interactions in soil. Assessment and integration of the qualitative and quantitative impact of soil microorganisms, fauna and plants on decomposition, element cycling and soil structure dynamics in terrestrial ecosystems. The acquired information will be linked to current global environmental issues. Students develop simulation models and practise writing grant applications. Offered in alternate years. Prerequisite: SOILS 330, 430 or a 300-level course in biological sciences.

SOILS 540 Advanced Soil Physics

★3 (fi 6) (second term, 3-0-3). Physical principles of water, solutes, and heat transport in the soil-plant-atmosphere continuum; formulation and solution of mathematical equations describing the dynamic interactions among water, solutes, heat, soil matrix and plants; application of physical theories at the field scale, including effects of the soil spatial variability and preferential flow. Offered in alternate years. Prerequisites: A course in calculus and a course in one of the following: soil physics, soil mechanics, hydrogeology, physics or thermodynamics.

221.211 Spanish, SPAN

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 Spanish 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) All courses at the 300-level, except SPAN 330 and 360 which are taught in English, include language acquisition among other course requirements.

Undergraduate Courses

SPAN 111 Beginners' Spanish I

★3 (fi 6) (either term, 5-0-0). A basic course, intended for students with no previous knowledge of the language, emphasizing spoken and written Spanish. Note: not to be taken by students with credit in SPAN 100, or with native or near native proficiency, or with Spanish 30 or its equivalents in Canada and other countries.

SPAN 112 Beginners' Spanish II

★3 (fi 6) (either term, 5-0-0). Prerequisite: SPAN 111 or consent of Department. Note: not to be taken by students with credit in SPAN 100, or with native or near native proficiency, or with Spanish 30 or its equivalents in Canada and other countries.

SPAN 210 Intensive Transitional Spanish

★3 (fi 6) (either term, 3-0-0). Builds upon basic concepts and language skills as a transition between Beginners' and Intermediate levels. Prerequisite: SPAN 30, placement test or consent of the Department.

SPAN 211 Intermediate Spanish I

★3 (fi 6) (either term, 3-0-0). A course intended to consolidate a basic understanding of Spanish through a systematic grammar review and practice in the various language skills. Prerequisite: SPAN 112 or 210 or consent of Department. Note: not to be taken by students with credit in SPAN 200 or 201 or by students with advanced standing equivalent or near native ability.

SPAN 212 Intermediate Spanish II

★3 (fi 6) (either term, 3-0-0). A continuation of Spanish 211. Prerequisite: SPAN 211 or consent of Department. Note: Not to be taken by students with credit in SPAN 201 or by students with advanced standing equivalent or near native ability.

SPAN 300 Conversation and Composition in Spanish

★3 (fi 6) (either term, 3-0-0). Prerequisite: SPAN 212 or consent of Department. Note: SPAN 300 is not open to students with advanced standing equivalent or near native ability or with credit in SPAN 306.

SPAN 303 Popular Culture and its Traditions

★3 (fi 6) (either term, 3-0-0). For students who are learning Spanish and wish to broaden their understanding of cultural life in the Spanish-speaking world (media, film, dance, literature, art, performance, and advertising from Spain and the Americas). Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 305 Spanish and English, a Linguistic Comparison

★3 (fi 6) (either term, 3-0-0). A comparison of Spanish and English from a linguistic perspective. Topics relating to the construction and construal of meaning at a variety of levels, including word meaning, sentence structure, narrative and discourse structure, and use of metaphor. Attention to issues relating to translation. Taught in English. Pre-or-corequisite: SPAN 300 or 306 or consent of Department. Note: This course can also be applied to the MLCS Certificate in Translation Studies.

SPAN 306 Spanish for Heritage Speakers

★3 (fi 6) (either term, 3-0-0). Intended for speakers with an advanced level of oral proficiency, but no previous formal study of Spanish. Focus is on topics such as grammar and sentence structure, spelling and punctuation, interference between English and Spanish, and colloquial versus formal usages with the objective of improving skills in oral and written communication. Prerequisite: consent of Department. Not to be taken by students with credit in SPAN 300.

SPAN 307 Civilization and Culture in Spain Before 1900

★3 (fi 6) (either term, 3-0-0). Aspects of Spanish civilization and culture in the Iberian Peninsula from the Middle Ages to the end of the 19th century. Designed to complement the study of Spanish and to provide an introduction to the major trends in thought and cultural forms in Spain. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 309 Civilization and Culture in Spain Since 1900

★3 (fi 6) (either term, 3-0-0). Civilization and culture in Spain since the beginning of the 20th century. Designed to complement the study of Spanish and to provide an introduction to the major trends in thought and cultural forms, with particular emphasis on the contemporary period. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 321 Foundational Fictions of Spanish America

★3 (fi 6) (either term, 3-0-0). Readings from selected texts to continue language acquisition and to introduce students to aspects of Spanish American literature and culture. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 322 Foundational Fictions of Spain

★3 (fi 6) (either term, 3-0-0). Readings from selected texts to continue language acquisition and to introduce students to aspects of Spanish literature and culture. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 325 Introduction to Cinema

★3 (fi 6) (either term, 3-0-3). Some of the major works of film of Spain and/or Spanish America. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 330 The Latino Experience Abroad

★3 (fi 6) (either term, 3-0-0). Exile, immigration, identity, language, and other questions concerning relocation and cultural and social integration represented in the work of authors from Latin American and Caribbean communities in North America. Note: not to be taken by students with credit in LA ST 330. Does not fulfill any Faculty of Arts Language Other than English requirement. Taught in English.

SPAN 335 The Spanish Caribbean

★3 (fi 6) (either term, 3-0-0). Literature and culture in Cuba, Puerto Rico and the Dominican Republic. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 341 The 'Roaring Twenties' in Transatlantic Perspective

★3 (fi 6) (either term, 3-0-0). Cultural production of Spanish America and Spain in the 1920's. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 342 Urban Poetics: The City and Modernity in the Spanish American Avant-gardes

★3 (fi 6) (either term, 3-0-0). How avant-garde artists in Spanish America produced contrasting visions of the city. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 343 Narrative Fiction and Dramatic Spectacle in Early Modern Spain

★3 (fi 6) (either term, 3-0-0). The narrative prose and drama of Golden-Age Spain, incorporating cinematic adaptations of selected early modern works. Prerequisite: SPAN 300 or 306 or consent of Department.

Q SPAN 360 Latin America in its Literature (in English Translation)

★3 (fi 6) (either term, 3-0-0). Relations among the literature, culture, history and politics of Latin America, primarily in Spanish-speaking areas. Themes vary from year to year. Note: not to be taken by students with credit in LA ST 360 or CLIT 363. Does not fulfill any Faculty of Arts Language Other than English requirement.

SPAN 370 The Sounds of Spanish

★3 (fi 6) (either term, 3-0-0). Sound system of Spanish: phonetics, phonology, evolution of the language. Special attention to the pronunciation differences from English. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 371 Meaning and Form in Spanish

★3 (fi 6) (either term, 3-0-0). Spanish syntax, semantics, lexical semantics, bilingualism, etc. Special emphasis on their relevance to applied linguistics. Prerequisite: SPAN 300 or 306 or consent of Department.

SPAN 405 Exercises in Translation: Spanish into English

★3 (fi 6) (either term, 3-0-0). Prerequisite: A grade of B in either SPAN 300 or 306 or proficiency test and an additional ★3 in SPAN at the 300-level or consent of Department.

SPAN 406 Exercises in Translation: English into Spanish

★3 (fi 6) (either term, 3-0-0). Prerequisite: SPAN 300 or 306 and an additional ★3 in SPAN at the 300-level or consent of Department. Note: This course can also be applied to the MLCS Certificate in Translation Studies.

SPAN 407 Advanced Grammar and Composition

★3 (fi 6) (either term, 3-0-0). Prerequisites: SPAN 300 or consent of Department.

SPAN 409 Topics in Spanish Language

★3 (fi 6) (either term, 3-0-0). Prerequisite: SPAN 300 or consent of Department.

SPAN 431 Business Spanish

★3 (fi 6) (either term, 3-0-0). Emphasis on the development of the relevant vocabulary, and the ability to participate in the appropriate discourses, both spoken and written. Prerequisite: ★3 in Spanish at the 300-level or consent of Department.

SPAN 440 Topics in Spanish Peninsular Literature and Culture

★3 (fi 6) (either term, 3-0-0). Prerequisites: SPAN 321 or 322 and an additional ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 441 Reading Colonial Culture

★3 (fi 6) (either term, 3-0-0). Colonial identities, power and ideology, mobilized through various forms of representation. Prerequisites: SPAN 321 or 322 and an additional ★3 in SPAN at the 300-level excluding 300 and 306 or consent of Department.

SPAN 445 The Culture of Democracy

★3 (fi 6) (either term, 3-0-0). Cultural production and its interpretation in Spain since 1976. Prerequisites: SPAN 321 or 322 and an additional ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 450 Topics in Spanish-American Literature and Culture

★3 (fi 6) (either term, 3-0-0). Prerequisites: SPAN 321 or 322 and an additional ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 452 Indigenous America

★3 (fi 6) (either term, 3-0-0). Representations of indigenous life and culture in Spanish America from pre-colonial times to the present. Prerequisites: SPAN 321 or 322 and an additional ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 455 Literature, War and Revolution in Spanish America

★3 (fi 6) (either term, 3-0-0). From European conquest to the twentieth-century revolutions and liberation movements. Prerequisites: SPAN 321 or 322 and an additional ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 457 Post-dictatorship Culture in the Southern Cone

★3 (fi 6) (either term, 3-0-0). Cultural production and consumption in Argentina, Chile and Uruguay since the mid-1980s. Prerequisites: SPAN 321 or 322 and an additional ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 460 Self Portraits in Writing

★3 (fi 6) (either term, 3-0-0). Testimonial writing, biography and autobiography, memoirs, correspondence, diaries, interviews, and confessions. Prerequisites: SPAN 321 or 322 and an additional ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 475 Spanish in Society

★3 (fi 6) (either term, 3-0-0). Language as a social phenomenon. Description of dialects in Spanish. Language shift, bilingualism, language attrition, code-switching

and language attitudes. Prerequisite: ★3 in SPAN at the 300-level excluding 300 and 306 or consent of Department.

SPAN 476 The Acquisition of Spanish

★3 (fi 6) (either term, 3-0-0). Issues relating to the acquisition of Spanish as a second language, education and language policies, and language pedagogy in the literature and in practice. Prerequisite: ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 478 Issues in Teaching Spanish

★3 (fi 6) (either term, 3-0-0). Issues relevant to teaching Spanish as a second language to adult learners. Prerequisite: ★3 in SPAN at the 300-level excluding 300 and 306, or consent of Department.

SPAN 495 Honors Thesis

★3 (fi 6) (either term, 0-3s-0).

SPAN 499 Special Topics

★3 (fi 6) (either term, 3-0-0).

Graduate Courses**SPAN 524 Hispanic Theories of Cultural Studies**

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

SPAN 530 Visual Arts and Literature

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

SPAN 534 Popular Culture and Kitsch in Latin America

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

SPAN 535 Topics in Hispanic Culture

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

SPAN 538 Nationalizing the Modern: Tensions in the Latin American Avant-gardes

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

SPAN 539 Fashioning and Representing the Self in Early Modern Spain

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

SPAN 540 Imagining Latin America in History, Fiction and Film

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

SPAN 544 Theory and Practice of Fantastic Literature in the Hispanic World

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

SPAN 575 Spanish in Society

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

SPAN 576 The Acquisition of Spanish

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

SPAN 578 Issues in Teaching Spanish

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

SPAN 599 Directed Reading

★3 (fi 6) (either term, 3-0-0).

SPAN 610 Reading and Writing Sexualities

★3 (fi 6) (either term, 0-3s-0).

SPAN 615 Latin American Film in Theory and Context

★3 (fi 6) (either term, 0-3s-0).

SPAN 620 The Poetics of Place

★3 (fi 6) (either term, 0-3s-0).

SPAN 625 Theory and Practice of Magical Realism in the Hispanic World

★3 (fi 6) (either term, 0-3s-0).

SPAN 698 Topics in Spanish Linguistics

★3 (fi 6) (either term, 3-0-0).

SPAN 699 Topics in Spanish Literature

★3 (fi 6) (either term, 3-0-0).

SPAN 900 Directed Research Project

★6 (fi 12) (variable, variable).

221.212 Speech Pathology and Audiology, SPA

Department of Speech Pathology and Audiology
Faculty of Rehabilitation Medicine

Note: All SPA courses are open to SPA students only.

Graduate Courses**SPA 501 Clinical Research Methods**

★3 (fi 6) (either term, 3-0-0). Investigation of strategies for demonstrating

scientifically the impact of clinical intervention programs, both for accountability and for contributing to the knowledge base regarding effective treatment. Students will be advised to approach staff members as resources for development of specific projects in anticipation of SPA 900. (Restricted to MScSLP students only.)

SPA 502 Anatomy and Physiology of the Speech Mechanism

★4 (*fi 8*) (first term, 4-0-2). Lectures and demonstrations provide a systematic study of the gross anatomy and neuroanatomy of the respiratory, phonatory, resonatory, and articulatory subsystems and the physiology of respiration, phonation, and upper airway in speech production and swallowing. The embryological and post-natal development of these systems is considered. Review of the neural substrates underlying speech and language processing is included. Laboratories provide observational and simulated dissection experiences using computer software video, anatomical models, and prosected materials. (Restricted to MScSLP students only.)

SPA 505 Speech Science

★3 (*fi 6*) (first term, 3-0-1). Study of theoretical and applied aspects of acoustic phonetics, speech perception and speech production, including theory and application of methods (physiological, acoustic and perceptual) to record and analyze speech behaviors. Provides students with basic knowledge for entry into the field of speech-language pathology. Pre- or corequisites: SPA 502 or equivalent, SPA 507 and 515. (Restricted to MScSLP students only.)

SPA 507 Phonological Disorders

★3 (*fi 6*) (either term, 3-0-2). In-depth study of the nature, assessment and remediation of articulatory/phonological disorders according to various theoretical models. Emphasis will be placed on phonologically based clinical approaches including phonological process analysis and generative phonology. Practical experience in assessment and remediation will be provided through clinical observation and laboratory experiences. (Restricted to MScSLP students only.)

SPA 509 Motor Speech Disorders

★3 (*fi 6*) (either term, 0-4L-1). Study of dysarthria and dyspraxia (congenital and acquired) including the nature of their underlying neuropathologies, methods of instrumental and perceptual assessment, and systematic instrumental and behavioral management strategies. Students will develop their understanding of the course material via a series of clinical problem solving and treatment planning exercises. Prerequisites: SPA 502 or equivalent and SPA 505, 507, 511. Pre- or corequisite: SPA 520. (Restricted to MScSLP students only.)

SPA 511 Child Language Development and Assessment

★3 (*fi 6*) (either term, 0-4L-1). A review of normal language development provides the basis for a comprehensive study of the assessment and identification of children with language disorders. Assessment procedures involve language test administration and interpretation. Discussion of research findings highlights disordered language behaviors associated with such problems as mental retardation, emotional problems, and learning disabilities. The laboratory provides experience in administering a variety of language tests. (Restricted to MScSLP students only.)

SPA 515 Hearing Science/Audiology

★3 (*fi 6*) (first term, 3-0-1). Study of basic audiology for speech-language pathologists. Includes anatomy and physiology of the auditory and vestibular systems, theories of hearing, the physics and measurement of sound (including psychophysical methods and psychoacoustics), symptoms, etiology and prognosis of hearing disorders, overview of assessment procedures and instrumentation used in diagnostic audiology, and application of audiometric results to speech-language pathology. Proficiency in hearing and tympanometry screening, including care and maintenance of equipment, is acquired in laboratory sessions. Prerequisites or corequisites: SPA 502. (Restricted to MScSLP students only.)

SPA 516 Diagnosis and Appraisal of Communication Disorders

★3 (*fi 6*) (either term, 3-0-1). A study of the principles underlying the evaluative and management procedures in communication disorders. History taking, report writing, recording observations, analysis of tests relevant to the clinical process and test procedure administration will be covered. Corequisite: SPA 524. (Restricted to MScSLP students only.)

SPA 518 Remediation of Child Language Disorders

★3 (*fi 6*) (either term, 0-4L-1). A study of the theoretical models of intervention and clinical application in remediating children's disordered language patterns. Specific attention focused toward commercial and clinician-generated programs that serve these various theoretical frameworks. Discussion of language goals, intervention strategies and accountability measures that serve to guide the therapeutic process and determine treatment effectiveness. The laboratory provides opportunity to observe therapy and design sample language therapy units. Prerequisite: SPA 511. (Restricted to MScSLP students only.)

SPA 520 Adult Language Disorders I

★3 (*fi 6*) (either term, 0-4L-0). Study of acquired aphasia including the nature of the underlying neuropathologies, methods of differential diagnosis and comprehensive assessment, and clinically-pertinent behavioral management strategies. Students will develop their understanding of the course material via a series of clinical problem solving and treatment planning exercises. Prerequisite: SPA 502 or equivalent. (Restricted to MScSLP students only.)

SPA 521 Dysphagia

★1.5 (*fi 3*) (Spring/Summer, 0-2L-0). This course will provide an overview of the anatomical and neurophysiological bases of normal and abnormal feeding and swallowing in adults and children. Structural and neurological conditions commonly associated with dysphagia will be reviewed. A framework of interdisciplinary assessment and management of dysphagia will be provided. Prerequisite: SPA 502 or equivalent. (Restricted to MScSLP students.)

SPA 523 Augmentative/Alternative Communication Systems

★1.5 (*fi 3*) (either term, 0-2L-0). This course will provide a description of various augmentative/alternative communication systems, including microcomputers. It will address assessment questions and the intervention process for individual users with communication disorders. Prerequisite: SPA 518. (Restricted to MScSLP students only.)

SPA 524 Introduction to Clinical Practicum I

★7.5 (*fi 15*) (two term, 0-8c-2). Credit. Practical application of clinical procedures under direct supervision. Normally, students will possess an academic background enabling them to assume direct treatment responsibilities with children and adults having disorders of articulation and/or language. A minimum of 48 direct contact hours as well as simulated and indirect contact hours will be accrued. Seminar content will include topics of clinical and/or professional significance such as ethics, health law, private practice, goal setting and data collection. Flexibility in seminar topics will accommodate new topics as they arise. Prerequisites: At least six MSLP (B) courses including SPA 507, 511, 518. Corequisite: SPA 516. (Restricted to MScSLP students only.)

SPA 525 Introduction to Clinical Practicum II

★2 (*fi 4*) (first term, 0-2c-0). Credit. Continued practical application of clinical procedures under direct supervision. Normally students will acquire experience with alternative service delivery models such as group treatment. A minimum of 25 direct contact hours as well as simulated and indirect contact hours will be accrued. Prerequisite: SPA 524. (Restricted to MScSLP students only.)

SPA 526 Voice and Resonance Disorders

★3 (*fi 6*) (either term, 3-0-1). A study of the causes, nature, clinical assessment, and management of voice and resonance disorders. Prerequisites: SPA 502 and SPA 505. (Restricted to MScSLP students only.)

SPA 527 Language and Literacy

★3 (*fi 6*) (either term, 0-4L-0). Study of language development in school-age children and adolescents, with focus on the relationships among oral language, reading, and writing; linguistic tasks faced by these age groups in school and elsewhere; and implications for language assessment and intervention. Prerequisites: SPA 511 and 518. (Restricted to MScSLP students only.)

SPA 528 Fluency

★3 (*fi 6*) (either term, 3-0-1). A study of the development, nature and treatment of stuttering with particular emphasis on management strategies. Pre- or corequisite: SPA 501. (Restricted to MScSLP students only.)

SPA 529 Adult Language Disorders II

★3 (*fi 6*) (either term, 0-4L-0). Study of conditions (other than aphasia) affecting language, social, and cognitive functioning in adults, including traumatic brain injury, dementia, and right hemisphere dysfunction, and issues related to the aging process. Nature of underlying neuropathologies and their implications for differential diagnosis, assessment, and management will be addressed. Prerequisite: SPA 520. (Restricted to MScSLP students only.)

SPA 532 Advanced Clinical Practicum

★4.5 (*fi 9*) (either term, 0-12c-0). Credit. Full-time supervised clinical practice normally for a period of six weeks in an approved clinical service facility. Students will have completed all academic course work and will be prepared to work with a broad range of communication disorders under reduced supervision. A minimum of 75 direct contact hours as well as simulated and indirect contact hours will be accrued. Prerequisites: SPA 525 and all MSLP(B) academic courses. (Restricted to MScSLP students only.)

SPA 533 Advanced Clinical Practicum

★4.5 (*fi 9*) (either term, 0-12c-0). Credit. Full-time supervised clinical practice normally for a period of six weeks in an approved clinical service facility. Students will have completed all academic course work and will be prepared to work with a broad range of communication disorders under reduced supervision. A minimum of 75 direct contact hours as well as simulated and indirect contact hours will be accrued. Prerequisites: SPA 525 and all MSLP(B) academic courses. (Restricted to MScSLP students only.)

SPA 534 Aural (Re)habilitation

★3 (*fi 6*) (either term, 0-4L-0). Study of the diagnostic and treatment strategies for communication problems associated with childhood and adult onset hearing loss. Prerequisites: SPA 505, 507, 511 and 515. (Restricted to MScSLP students only.)

SPA 540 Advanced Clinical Practicum

★4.5 (*fi 9*) (either term, 0-12c-0). Credit. Full-time supervised clinical practice normally for a period of six weeks in an approved clinical service facility. Students will have completed all academic course work and will be prepared to work with a broad range of communication disorders under reduced supervision. A minimum

of 75 direct contact hours as well as simulated and indirect contact hours will be accrued. Prerequisites: SPA 532 and 533. (Restricted to MScSLP students only.)

SPA 541 Advanced Clinical Practicum

★4.5 (fi 9) (either term, 0-12c-0). Credit. Full-time supervised clinical practice normally for a period of six weeks in an approved clinical service facility. Students will have completed all academic course work and will be prepared to work with a broad range of communication disorders under reduced supervision. A minimum of 75 direct contact hours as well as simulated and indirect contact hours will be accrued. Prerequisites: SPA 532 and 533. (Restricted to MScSLP students only.)

SPA 561 Methods of Data Analysis

★3 (fi 6) (either term, 0-3s-0). The role of statistics in speech pathology and audiology research, including study of basic concepts related to selection of analysis methods for particular data sets and interpretation of results. Prerequisites: Introductory statistics course and consent of Department. Formerly SPA 502. (MSc)

SPA 597 Advanced Clinical Practicum

★4.5 (fi 9) (either term, 0-12c-0). May be repeated. Credit. Full-time supervised clinical practice normally for a period of six weeks in an approved clinical service facility. Students will have completed all academic course work and will be prepared to work with a broad range of communication disorders under reduced supervision. A minimum of 75 direct contact hours as well as simulated and indirect contact hours will be accrued. Prerequisite: SPA 525 and all MSLP(B) academic courses. (Restricted to MScSLP students only.)

SPA 598 Directed Individual Reading and Research

★1-12 (variable) (either term, variable). May be repeated. Prerequisite: consent of Department. (MScSLP)

SPA 900 Directed Research Project

★3 (fi 6) (either term or Spring/Summer, 0-3s-0). Required capping exercise for the MSLP program. Intended to develop students' inquiry, reflection, critical thinking, and writing skills and to provide a supervised experience in the disciplined investigation of a problem. Prerequisites: SPA 501. (Restricted to MSLP-B students only.)

221.213 Statistics, STAT

Department of Mathematical and Statistical Sciences
Faculty of Science

Note: Statistical software packages will normally be used in courses that contain data analysis.

Undergraduate Courses

STAT 141 Introduction to Statistics

★3 (fi 6) (either term, 3-0-0). Random variables and frequency distributions. Averages and variance. The binomial and normal distribution. Sampling distributions and elementary inference. X²-test for contingency tables. Regression and correlation. Analysis of variance. Prerequisite: Pure Mathematics 30 or consent of Department. This course may not be taken for credit if credit has been obtained in any STAT course, or in PSYCO 211 or SOC 210.

STAT 151 Introduction to Applied Statistics I

★3 (fi 6) (either term, 3-0-1.5). Data collection and presentation, descriptive statistics. Probability distributions, sampling distributions and the central limit theorem. Point estimation and hypothesis testing. Correlation and regression analysis. Goodness of fit and contingency table. Prerequisite: Pure MATH 30. This course may not be taken for credit if credit has been obtained in any STAT course, or in PSYCO 211 or SOC 210.

STAT 221 Applied Probability

★3 (fi 6) (either term, 3-0-2). Probability models; distribution of one and two random variables; moment generating functions; specific distributions; uniform, binomial, geometric, Poisson, exponential, normal, etc. Markov chains and simple queues. Various applications are considered with emphasis on the analysis of computer systems; simulation techniques are used and the algorithmic approach is used throughout the course. Restricted to Honors and Specialization students in Computing Science and Specialization students in Computational Science (Mathematics). Prerequisites: MATH 115 or equivalent; pre- or corequisite: MATH 120 or 125 or equivalent. Credit may not be obtained for both STAT 221 and STAT 265.

STAT 222 Applied Statistics

★3 (fi 6) (either term, 3-0-2). Sampling distributions; estimation; hypothesis testing; linear regression. Poisson process; simple queues; models and applications which are primarily of interest to computing scientists. Prerequisite: STAT 221. Note: Credit may be obtained for at most one of STAT 222, 266 and 366.

STAT 235 Introductory Statistics for Engineering

★4 (fi 6) (either term or Spring/Summer, 3-0-2). Descriptive data analysis. Calculus

of Probability. Binomial, multinomial, Poisson, normal, beta, exponential, gamma, hypergeometric, and Weibull distributions. Sampling distributions. Estimation, testing hypotheses, goodness-of-fit tests, and one-way analysis of variance. Linear correlation and regression. Sampling. Quality control. Use of a microcomputer software package for statistical analyses in engineering applications. Prerequisite: MATH 100. Corequisite: MATH 101. Credit may not be obtained in STAT 235 if credit has already been obtained in STAT 141, 151, 222, 265, 266; PSYCO 211 or SOC 210. Intended for Engineering students. Other students who take this course will receive ★3.0.

STAT 252 Introduction to Applied Statistics II

★3 (fi 6) (either term, 3-0-2). Methods in applied statistics including regression techniques, analysis of variance and covariance, and methods of data analysis. Applications are taken from Biological, Physical and Social Sciences, and Business. Credit may be received in at most one of STAT 252, 319, or 341. Prerequisite: STAT 141 or 151 or equivalent.

STAT 265 Elements of Probability and Statistical Theory I

★3 (fi 6) (either term, 3-0-1). Probability, probability distributions for discrete and continuous random variables. Expectations and moments. Linear combinations of independent random variables. Statistical models, parameters and Statistics, methods of estimation, bias and efficiency. Prerequisites: STAT 151 or equivalent or consent of department; MATH 115. Credit may not be obtained for both STAT 265 and STAT 221.

STAT 312 Mathematical Methods in Statistics

★3 (fi 6) (either term, 3-0-1). Theory and applications of basic mathematical results required in Statistics. Applications of diagonalization results for real symmetric matrices, of continuity, differentiation, Riemann-Stieltjes integration and multivariable calculus to the theory of Statistics including least square estimation, generating functions, distribution theory. Prerequisites: MATH 215, MATH 225 or equivalent.

STAT 335 Statistical Quality Control and Industrial Statistics

★3 (fi 6) (either term, 3-0-0). Control charts for variables and attributes. Process capability analysis. Acceptance sampling: single and multiple attribute and variable acceptance plans. Prerequisite: STAT 235 or 265.

STAT 337 Biostatistics

★3 (fi 6) (first term, 3-0-2). Methods of data analysis useful in Biostatistics including analysis of variance and covariance and nested designs, multiple regression, logistic regression and log-linear models. The concepts will be motivated by problems in the life sciences. Applications to real data will be emphasized through the use of a computer package. Prerequisite: STAT 151 and a 200-level Biological Science course. Note: This course may not be taken for credit if credit has already been obtained in STAT 252, 368 or 378.

STAT 353 Life Contingencies I

★3 (fi 6) (either term, 3-0-0). Time at death random variables, continuous and discrete insurances, endowments and varying annuities, net premiums and reserves. Prerequisites: MATH 215, 253 and STAT 265.

STAT 354 Life Contingencies II

★3 (fi 6) (either term, 3-0-0). Analysis of benefits reserves, multiple life functions, multiple decrement models, applications of multiple decrement theory. Prerequisite: STAT 353 or MATH 353. May be offered in alternate years.

STAT 355 Casualty Insurance

★3 (fi 6) (either term, 3-0-0). Utility theory, insurability of risk, the economics of insurance, the ratemaking process, IBNR and chain ladder method, property/casualty loss reserving techniques. Prerequisite: MATH 215, 253, and STAT 265. May be offered in alternate years.

STAT 361 Sampling Techniques

★3 (fi 6) (either term, 3-0-0). Simple random sampling from finite populations, stratified sampling, regression estimators, cluster sampling. Note: This course may only be offered in alternate years. Prerequisite: STAT 265.

STAT 366 Elements of Probability and Statistical Theory II

★3 (fi 6) (either term, 3-0-1). Bivariate and multivariate probability distributions. Functions of random variables. Sampling distributions and the Central Limit Theorem. Point estimation; consistency; sufficiency; UMVU. Confidence intervals and large sample tests. Prerequisites: STAT 265, MATH 215 and MATH 225. Credit may not be obtained for both STAT 366 and either of STAT 222 or 266.

STAT 368 Introduction to Design and Analysis of Experiments

★3 (fi 6) (either term, 3-0-0). Basic principles of experimental design, completely randomized design-one way ANOVA and ANCOVA, randomized block design, Latin square design, Multiple comparisons. Nested designs. Factorial experiments. Prerequisites: STAT 265 and a course in Linear Algebra; MATH 225 recommended.

STAT 377 Non-Parametric Inference

★3 (fi 6) (either term, 3-0-0). Tests for randomness, goodness of fit, tests for location and scale, non-parametric estimators. Robust statistics. Introduction to computer packages for non-parametric statistics. Note: This course may be offered only in alternate years. Prerequisites: STAT 265 and MATH 215. STAT 366 recommended as co- or prerequisite.

STAT 378 Applied Regression Analysis

★3 (fi 6) (either term, 3-0-0). Simple linear regression analysis, inference on regression parameters, residual analysis, prediction intervals, weighted least squares. Multiple regression analysis, inference about regression parameters, multicollinearity and its effects, indicator variables, selection of independent variables. Non-linear regression. Prerequisites: STAT 265 and a course in Linear Algebra; MATH 225 recommended.

STAT 400 Industrial Internship Practicum

★3 (fi 6) (first term, 0-3s-0). Required by all students who have just completed a Mathematical Sciences Industrial Internship Program and who are in an Honors or Specialization degree in Statistics. Must be completed during the first academic term following return to full-time studies. Note: A grade of F to 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 to learn from the experiences of the Internship as demonstrated in an oral presentation. Prerequisite: WKEXP 953.

STAT 432 Survival Analysis

★3 (fi 6) (either term, 3-0-0). Survival models, model estimation from complete and incomplete data samples, parametric survival models with concomitant variables, estimation of life tables from general population data. Prerequisite: STAT 366. This course may be offered in alternate years.

STAT 441 Applied Statistical Methods

★3 (fi 6) (either term, 2-1s-1). Principle of statistical design and analysis illustrated through techniques such as time series regression, repeated measures and other experimental designs; principal components, classification and grouping techniques and other multivariate methods; logistic regression and log-linear models. Prerequisites: MATH 120 or 125 or equivalent, STAT 252 or 337 or MGTSC 312 or equivalent, and a 300-level course in an area of application.

STAT 453 Risk Theory

★3 (fi 6) (either term, 3-0-0). Classical ruin theory, individual risk models, collective risk models, models for loss severity: parametric models, tail behavior, models for loss frequency, mixed Poisson models; compound Poisson models, convolutions and recursive methods, probability and moment generating functions. Prerequisite: STAT 366.

STAT 454 Topics in Actuarial Science

★3 (fi 6) (second term, 3-0-0). Topics in actuarial mathematics, as selected by the instructor. Prerequisite: STAT 353 or MATH 353.

STAT 455 Loss Model and Credibility Theory

★3 (fi 6) (second term, 3-0-0). Credibility theory: limited fluctuation; Bayesian; Buhlmann, Buhlmann-Straub; empirical Bayes parameter estimation; statistical inference for loss models; maximum likelihood estimation; effect of policy modifications; model selection. Prerequisite: STAT 366.

STAT 471 Probability I

★3 (fi 6) (first term, 3-0-0). Probability spaces, algebra of events. Elements of combinatorial analysis. Conditional probability, stochastic independence. Special discrete and continuous distributions. Random variables, moments, transformations. Basic limit theorems. Prerequisite: STAT 366.

STAT 472 Probability II

★3 (fi 6) (second term, 3-0-0). Sequences of Bernoulli trials, laws of large numbers, normal approximations. Generating functions, recurrent events, random walks. Introduction to Markov chains. Special topics. Prerequisite: STAT 471.

STAT 479 Time Series Analysis

★3 (fi 6) (either term, 3-0-0). Stationary series, spectral analysis, models in time series: autoregressive, moving average, ARMA and ARIMA. Smoothing series, computational techniques and computer packages for time series. Note: This course may be offered only in alternate years. Prerequisite: STAT 366 or consent of Instructor.

Graduate Courses**STAT 501 Directed Study I**

★3 (fi 6) (either term, 3-0-2). Basic principles of experimental design, completely randomized design-one way ANOVA and ANCOVA. Randomized block design. Latin square design, Multiple comparisons. Nested designs. Factorial experiments. Each student will give a written report and seminar presentation highlighting statistical methods used in a research project. Prerequisites: STAT 252 or 337 or equivalent and a course in linear algebra. Note: Not open to graduate students in the Department of Mathematical and Statistical Sciences.

STAT 502 Directed Study II

★3 (fi 6) (either term, 3-0-2). Simple linear regression analysis, inference on regression parameters, residual analysis, prediction intervals, weighted least squares. Multiple regression analysis, inference about regression parameters, multicollinearity and its effects, indicator variables, selection of independent variables. Non-linear regression. Each student will give a written report and seminar presentation highlighting statistical methods used in a research project. Prerequisite: STAT 337 or equivalent and a course in linear algebra. Note: Not open to graduate students in the Department of Mathematical and Statistical Sciences.

STAT 503 Directed Study III

★3 (fi 6) (either term, 3-0-2). Theory and applications of time series modelling, stationarity, autocorrelation. Spectral properties, filtering. Box-Jenkins models, seasonality. Each student will give a written report and seminar presentation highlighting statistical methods used in a research project. Prerequisite: STAT 366 or consent of Instructor.

STAT 512 Techniques of Mathematics for Statistics

★3 (fi 6) (either term, 3-0-0). Introduction to mathematical techniques commonly used in theoretical Statistics, with applications. Applications of diagonalization results for real symmetric matrices, and of continuity, differentiation, Riemann-Stieltjes integration and multivariable calculus to the theory of Statistics including least squares estimation, generating functions, distribution theory. Prerequisite: consent of Department.

STAT 532 Survival Analysis

★3 (fi 6) (either term, 3-0-0). Survival distribution and hazard rate, Kaplan-Meier estimator, Greenwood's formula. Log-rank and weighted log-rank tests. Asymptotic methods. Regression models including Cox proportional hazards model and accelerated failure time models. Likelihood and partial likelihood for survival models; diagnostics. Prerequisite: STAT 366 or consent of Department.

STAT 558 Techniques of Statistical Analysis I

★3 (fi 6) (either term, 3-0-0). The contents will be selected each year from applied topics. Prerequisite: consent of Department.

STAT 559 Techniques of Statistical Analysis II

★3 (fi 6) (either term, 3-0-0). The contents will be selected each year from applied topics. Prerequisite: consent of Department.

STAT 561 Sample Survey Methodology

★3 (fi 6) (either term, 3-0-0). Review of basic sampling schemes: simple random sampling, and stratified random sampling, and systematic sampling. Multistage sampling schemes. Estimation of nonlinear parameters: ratios, regression coefficients, and correlation coefficients. Variance estimation techniques: linearization, BRR, jackknife, and bootstrap. Selected topics: model-based estimation, regression analysis from complex survey data. Relevant computer packages. Prerequisites: STAT 361, 366, 471.

STAT 562 Discrete Data Analysis

★3 (fi 6) (either term, 3-0-0). Sampling models and methods of inference for discrete data. Maximum likelihood estimation for complete contingency tables, measures of association and agreement. Goodness-of-fit. Incomplete tables. Analysis of square tables; symmetry and marginal homogeneity. Model selection and closeness of fit; practical aspects. Chi-square tests for categorical data from complex surveys. Prerequisite: STAT 366 or 471.

STAT 566 Methods of Statistical Inference

★3 (fi 6) (either term, 3-0-0). An introduction to the theory of statistical inference. Topics to include exponential families and general linear models, likelihood, sufficiency, ancillarity, interval and point estimation, asymptotic approximations. Optional topics as time allows, may include Bayesian methods, Robustness, resampling techniques. This course is intended primarily for MSc students. Prerequisite: STAT 471 or consent of Department.

STAT 568 Design and Analysis of Experiments

★3 (fi 6) (either term, 3-0-0). The general linear model. Fully randomized designs, one-way layout, multiple comparisons. Block designs, Latin squares. Factorial designs confounding, fractions. Nested designs, randomization restrictions. Response surface methodology. Analysis of covariance. Prerequisite: STAT 368 and a 400-level STAT course.

STAT 571 Applied Measure Theory for Probability

★3 (fi 6) (either term, 3-0-0). Measure and integration, Laws of Large Numbers, convergence of probability measures. Conditional expectation as time permits. Prerequisites: STAT 471 and STAT 512 or their equivalents.

STAT 575 Multivariate Analysis

★3 (fi 6) (either term, 3-0-0). The multivariate normal distribution, multivariate regression and analysis of variance, classification, canonical correlation, principal components, factor analysis. Prerequisite: consent of Department.

STAT 578 Regression Analysis

★3 (fi 6) (either term, 3-0-0). Multiple linear regression, ordinary and generalized least squares, partial and multiple correlation. Regression diagnostics, collinearity, model building. Nonlinear regression. Selected topics: robust and nonparametric regression, measurement error models. Prerequisites: STAT 378 and a 400-level statistics course.

STAT 580 Stochastic Processes

★3 (fi 6) (either term, 3-0-0). Elements of stochastic processes. Discrete and continuous time Markov Chains; Birth and Death processes. Branching processes. Brownian Motion. General Stationary and Markov processes. Examples. Prerequisite: STAT 471 or consent of Instructor.

STAT 590 Statistical Consulting

★3 (fi 6) (first term, 3-0-0). Data analysis, problem solving, oral communication

with clients, issues in planning experiments and collecting data; practical aspects of consulting and report writing. Prerequisite: STAT 568, 578 or their equivalents.

STAT 600 Reading in Statistics

★3 (fi 6) (either term, 3-0-0). Students will be supervised by an individual staff member to participate in areas of research interest of that staff member. Students can register only with the permission of the Chair of the Department in special circumstances. Will not be counted toward the minimum course requirement for graduate credits.

STAT 664 Theory of Statistical Inference

★3 (fi 6) (either term, 3-0-0). Properties of statistical models. Theory of point estimation and testing of hypotheses, including likelihood, information, unbiasedness, equivariance, and Bayesian theory. Optional topics as time allows. Prerequisites: STAT 571 and consent of Department.

STAT 665 Asymptotic Methods in Statistical Inference

★3 (fi 6) (either term, 3-0-0). Approximation techniques and asymptotic methods in statistics. Topics may include second and higher order expansions, asymptotics of likelihood based estimation and testing. Edgeworth expansions, exponential tilting, asymptotic relative efficiency, U-, M-, L-, and R-estimation. Prerequisites: STAT 566 or 664 and 512 or the equivalent.

STAT 671 Probability Theory I

★3 (fi 6) (either term, 3-0-0). Zero-one laws, sums of independent random variables, three-series criterion, laws of iterated logarithm, laws of large numbers, convergence in distribution, characteristic functions. Bochner's theorem, central limit theorems, discrete time martingales. Prerequisite: STAT 571 or MATH 563 or equivalent.

STAT 672 Probability Theory II

★3 (fi 6) (either term, 3-0-0). Martingales and martingale inequalities, stopping theorems, local martingales, quadratic variation. Wiener and Poisson processes, stochastic integration. Itô's formula, semimartingales, Girsanov's theorem, introduction to stochastic differential equations, Markov processes, diffusion. Prerequisite: STAT 671 or equivalent.

STAT 679 Time Series Analysis

★3 (fi 6) (either term, 3-0-0). The autocorrelation function and spectrum and their estimates. Linear stationary models; autoregressive, moving average, and mixed models. Linear nonstationary models; autoregressive integrated moving average models. Forecasting. Model identification and estimation. Spectral analysis. Prerequisite: STAT 479 or equivalent.

STAT 766 Topics in Statistics I

★3 (fi 6) (either term, 3-0-0).

STAT 771 Topics in Probability I

★3 (fi 6) (either term, 3-0-0).

STAT 772 Topics in Probability II

★3 (fi 6) (either term, 3-0-0).

STAT 900 Directed Research Project

★6 (fi 12) (variable, unassigned). Open only to students taking the MSc non-thesis option in statistics.

221.214 Statistique, STATQ

Faculté Saint-Jean

Cours de 1er cycle

STATQ 151 Introduction à la statistique appliquée I

★3 (fi 6) (l'un ou l'autre semestre, 3-0-2). Collecte de données et leur présentation, statistiques descriptives. Loi de probabilité, distribution d'échantillonnage et théorème limite central, estimation ponctuelle et tests d'hypothèses. Corrélation et régression linéaire simple. Mesure d'ajustement et tableaux de contingences. Préalable(s): Mathématiques 30. Note: Ce cours n'est pas accessible aux étudiants ayant ou postulant des crédits pour un cours de STAT, PSYCO 211, SCSOC 322, ou SOC 210.

221.215 Surgery, SURG

Department of Surgery
Faculty of Medicine and Dentistry

Undergraduate Courses

SURG 546 Surgery Student Internship

★6 (fi 12) (either term, 6 weeks). Student internship for students registered in the MD program.

SURG 556 Surgery Student Internship

★6 (fi 12) (either term, 6 weeks). Student internship for students registered in the MD Program.

Graduate Courses

SURG 510 Gene Transfection and Expression

★3 (fi 6) (first term, 1-0-3 in 4 weeks). This course will prepare graduate students for carrying out projects requiring molecular biology techniques. Topics to be covered include preparation of competent bacteria; bacterial transformation with gene of interest; growing transformed bacteria in a large scale; isolation of plasmid DNA containing gene of interest; isolation of DNA insert by electrocloture method to be used as a probe; gene transfection of human mammalian cells such as dermal fibroblasts; preparation of total RNA from transfected and untransfected cells; separation of RNA by gel electrophoresis; RNA blotting and hybridization with probe of interest; DNA labelling; analysis of corresponding protein as a gene product in transfected cells using a variety of techniques including ELISA, Western blot analysis, immunohistochemistry or receptor assay. It will provide students with an understanding of the basic science on which these techniques will be based. This course is intended for Surgical Residents and Fellows working in experimental surgery. Prerequisite: consent of Department.

SURG 520 Directed Reading in Biomedical Research

★3 (fi 6) (two term, 2-0-0). Lecture series on research techniques in the biomedical sciences intended for students with an advanced medical background. Prerequisite: consent of Department

SURG 530 Directed Reading in Biology and Medicine

★3 (fi 6) (either term, 3-0-0). Reading and study of topics in biomedical research of relevance to the student's interest under direction of one or more faculty members.

SURG 555 Microvascular Surgery

★3 (fi 6) (either term, 40 hours). The course reviews the fundamentals of microvascular surgery, and then allows supervised instruction in techniques including dissection, vascular anastomosis, mobilization of free flaps of vascularized tissue, transplantation and vein grafts. This course is intended for individuals with an extensive background in the theory and practice of surgery such as Surgery Residents and experienced researchers in the field. Prerequisite: consent of Department.

SURG 600 Research Seminar

★2 (fi 4) (two term, 0-1s-0). A weekly series of seminars on current research is held during Fall and Winter Terms. Graduate students must attend and make two presentations in this series.

221.216 Swahili, SWAH

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 background. Students with a Swahili language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course 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 students with matriculation standing or those possessing 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

SWAH 111 Beginners' Swahili I

★3 (fi 6) (either term, 5-0-0). Introduction to Swahili language and culture. Not to be taken by students with native or near native proficiency, or SWAH 35 or its equivalents in Canada and other countries.

SWAH 112 Beginners' Swahili II

★3 (fi 6) (either term, 5-0-0). Continuation of SWAH 111. Prerequisite: SWAH 111 or consent of Department. Not to be taken by students with native or near native proficiency, or SWAH 35 or its equivalents in Canada and other countries.

221.217 Swedish, SWED

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 Swedish language background should consult a Department advisor. Such students may be granted advanced placement and directed to register in a more advanced course more suitable to their level of ability. 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 Scandinavian (SCAND) listings.

Undergraduate Courses

SWED 111 Beginners' Swedish I

★3 (fi 6) (either term, 5-0-0). Designed to give basic practical skill in everyday spoken and written Swedish. The oral approach, using the laboratory, is followed. Note: not to be taken by students with credit in SWED 100, or with native or near native proficiency, or with Swedish 30 or its equivalents in Canada and other countries.

SWED 112 Beginners' Swedish II

★3 (fi 6) (either term, 5-0-0). Prerequisite: SWED 111 or consent of Department. Note: not to be taken by students with credit in SWED 100, or with native or near native proficiency, or with Swedish 30 or its equivalents in Canada and other countries.

SWED 211 Second-Year Swedish I

★3 (fi 6) (either term, 4-0-0). Reading and study of selected texts in Swedish literature and culture. Conversation and composition. Prerequisite: Swedish 30 (or equivalent) or SWED 112 or consent of Department. Note: not to be taken by students with credit in SWED 200.

SWED 212 Second-Year Swedish II

★3 (fi 6) (either term, 4-0-0). Prerequisite: SWED 211 or consent of Department. Note: not to be taken by students with credit in SWED 200.

221.218 Theatre Design, T DES

Department of Drama
Faculty of Arts

Undergraduate Courses

T DES 170 Fundamentals of Stagecraft and Design

★3 (fi 6) (either term, 3-0-0). Production techniques, construction, mechanics, lighting and design. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students. Not to be taken by students with credit in Drama 279, 379 or 479.

T DES 171 Studio Techniques for Theatre Design

★6 (fi 12) (two term, 0-4L-0). Study and practice of the studio techniques employed in theatre design. Note: Not to be taken by students with credit in DRAMA 371. Prerequisite: consent of department.

T DES 172 Technical Drawing for Theatre Design

★3 (fi 6) (either term, 2-0-1). Studies in drafting and perspective drawing for the stage. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students. Note: Not to be taken by students with credit in DRAMA 270 or 471.

T DES 270 Theatre Design I

★6 (fi 12) (two term, 0-6L-0). Study and practice of design for the theatre. Restricted to BFA Drama (Design) and (Technical Theatre) students or consent of department.

T DES 271 Computer Graphics for Theatre Design

★3 (fi 6) (either term, 2-0-2). Study in practice of computer graphic techniques employed in theatre design. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students or consent of Department.

T DES 272 CAD for the Theatre

★3 (fi 6) (either term, 2-0-2). Computer aided design for the theatre designer and technician. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students. Note: Not to be taken by students with credit in DRAMA 491

T DES 273 Production Techniques: Scene Painting

★3 (fi 6) (first term, 0-6L-0). Theory and techniques of the texturing and painting of scenery. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students, or consent of department. Not to be taken by students with credit in DRAMA 572 or 584.

T DES 274 Production Techniques: Advanced Scene Painting

★3 (fi 6) (second term, 0-6L-0). Prerequisite: DRAMA 273. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students, or consent of department. Not to be taken by students with credit in DRAMA 572 or 585

T DES 275 History of Dress and Decor I

★3 (fi 6) (either term, 3-0-0). A survey of style in western civilization from the ancients to the Renaissance. Prerequisite: consent of department. Note: Not to be taken by students with credit in DRAMA 375 or HECOL 150, 268 or 360.

T DES 278 Drawing

★3 (fi 6) (two term, 0-3L-0). Development and application of drawing techniques with emphasis on drawing for the theatre. Note: A single-term course offered over two terms. Restricted to BFA Drama (Design) students.

T DES 370 Theatre Design II

★6 (fi 12) (two term, 0-6L-0). Further study and practice of design for the theatre. Prerequisite: DRAMA 270. Note: Restricted to BFA Drama (Design) students.

T DES 372 3D CAD for the Theatre

★3 (fi 6) (either term, 2-0-2). Exploration, practice and experimentation with 3D CAD for theatrical application. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students. Offered in alternate years.

T DES 373 Production Techniques: Lighting Design

★3 (fi 6) (first term, 4-2L-0). Theory and techniques of lighting design. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students, or consent of department. Note: Not to be taken by students with credit in DRAMA 372 or 384.

T DES 374 Production Techniques Advanced: Lighting Design

★3 (fi 6) (second term, 0-6L-0). Prerequisite: T DES 373. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students, or consent of department. Note: Not to be taken by students with credit in DRAMA 372 or 385.

T DES 375 History of Dress and Decor II

★3 (fi 6) (either term, 3-0-0). A survey of style in western civilization from the Renaissance to the present. Prerequisite: consent of department. Note: Not to be taken by students with credit in DRAMA 375 HECOL 150, 268 or 360.

T DES 376 Design Assistantship I

★3 (fi 6) (two term, 0-0-6). Practical experience in assisting the designer. Corequisite: T DES 370. Note: A single-term course offered over two terms. Restricted to BFA Drama (Design) students. Not to be taken by students with credit in DRAMA 473 or 493.

T DES 377 Production Design I

★3 (fi 6) (two term, 0-0-6). Practical experience in designing an element or elements of a production. Note: A single-term course offered over two terms. Restricted to BFA Drama (Design) students. Not to be taken by students with credit in DRAMA 476.

T DES 378 Drawing II

★3 (fi 6) (two term, 0-3L-0). Further development and application of drawing techniques with emphasis on drawing for the theatre. Note: A single-term course offered over two terms. Restricted to BFA Drama (Design) students.

T DES 470 Theatre Design III

★6 (fi 12) (two term, 0-6L-0). A specialized course for advanced students, designed to meet the needs of the individual. Prerequisite: T DES 370. Note: Restricted to BFA Drama (Design) students. Not to be taken by students with credit in DRAMA 570.

T DES 471 Portfolio

★0 (fi 2) (two term, 0-1s-0). Portfolio assessment. Note: Not to be taken by students with credit in DRAMA 571.

T DES 473 Production Techniques: Costume

★3 (fi 6) (first term, 0-6L-0). Theory and techniques of stage costuming. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students, or consent of department. Not to be taken by students with credit in DRAMA 472 or 484.

T DES 474 Production Techniques: Advanced Costume

★3 (fi 6) (second term, 0-6L-0). Prerequisite: T DES 473. Note: Restricted to BFA Drama (Design) and (Technical Theatre) students or consent of department. Not to be taken by students with credit in DRAMA 472 or 485.

T DES 475 Topics in the History of Theatre Design

★3 (fi 6) (either term, 3-0-0). History of design and scenography for the theatre.

T DES 476 Design Assistantship II

★6 (fi 12) (two term, 0-0-6). Practical experience in assistant designing. Corequisite: T DES 470. Note: Restricted to BFA Drama (Design) students.

T DES 477 Production Design II

★3 (fi 6) (two term, 0-0-6). Practical experience in designing an element or elements of a production. Restricted to BFA Drama (Design) students. A single-term course offered over two terms. Not to be taken by students with credit in DRAMA 576.

T DES 479 Practicum

★6 (fi 12) (two term, 0-9L-0). A practical extension of the production techniques courses, involving the student in the production process of main stage shows. Pre or corequisite: T DES 273, 373, or 473. Note: Not to be taken by students with credit in DRAMA 579.

Graduate Courses**T DES 570 Advanced Theatre Design I**

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

T DES 571 Advanced Studio Techniques for Theatre Design

★3 (fi 6) (two term, 0-4L-0). Study and practice of the studio techniques employed in theatre design. Note: A single-term course offered over two terms. Restricted to MFA Drama (Design) students.

T DES 572 Advanced Technical Drawing for Theatre Design

★3 (fi 6) (either term, 2-0-1). Studies in drafting and perspective drawing for the stage. Note: Restricted to MFA Drama (Design) students.

T DES 573 Advanced Scene Painting

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

T DES 575 History of Dress and Decor I

★3 (fi 6) (either term, 3-0-0). A survey of style in western civilization from the ancients to the Renaissance. Offered in alternate years.

T DES 576 Design Assistantship III

★3 (fi 6) (two term, 0-0-6). Practical experience in assistant designing. Note: A single-term course offered over two terms. Restricted to MFA Drama (Design) students.

T DES 577 Production Design III

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

T DES 578 Advanced Drawing

★3 (fi 6) (two term, 0-3L-0). Development and application of drawing techniques with emphasis on drawing for the theatre. Note: A single-term course offered over two terms. Restricted to MFA Drama (Design) students.

T DES 579 Practicum

★3 (fi 6) (two term, 0-9L-0). A practical extension of the production techniques courses, involving the student in the production process of main stage shows. Pre- or corequisite: T DES 573, 673, or 773. Note: A single-term course offered over two terms. Restricted to MFA Drama (Design) students.

T DES 580 Design for Directors

★3 (fi 6) (either term, 0-3L-0). Corequisites: DRAMA 660, 661, 680 or 681. Note: Restricted to MFA Drama (Directing) students and MA Drama students (with consent of department). Not to be taken by students with credit in DRAMA 672.

T DES 670 Advanced Theatre Design II

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

T DES 671 Advanced Computer Graphics for Theatre Design

★3 (fi 6) (either term, 2-0-2). Study in practice of computer graphic techniques employed in theatre design. Note: Restricted to MFA Drama (Design) students.

T DES 672 Advanced CAD for the Theatre

★3 (fi 6) (either term, 2-0-2). Computer aided design for the theatre designer and technician. Note: Restricted to MFA Drama (Design) students.

T DES 673 Advanced Lighting Design

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

T DES 675 History of Dress and Decor II

★3 (fi 6) (either term, 3-0-0). A survey of style in western civilization from the Renaissance to the present. Offered in alternate years.

T DES 676 Design Assistantship IV

★3 (fi 6) (two term, 0-0-6). Practical experience in assistant designing. Note: A single-term course offered over two terms. Restricted to MFA Drama (Design) students.

T DES 677 Production Design IV

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

T DES 770 Advanced Theatre Design III

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

T DES 772 Advanced 3D CAD for the Theatre

★3 (fi 6) (either term, 2-0-2). Exploration, practice and experimentation with 3D

CAD for theatrical application. Note: Restricted to MFA Drama (Design) students. Offered in alternate years.

T DES 773 Advanced Costume Techniques

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

T DES 775 Advanced Topics in the History of Theatre Design

★3 (fi 6) (either term, 3-0-0). History of design and scenography for the theatre.

221.219 Thesis, THES

Faculty of Graduate Studies and Research

Graduate Courses**THES 901 Thesis Research**

★0 (fi 2) (either term, unassigned). Represents research activity equivalent to ★1 for registration status and fee assessment purposes. Approval of the Faculty of Graduate Studies and Research required.

THES 902 Thesis Research

★0 (fi 4) (either term, unassigned). Represents research activity equivalent to ★2 for registration status and fee assessment purposes. Approval of Faculty of Graduate Studies and Research required.

THES 903 Thesis Research

★0 (fi 6) (either term, unassigned). Represents research activity equivalent to ★3 for registration status and fee assessment purposes.

THES 904 Thesis Research

★0 (fi 8) (either term, unassigned). Represents research activity equivalent to ★4 for registration status and fee assessment purposes.

THES 905 Thesis Research

★0 (fi 10) (either term, unassigned). Represents research activity equivalent to ★5 for registration status and fee assessment purposes.

THES 906 Thesis Research

★0 (fi 12) (either term, unassigned). Represents research activity equivalent to ★6 for registration status and fee assessment purposes.

THES 907 Thesis Research

★0 (fi 14) (either term, unassigned). Represents research activity equivalent to ★7 for registration status and fee assessment purposes.

THES 908 Thesis Research

★0 (fi 16) (either term, unassigned). Represents research activity equivalent to ★8 for registration status and fee assessment purposes.

THES 909 Thesis Research

★0 (fi 18) (either term, unassigned). Represents research activity equivalent to ★9 for registration status and fee assessment purposes.

THES 910 Thesis Research

★0 (fi 0) (either term, unassigned). For special purposes. Approval of Faculty of Graduate Studies and Research required.

THES 919 Thesis Research

★0 (fi 0) (either term, unassigned). Represents research activity equivalent to ★9 for registration status purposes. Requires payment of a set fee. See §22.2.2.

221.220 Ukrainian, UKR

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 Ukrainian 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 439 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 the Folklore specialization.

- (5) See also HIST 315, 316, 317, INT D 444 and C LIT 362 to select one of the required courses in the Language and Literature specialization.

Undergraduate Courses

UKR 111 Beginners' Ukrainian I

★3 (fi 6) (either term, 5-0-0). For students with little or no background in Ukrainian, the course emphasizes oral communication while developing basic listening, reading and writing skills. Cultural practices are taught as an integral part of the language. Note: not to be taken by students with credit in UKR 100, or with native or near native proficiency, or with Ukrainian 30 or its equivalents in Canada and other countries.

UKR 112 Beginners' Ukrainian II

★3 (fi 6) (either term, 5-0-0). Prerequisite: UKR 111 or consent of Department. Note: not to be taken by students with credit in UKR 100, or with native or near native proficiency, or with Ukrainian 30 or its equivalents in Canada and other countries.

UKR 211 The Ukrainian-speaking World I

★3 (fi 6) (either term, 4-0-0). Contemporary language and culture through newspapers, magazines, TV and the Internet. Prerequisite: Ukrainian 30 (or equivalent matriculation standing), or UKR 112, or consent of Department. Note: not to be taken by students with credit in UKR 150, 201, 202, 203, 204.

UKR 212 The Ukrainian-speaking World II

★3 (fi 6) (either term, 4-0-0). Focus on elementary conversation and composition. Prerequisite: UKR 211 or consent of Department. Note: not to be taken by students with credit in UKR 150, 202, 204.

UKR 300 Ukrainian through its Living Culture

★6 (fi 12) (either term, 3-0-0). Practical language skills with a direct experience of Ukrainian life and culture in the Lviv environment. The language of instruction is Ukrainian. Prerequisite: UKR 204 or consent of Department.

UKR 301 Reading and Speaking Ukrainian

★3 (fi 6) (either term, 3-0-0). A variety of written and audio-visual texts explore social and cultural issues, and serve as a basis for developing active vocabulary and oral proficiency. Readings include selection made by students. A companion course to UKR 204 or 304. Pre- or corequisite: UKR 204 (or former 150, 202) or consent of Department. Note: not to be taken by students enrolled in 400-level Ukrainian language courses.

UKR 303 Ukrainian in Context I

★3 (fi 6) (either term, 3-0-0). Conversation and writing through films, news items, short stories and plays. Prerequisite: UKR 204 (formerly 150, 202), or consent of Department. Note: not to be taken by students with credit in UKR 401 or 402.

UKR 304 Ukrainian in Context II

★3 (fi 6) (either term, 3-0-0). Prerequisite: UKR 303 (formerly 401) or consent of Department. Note: not to be taken by students with credit in UKR 402.

UKR 324 Ukrainian Culture I

★3 (fi 6) (either term, 3-0-0). Comparison among contemporary life in Ukraine today, Ukrainian Canadian culture, and traditional village life in the past. Focus is on everyday life and spiritual culture. Language of instruction is English. This course does not fulfil the language other than English requirement of the BA.

UKR 325 Ukrainian Culture II

★3 (fi 6) (either term, 3-0-0). Comparison among contemporary life in Ukraine today, Ukrainian Canadian culture, and traditional village life in the past. Focus is on community relationships, arts, recreation, cultural representation and change. This course does not fulfil the language other than English requirement of the BA.

UKR 327 Early Ukrainian-Canadian Culture

★3 (fi 6) (either term, 3-0-0). Immigration, settlement, traditions and material culture of Ukrainians in Alberta to 1930, with special reference to activities at the Ukrainian Cultural Heritage Village. Note: This course is given in Spring/Summer only. Language of instruction is English. This course will not fulfil the Language other than English requirement of the BA degree.

UKR 403 Ukrainian in the Media and Internet

★3 (fi 6) (either term, 3-0-0). Practical language skills in the context of life in Ukraine through traditional and contemporary media. Debates, interviews and opinion polls. Basic discourse analysis. Prerequisite: UKR 304 (formerly 402), or consent of Department.

UKR 404 Ukrainian on TV and in Film

★3 (fi 6) (either term, 3-0-0). Advanced language course with creative writing, critiques and discussions. Prerequisite: UKR 304 (formerly 402), or consent of Department.

UKR 405 Children's Literature in Ukrainian

★3 (fi 6) (either term, 3-0-0). Advanced language skills for the future teacher through a survey of poetry, tales, legends and riddles adapted for the young reader. Prerequisite: UKR 304 (formerly 402), or consent of Department.

UKR 406 Business Ukrainian

★3 (fi 6) (either term, 3-0-0). Advanced modern Ukrainian with emphasis on the vocabulary and communication style of the Ukrainian business world. Prerequisite: UKR 304 (formerly 402), or consent of Department.

UKR 407 Translating Literature: Ukrainian to English

★3 (fi 6) (either term, 3-0-0). Evaluation and comparison of existing translations, and extensive practical exercises. Prerequisite: UKR 304 (formerly 402), or consent of Department.

UKR 410 Language Issues in Contemporary Ukraine

★3 (fi 6) (either term, 3-0-0). The language situation in Ukraine after independence: language contact, language maintenance, language shift, the language of mass media and the Internet. Prerequisite: consent of Department.

UKR 411 The Style and Structure of Contemporary Ukrainian

★3 (fi 6) (either term, 3-0-0). Ukrainian and its various styles including dialects, jargon and slang. Prerequisite or corequisite: UKR 304 (formerly 402), or consent of Department.

UKR 415 Women in Culture: Fictional Characters/Feminist Writers

★3 (fi 6) (either term, 3-0-0). The course delves into the role and representation of women in 19th- and 20th-century Ukraine. It traces the evolution of female characters from Romanticism to Postmodernism and explores contributions by women to the Ukrainian literary and cultural canon. Social issues and sexual politics are examined in the light of women's biographies as well as their fictional worlds. Note: Readings are available in English for students not taking Ukrainian as a major or minor.

UKR 422 Ukrainian Folk Songs

★3 (fi 6) (either term, 3-0-0). A survey of the folk song genres, with analysis of texts in the original. Some field work. Prerequisite: UKR 301 or consent of Department.

UKR 423 Ukrainian Folk Prose

★3 (fi 6) (either term, 3-0-0). A survey of the prose and minor verbal genres, with analysis of texts in the original. Some field work. Pre- or corequisite: UKR 301 or consent of Department.

UKR 425 Ukrainian Rites of Passage

★3 (fi 6) (either term, 3-0-0). Examines rites of passage for birth, marriage and death. Some field work. Prerequisites: UKR 301 and ANTHR 207 or consent of Department.

UKR 426 Ukrainian Calendar Customs

★3 (fi 6) (either term, 3-0-0). Examines seasonal folk customs, including winter, spring, summer and autumn rites. Some field work. Pre- or corequisite: UKR 301; prerequisite: ANTHR 207 or consent of Department.

UKR 427 Ukrainian Material Culture

★3 (fi 6) (either term, 3-0-0). Investigation of selected aspects of the vernacular material culture of Ukrainians and Ukrainian Canadians, including village dress, architecture, agricultural techniques, and folk crafts. Prerequisite: ANTHR 207 or consent of Department.

UKR 428 Ukrainian Folk Art and Performance

★3 (fi 6) (either term, 3-0-0). Investigation of selected aspects of Ukrainian folk arts, their performance processes and material manifestations. Topics include embroidery, egg decoration, folk medicine, games, folk movement, and drama. Prerequisite: ANTHR 207 or consent of Department.

UKR 469 Civilization and Culture in Ukraine: 988-1794

★3 (fi 6) (either term, 3-0-0). Major trends in thought of pre-secular Ukraine. The literary, iconographic and musical legacy of Kyivan and Galician-Volhynian Rus' and its transformation during the Ruthenian renaissance. Lectures in English. Readings available in English for students not taking Ukrainian as a major or minor. Otherwise modern Ukrainian translations will be assigned.

UKR 473 Ukrainian Modernism and Avant-Garde

★3 (fi 6) (either term, 3-0-0). The dramatic revolt against 19th-century aesthetics from the 1890s to 1930. Selected poetry, short prose, drama, and manifestoes highlight the philosophical and formal innovations introduced by such movements as symbolism, futurism, and constructivism. Analogies are drawn to the visual arts. Prerequisite: UKR 301; or corequisite UKR 303 or 304 or consent of Department.

UKR 474 Ukrainian Literature: Diaspora and Dissent

★3 (fi 6) (either term, 3-0-0). Works in the diaspora (1940s - 1980s) are compared and contrasted with Soviet Ukraine's official and dissident literature. The focus is on the New York Group and the writers of the Sixties, with emphasis on their innovations in poetic language and themes. Prerequisite: consent of Department. Note: Readings are available in English for students not taking Ukrainian as a major or minor.

UKR 475 Ukrainian Literature Today

★3 (fi 6) (either term, 3-0-0). The course begins with developments on the eve of Ukrainian independence (1991). The dramatic transformation of literature is surveyed against the background of the collapse of communism and socialist realism. Emphasis is on the youngest and most radical generation of writers and

critics, their styles, themes, and ideologies. Prerequisite: consent of Department. Note: Readings are available in English for students not taking Ukrainian as a major or minor.

UKR 495 Honors Thesis

★3 (fi 6) (either term, 0-3s-0).

UKR 499 Special Topics

★3 (fi 6) (either term, 3-0-0).

Graduate Courses

UKR 503 Ukrainian in the Media and Internet

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

UKR 504 Ukrainian on TV and in Film

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

UKR 510 Language Issues in Contemporary Ukraine

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

UKR 515 Early-Modern Ukrainian Poetry and Drama (1550s-1780s)

★3 (fi 6) (either term, 3-0-0). The impact of humanistic theory on the linguistic and formal features of occasional verse, religious lyric, school drama, and political dialogue. Course also considers the alternative poetics of the love lyric, the puppet theatre, and the oral epic. Authors include H Smotrytsky, K Sakovych, L Baranovych, I Velychkovsky, S Iavorsky, T Prokopovych, M Dovhalevsky, and H Skovoroda. Reading knowledge of Middle Ukrainian (i.e., Ruthenian) or Polish or Latin desirable. Prerequisite: consent of Department.

UKR 522 Ukrainian Folk Songs

★3 (fi 6) (either term, 3-0-0). A survey of the folk song genres, with analysis of texts in the original. Some field work. Prerequisite: consent of Department.

UKR 523 Ukrainian Folk Prose

★3 (fi 6) (either term, 3-0-0). A survey of the prose and minor verbal genres, with analysis of texts in the original. Some field work. Prerequisite: consent of Department.

UKR 525 Ukrainian Rites of Passage

★3 (fi 6) (either term, 3-0-0). Examines rites of passage for birth, marriage and death. Some field work. Prerequisite: consent of Department.

UKR 526 Ukrainian Calendar Customs

★3 (fi 6) (either term, 3-0-0). Examines seasonal folk customs, including winter, spring, summer and autumn rites. Some field work. Prerequisite: consent of Department.

UKR 527 Ukrainian Material Culture

★3 (fi 6) (either term, 3-0-0). Investigation of selected aspects of the vernacular material culture of Ukrainians and Ukrainian Canadians, including village dress, architecture, agricultural techniques, and folk crafts. Prerequisite: consent of Department.

UKR 528 Ukrainian Folk Art and Performance

★3 (fi 6) (either term, 3-0-0). Investigation of selected aspects of Ukrainian folk arts, their performance processes and material manifestations. Topics include embroidery, egg decoration, folk medicine, games, folk movement, and drama. Prerequisite: consent of Department.

UKR 531 History of Ukrainian Folklore Studies

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

UKR 532 Ukrainian Folklore in Canada

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

UKR 565 Women in Culture: Fictional Characters/Feminist Writers

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

UKR 569 Civilization and Culture in Ukraine: 988-1794

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

UKR 571 Ukrainian Romanticism

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

UKR 572 Ukrainian Realism

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

UKR 573 Ukrainian Modernism and Avant-Garde

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

UKR 574 Ukrainian Literature: Diaspora and Dissent

★3 (fi 6) (either term, 3-0-0). Focus on theories of exile and the literature of displacement. Prerequisite: consent of Department.

UKR 575 Ukrainian Literature Today

★3 (fi 6) (either term, 3-0-0). Focus on post-colonial theories of art. Prerequisite: consent of Department.

UKR 631 Ukrainian Folklore Theory Studies

★3 (fi 6) (either term, 3-0-0).

UKR 632 Ukrainian Folklore Research Methods

★3 (fi 6) (either term, 3-0-0).

UKR 642 Studies in Ukrainian Drama

★3 (fi 6) (either term, 3-0-0). Detailed study of major dramatic works of the 19th and 20th centuries.

UKR 645 Studies in Ukrainian Literary Criticism

★3 (fi 6) (either term, 3-0-0). Detailed study of major critical texts from the 19th and 20th centuries.

UKR 697 Topics in Ukrainian Folklore

★3 (fi 6) (either term, 3-0-0).

UKR 698 Topics in Ukrainian Linguistics

★3 (fi 6) (either term, 3-0-0).

UKR 699 Topics in Ukrainian Literature

★3 (fi 6) (either term, 3-0-0).

UKR 900 Directed Research Project

★6 (fi 12) (variable, unassigned).

221.221 Université, UNTE

Faculté Saint-Jean

Cours de 1er cycle

UNTE 101 Initiation aux études universitaires

★0 (fi 2) (l'un ou l'autre semestre, 12 heures). Une série de séminaires visant à faciliter la réussite académique au niveau universitaire. Méthodes d'étude et de recherche. Introduction au réseau des bibliothèques et à l'utilisation de l'Internet. Note: ce cours est fortement recommandé pour tous les étudiants de première année inscrits à la Faculté Saint-Jean.

221.222 University, UNIV

Faculty of Agriculture, Forestry, and Home Economics

Undergraduate Courses

UNIV 101 First-Year Experience I

★2 (fi 0) (either term, 0-3s-0). Topics relevant to successful academic performance including study skills, use of campus resources, stress management, and career planning. Intended for students in the Transitional Year Program. (Native Student Services). Students in other programs will be assessed four units of fee index (fi 4).

UNIV 102 First -Year Experience II

★2 (fi 0) (second term, 0-3s-0). Exploration and application of university regulations, faculty expectations, pathways to academic excellence, and practical methods for surviving the challenges of first year on campus. Intended for students in the Transitional Year Program. (Native Student Services.) Students in other programs will be assessed four units of fee index (fi 4).

221.223 Women's Studies, W ST

Women's Studies Program
Faculty of Arts

Undergraduate Courses

W ST 201 Introduction to Women's Studies

★3 (fi 6) (either term, 3-0-0). Introduces students to the field of Women's Studies, with emphasis on the theoretical foundations of feminist analysis and the diversity of debates within feminism. Not open to students who have successfully completed W ST 200.

W ST 202 Current Issues in Women's Studies

★3 (fi 6) (either term, 3-0-0). Examines current and emerging topics and analytic perspectives in Women's Studies. Topics include women as individuals; women's families and communities; women's involvement in health, science, work, popular culture, religion, politics and social change. Prerequisite: W ST 201 or consent of the Department. Not open to students who have successfully completed W ST 200.

W ST 301 History of Feminist Thought

★3 (fi 6) (either term, 3-0-0). The development of feminist thought and theories from the 18th to the 20th century, including the contributions of, and tensions among various feminisms. Prerequisites: W ST 200, or 201, or consent of the Program.

W ST 302 Feminist Research and Methodologies

★3 (fi 6) (either term, 3-0-0). Whether there can be and is a distinctive feminist perspective on research in various disciplines; the ways in which taking a feminist perspective or taking account of women in research, affects the research process. Prerequisite: W ST 200, or 201, or consent of the Program.

W ST 305 Women and Work

★3 (fi 6) (either term, 0-3s-0). This course surveys women's paid employment, and domestic work, examining the nature of work women do and the interrelation between different forms of female labor. Canada provides the focal point of the course, with comparisons being drawn to other industrialized countries. Prerequisite: W ST 200, or 201, or consent of Program.

W ST 310 Women in Development

★3 (fi 6) (either term, 3-0-0). This course deals with development issues, such as work, health, environment, and human rights among women in developing countries. Prerequisite: W ST 200, or 201, or consent of Program. Not available to students with credit in R SOC 310.

W ST 320 Popular Culture/Feminist Culture

★3 (fi 6) (either term, 3-0-0). This course examines selected cultural forms in Canadian and American society from feminist perspectives. The focus is both on developing a feminist critique of cultural representations of women, and on considering the possibilities of feminist intervention in and production of popular culture. Prerequisite: W ST 200, or 201, or consent of the Program.

W ST 332 Contemporary Feminist Theory

★3 (fi 6) (either term, 3-0-0). The origins and evolution of various schools of contemporary western feminist thought. Prerequisite: W ST 200 or 201 or consent of Program. Not available to students with credit in PHIL 332.

W ST 350 Women and Science

★3 (fi 6) (either term, 3-0-0). This course will explore the roles of women in science, and the ways in which scientific theory and practice might better accommodate women's ideas, lives, and ways of knowing. Prerequisite: W ST 200, or 201, or consent of the Program.

W ST 360 Race, Class and Gender in Canada

★3 (fi 6) (either term, 0-3s-0). Historical, contemporary and comparative perspectives on the interaction of race, class, and gender experiences in multicultural Canada. Prerequisite: W ST 200 or 201 or consent of Program.

W ST 400 Feminist Ethics: An Interdisciplinary Approach

★3 (fi 6) (either term, 0-3s-0). A critical exploration of moral agency, moral language, moral identity, moral relationships, and moral community in the context of asymmetrical power as these relate to selected ethical issues affecting women's lives. Prerequisite: W ST 200, or 201, or consent of the Program.

W ST 401 Directed Readings in Women's Studies

★3 (fi 6) (either term, 0-3s-0). Open only to Women's Studies honors, majors and minors. May be taken only once. Prerequisite: W ST 200, or 201, or consent of the Program.

W ST 402 Honors Seminar and Project

★6 (fi 12) (two term, 0-3s-0). Prerequisite: W ST 200, or 201, and 302.

W ST 410 Feminism/Postmodernism

★3 (fi 6) (either term, 0-3s-0). An introductory exploration of tensions, disadvantages, and advantages of postmodernism for feminist theory and practice in relation to cultural and political issues such as representation, agency, identity/difference/ambiguity, nature, bodies, sexualities, and community. Prerequisite: W ST 200, or 201, or consent of the Program. Not open to students with credit in W ST 300.

W ST 420 Law and Feminism in Canada

★3 (fi 6) (either term, 0-3s-0). A focus on the fundamentally contradictory role of law for women in Canada, building upon role of insights offered by feminist cross-disciplinary legal scholarship. Prerequisite: W ST 200, or 201, or consent of the Program.

W ST 430 Sexuality

★3 (fi 6) (either term, 0-3s-0). Feminist analyses of, and alternatives to, the dominant 20th-century discourses that have defined women's sexualities. Prerequisite: W ST 200 or 201 or consent of Program.

W ST 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. Pre-requisite: WST 200, or WST 201, or consent of the Program. Not open to students who have successfully completed HIST 497.

W ST 498 Topics in Women's Studies

★3 (fi 6) (either term, 0-3s-0). Prerequisite: W ST 200, or 201, or consent of the Program.

Graduate Courses**W ST 500 Directed Reading in Women's Studies**

★3 (fi 6) (either term, 0-3s-0).

221.224 Work Experience, WKEXP**Undergraduate Courses****221.224.1 Faculty of Agriculture, Forestry, and Home Economics Courses****WKEXP 981 Agriculture, Forestry, and Home Economics Work Experience I**

★0 (fi 9) (Spring/Summer, unassigned). A four-month work placement for Faculty of Agriculture, Forestry, and Home Economics students admitted into the Internship program. The work experience provides the student with exposure to the practical application of their specialization and the general work environment. Evaluation is based on appraisal of employer and mentor.

WKEXP 982 Agriculture, Forestry, and Home Economics Work Experience II

★0 (fi 9) (first term, unassigned). A four-month work placement for Faculty of Agriculture, Forestry, and Home Economics students admitted into the Internship program. The work experience provides the student with exposure to the practical application of their specialization and the general work environment. Evaluation is based on appraisal of employer and mentor.

WKEXP 983 Agriculture, Forestry, and Home Economics Work Experience III

★0 (fi 9) (second term, unassigned). A four-month work placement for Faculty of Agriculture, Forestry, and Home Economics students admitted into the Internship program. The work experience provides the student with exposure to the practical application of their specialization and the general work environment. Evaluation is based on appraisal of employer and mentor.

221.224.2 Faculty of Arts Courses**WKEXP 801 Arts Work Experience I**

★0 (fi 9) (either term, unassigned). A four-month work placement for Faculty of Arts students participating in the Cooperative Education route. The focus of the work experience will be for the student to gain an appreciation of the work environment related to their discipline. Prerequisite: consent of the Department in which the student is majoring.

WKEXP 802 Arts Work Experience II

★0 (fi 9) (either term, unassigned). A four-month work placement for Faculty of Arts students participating in the Cooperative Education route. The focus of the work experience will be for the student to gain an appreciation of the work environment related to their discipline. Prerequisite: WKEXP 801 and consent of the Department in which the student is majoring.

WKEXP 803 Arts Work Experience III

★0 (fi 9) (either term, unassigned). A four-month work placement for Faculty of Arts students participating in the Cooperative Education route. The focus of the work experience will be for the student to gain an appreciation of the work environment related to their discipline. Prerequisite: WKEXP 802 and consent of the Department in which the student is majoring.

WKEXP 961 Psychology Work Experience I

★0 (fi 9) (either term, unassigned). A four-month work placement for Psychology students in the Faculty of Arts in the Psychology Cooperative Program. The focus of the work experience will be for the student to gain an appreciation of the work environment. Prerequisite: consent of Department.

WKEXP 962 Psychology Work Experience II

★0 (fi 9) (either term, unassigned). A four-month work placement for Psychology students in the Faculty of Arts in the Psychology Cooperative Program. The focus of the work experience will be for the student to gain further knowledge of the work environment. Prerequisite: WKEXP 961.

WKEXP 963 Psychology Work Experience III

★0 (fi 9) (either term, unassigned). A four-month work placement for Psychology students in the Faculty of Arts in the Psychology Cooperative Program. The focus of the work experience is to further the student's knowledge of the working world. Prerequisite: WKEXP 962.

WKEXP 970 Honors Work Term

★0 (fi 9) (either term, unassigned). Prerequisites: Department and Faculty approval.

WKEXP 971 Honors Work Assignment

★0 (fi 6) (either term, unassigned). Prerequisites: Department and Faculty approval.

221.224.3 Faculty of Business Courses**WKEXP 911 Business Work Experience I**

★0 (fi 12) (either term, unassigned). A four-month work placement for Business

students admitted into the cooperative education option. The focus of the work experience will be for the student to gain an appreciation of the work environment. Evaluation will be based on the employer's performance appraisal, the cooperative education coordinator's site evaluation report, and the student's performance on the work-term report.

WKEXP 912 Business Work Experience II

★0 (*fi 12*) (either term, unassigned). A four-month work placement for Business students admitted into the cooperative education option. The focus of the work experience will be for the student to gain experience in their chosen field of specialization. Evaluation will be based on the employer's performance appraisal, the cooperative education coordinator's site evaluation report, and the student's performance on the work-term report. Prerequisite: WKEXP 911.

WKEXP 913 Business Work Experience III

★0 (*fi 12*) (either term, unassigned). A four-month work placement for Business students admitted into the cooperative education option. The focus of the work experience will be for the student to perform work directly related to their specialization. Evaluation will be based on the employer's performance appraisal, the cooperative education coordinator's site evaluation report, and the student's performance on the work-term report. Prerequisite: WKEXP 912.

221.224.4 Faculty of Engineering Courses

WKEXP 901 Engineering Work Experience I

★0.5 (*fi 7*) (either term or Spring/Summer, unassigned). A four-month work placement for Engineering students registered in the Cooperative Education Program. This work experience will provide the student with exposure to the practical application of engineering and the general work environment. Evaluation will be based on the employer's performance appraisal, the student's work term report, and the student's ability to learn from the experiences of the work term. Prerequisite: ENGG 299.

WKEXP 902 Engineering Work Experience II

★0.5 (*fi 7*) (either term or Spring/Summer, unassigned). A four-month work placement for Engineering students registered in the Cooperative Education Program. This work experience will provide the student with exposure to the practical application of engineering and the general work environment. Evaluation will be based on the employer's performance appraisal, the student's work term report, and the student's ability to learn from the experiences of the work term. Prerequisite: WKEXP 901.

WKEXP 903 Engineering Work Experience III

★0.5 (*fi 7*) (either term or Spring/Summer, unassigned). A four-month work placement for Engineering students registered in the Cooperative Education Program. This work experience will provide students with personal involvement in the practice of their engineering discipline commensurate with their level of academic preparation. Evaluation will be based on the employer's performance appraisal, the student's work term report, and the student's ability to learn from the experiences of the work term. Prerequisite: WKEXP 902.

WKEXP 904 Engineering Work Experience IV

★0.5 (*fi 7*) (either term or Spring/Summer, unassigned). A four-month work placement for Engineering students registered in the Cooperative Education Program. This work experience will provide students with personal involvement in the practice of their engineering discipline commensurate with their level of academic preparation. Evaluation will be based on the employer's performance appraisal, the student's work term report, and the student's ability to learn from the experiences of the work term. Prerequisite: WKEXP 903.

WKEXP 905 Engineering Work Experience V

★3 (*fi 7*) (either term or Spring/Summer, unassigned). A four-month work placement for Engineering students registered in the Cooperative Education Program. This work experience will provide students with personal involvement in the practice of their engineering discipline commensurate with their level of academic preparation. Evaluation will be based on the employer's performance appraisal, the student's work term report, and the student's ability to learn from the experiences of the work term. Prerequisite: WKEXP 904.

221.224.5 Faculty of Medicine and Dentistry Courses

WKEXP 990 Pharmacology Work Experience I

★0 (*fi 9*) (either term or Spring/Summer, unassigned). A required four-month work experience placement for Pharmacology Specialization or Honors students admitted into the Industrial Internship Program. This work experience will expose the student to the practical application of Pharmacology and the general work environment.

WKEXP 991 Pharmacology Work Experience II

★0 (*fi 9*) (either term or Spring/Summer, unassigned). A required four-month work experience placement for Pharmacology Specialization or Honors students admitted into the Industrial Internship Program. This work experience will expose the student to the practical application of Pharmacology and the general work environment.

WKEXP 992 Pharmacology Work Experience III

★0 (*fi 9*) (either term or Spring/Summer, unassigned). A required four-month work experience placement for Pharmacology Specialization or Honors students admitted into the Industrial Internship Program. This work experience will expose the student to the practical application of Pharmacology and the general work environment.

221.224.6 Faculty of Physical Education and Recreation Courses

WKEXP 399 Professional Experience in Athletic Therapy/Training

★0 (*fi 4*) (two term, unassigned). Required for all BPE students enrolled in the Collaborative Specialization in Athletic Therapy program as well as those students who wish to work with Varsity Teams in an Athletic Therapy/Training capacity. The Head Athletic Therapist (Professional Experience Coordinator), who is CATA-certified, will supervise all students. All supervised hours will be eligible for CATA certification. Prerequisite: consent of Faculty. Note: a significant commitment of outside-class time is required.

221.224.7 Faculty of Science Courses

WKEXP 401 Chemistry Work Experience

★0 (*fi 9*) (first term, unassigned). A four-month work placement for Chemistry students admitted to the Industrial Internship program.

WKEXP 402 Chemistry Work Experience

★0 (*fi 9*) (second term, unassigned). A four-month work placement for Chemistry students admitted to the Industrial Internship program.

WKEXP 411 EAS Work Experience

★0 (*fi 9*) (either term or Spring/Summer, unassigned). A four-month work placement for Earth and Atmospheric Sciences students admitted to the Industrial Internship Program. Work Experience course registrations must be contiguous.

WKEXP 412 EAS Work Experience

★0 (*fi 9*) (either term or Spring/Summer, unassigned). A four-month work placement for Earth and Atmospheric Sciences students admitted to the Industrial Internship Program. Work Experience course registrations must be contiguous. Prerequisite: WKEXP 411.

WKEXP 413 EAS Work Experience

★0 (*fi 9*) (either term or Spring/Summer, unassigned). A four-month work placement for Earth and Atmospheric Sciences students admitted to the Industrial Internship Program. Work Experience course registrations must be contiguous. Prerequisite: WKEXP 412.

WKEXP 421 Physics and Environmental Physical Sciences Work Experience

★0 (*fi 9*) (first term, unassigned). A four-month work placement for Physics and Environmental Physical Sciences students admitted to the Industrial Internship Program.

WKEXP 422 Physics and Environmental Physical Sciences Work Experience

★0 (*fi 9*) (second term, unassigned). A four-month work placement for Physics and Environmental Physical Sciences students admitted to the Industrial Internship Program.

WKEXP 423 Physics and Environmental Physical Sciences Work Experience

★0 (*fi 9*) (Spring/Summer, unassigned). A four-month work placement for Physics and Environmental Physical Sciences students admitted to the Industrial Internship Program.

WKEXP 921 Computing Science Introductory Work Experience

★0 (*fi 9*) (either term, unassigned). A required four-month work experience placement for Computing Science Honors or Specialization students admitted into the Industrial Internship Program. The focus of the work experience will be for the student to gain an in-depth appreciation of the computing profession.

WKEXP 922 Computing Science Advanced Work Experience

★0 (*fi 9*) (second term, unassigned). A required four-month work experience for Computing Science Honors or Specialization students admitted into the Industrial Internship Program. The focus of the work experience will be for the student to perform work directly related to their specialization with sufficient technical and professional merit expected of a computing professional. Prerequisite: WKEXP 921.

WKEXP 923 Computing Science Work Experience

★0 (*fi 9*) (Spring/Summer, unassigned). A required four-month work experience placement for Computing Science Honors or Specialization students admitted into the Industrial Internship Program. The focus of the work experience will be for the students to perform in-depth work directly related to the advanced technical and professional skill level expected of a computing professional. Prerequisite: WKEXP 922.

WKEXP 931 Psychology Work Experience I

★0 (*fi 9*) (first term, unassigned). A four-month work placement for Psychology students in the Faculty of Science in the Psychology Industrial Internship Program. The focus of the work experience will be for the student to gain an appreciation of the work environment. Prerequisite: consent of Department.

WKEXP 932 Psychology Work Experience II

★0 (*fi 9*) (second term, unassigned). A four-month work placement for Psychology students in the Faculty of Science in the Psychology Industrial Internship Program. The focus of the work experience will be for the student to gain further knowledge of the work environment. Prerequisite: WKEXP 931.

WKEXP 933 Psychology Work Experience III

★0 (*fi 9*) (Spring/Summer, unassigned). A four-month work placement for Psychology students in the Faculty of Science in the Psychology Industrial Internship Program. The focus of the work experience is to further the student's knowledge of the working world. Prerequisite: WKEXP 932.

WKEXP 941 Biological Sciences Work Experience I

★0 (*fi 9*) (first term, unassigned). A four-month work placement for Biological Sciences students admitted into the Industrial Internship Program. The focus of the work experience will be for the student to gain an appreciation of the work environment.

WKEXP 942 Biological Sciences Work Experience II

★0 (*fi 9*) (second term, unassigned). A four-month work placement for Biological Sciences students admitted into the Industrial Internship Program. The focus of the work experience will be for the student to gain experience in his or her chosen field of specialization. Prerequisite: WKEXP 941.

WKEXP 943 Biological Sciences Work Experience III

★0 (*fi 9*) (Spring/Summer, unassigned). A four-month work placement for Biological Sciences students admitted into the Industrial Internship Program. The focus of the work experience will be for the student to perform work directly related to his or her specialization and of sufficient technical merit to show a good understanding of a particular area of study in Biological Sciences. Prerequisite: WKEXP 942.

WKEXP 951 Mathematical Sciences Work Experience I

★0 (*fi 9*) (first term, unassigned). A four-month work placement for Honors and Specialization students in the Mathematical Sciences Industrial Internship Program. The focus of the work experience will be for the student to gain an appreciation of the work environment. Prerequisite: consent of Department.

WKEXP 952 Mathematical Sciences Work Experience II

★0 (*fi 9*) (second term, unassigned). A four-month work placement for Honors and Specialization students in the Mathematical Sciences Industrial Internship Program. The focus of the work experience will be for the student to gain further knowledge of the work environment. Prerequisite: WKEXP 951.

WKEXP 953 Mathematical Sciences Work Experience III

★0 (*fi 9*) (Spring/Summer, unassigned). A four-month work placement for Honors and Specialization students in the Mathematical Sciences Industrial Internship Program. The focus of the work experience is to further the student's knowledge of the working world. Prerequisite: WKEXP 952.

221.225 Writing, WRITE

Department of English and Film Studies
Faculty of Arts

Undergraduate Courses**WRITE 294 Introduction to Writing Poetry**

★3 (*fi 6*) (either term, 3-0-0). Lectures and workshops in which the student will be required to write poetry. Prerequisites: ★6 of junior English (or equivalent), and consent of Instructor(s) based on a portfolio (see Instructor for deadline).

WRITE 295 Introduction to Writing Fiction

★3 (*fi 6*) (either term, 3-0-0). Lectures and workshops in which the student will be required to write prose. Prerequisites: ★6 of junior English (or equivalent), and consent of Instructor(s) based on a portfolio (see Instructor for deadline).

WRITE 298 Introduction to Writing Nonfiction

★6 (*fi 12*) (two term, 3-0-0). To increase the student's ability to write clear nonfiction prose. Models of prose style will be central, combined with frequent practice in writing on the basis of such models. Prerequisite: ★6 of junior English (or equivalent).

WRITE 394 Intermediate Creative Writing: Poetry

★6 (*fi 12*) (two term, 3-0-0). Prerequisite: WRITE 294 unless waived by Instructor. Consult Instructor for portfolio deadline.

WRITE 395 Intermediate Creative Writing: Fiction

★6 (*fi 12*) (two term, 3-0-0). Prerequisite: WRITE 295 unless waived by Instructor. Consult Instructor for portfolio deadline.

WRITE 398 Intermediate Creative Writing: Nonfiction

★6 (*fi 12*) (two term, 3-0-0). Prerequisite: WRITE 298 unless waived by Instructor.

WRITE 494 Advanced Creative Writing: Poetry

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: WRITE 394 unless waived by Instructor. Consult Instructor for portfolio deadline.

WRITE 495 Advanced Creative Writing: Fiction

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: WRITE 395 unless waived by Instructor. Consult Instructor for portfolio deadline.

WRITE 498 Advanced Creative Writing: Nonfiction

★3 (*fi 6*) (either term, 3-0-0). Prerequisite: WRITE 398 unless waived by Instructor.

WRITE 532 Tutorial: Fourth-Year Combined Honors Creative Writing

★3-6 (*variable*) (variable, variable). In the third year of the Combined Honors in Creative Writing program, the Honors student, in consultation with the Department, will arrange for a writing project under the guidance of a member of the Department for the ensuing summer and winter. The project is to be an original creative project judged by the Department to be the equivalent of a half-year creative writing course for ★3 or a full-year creative writing course for ★6.

221.226 Zoology (Biological Sciences), Z00L

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); Genetics (GENET); Microbiology (MICRB).
- 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**Z00L 224 Vertebrate Diversity**

★3 (*fi 6*) (first term, 3-0-3). A comparative survey of vertebrates, focusing on their morphology, classification, and phylogeny. Prerequisite: BIOL 108.

Z00L 225 Comparative Anatomy of the Vertebrates

★3 (*fi 6*) (second term, 3-0-3). Comparative anatomy of the vertebrates with special emphasis on the mammals. Prerequisite: BIOL 108. Z00L 224 strongly recommended.

Z00L 241 Animal Physiology I: Homeostasis

★3 (*fi 6*) (first term, 3-1s-0). Survey of physiological systems that regulate levels of gases, food, energy, temperature, water, and ions. Examples from invertebrates and vertebrates. Students with credit in PHYSL 210 may not obtain credit in Z00L 241. Prerequisite: BIOL 107.

Z00L 242 Animal Physiology II: Intercellular Communication

★3 (*fi 6*) (second term, 3-1s-0). Endocrinology, immunology and neural, sensory, motor, and reproductive physiology. Examples from invertebrates and vertebrates. Students with credit in PHYSL 210 may not obtain credit in Z00L 242. Prerequisite: BIOL 107.

Z00L 250 Survey of the Invertebrates

★3 (*fi 6*) (second term, 3-0-3). The functional anatomy and life cycles of the major invertebrate taxa are emphasized. Prerequisite: BIOL 108.

Z00L 302 Invertebrate Development

★3 (*fi 6*) (second term, 3-0-3). Reproduction, embryonic, and postembryonic development in invertebrates. Prerequisite: BIOL 201 or CELL 201. Z00L 250 is recommended.

Z00L 303 Animal Developmental Biology

★3 (*fi 6*) (first term, 3-0-3). An introduction to basic principles in animal development both in vertebrates and invertebrates. This course examines how the molecular, cellular and comparative approaches are integrated to explain the development of the egg into the embryo, and the cellular interactions that culminate in the development of organ systems. Prerequisite: BIOL 201 or CELL 201. Credit may be obtained in only one of ENT 202, Z00L 202 and Z00L 303.

Z00L 340 Comparative Environmental Physiology

★3 (*fi 6*) (second term, 3-0-0). A comparative examination of the integrated responses of animals to environmental changes. This course focuses on both the acute physiological and long-term adaptations to dealing with environmental challenges. Focus is on biochemical and physiological responses to extreme environments. Prerequisite: Z00L 241 or PHYSL 210 or 211.

Z00L 342 Neurobiology

★3 (*fi 6*) (second term, 3-0-0). Nerve cells, nervous systems and neuromuscular systems from molecular, physiological, behavioral, and developmental perspectives.

Examples from both invertebrates and vertebrates are given. Prerequisite: ZOOL 242 or PHYSL 210.

ZOOL 343 Comparative Endocrinology

★3 (fi 6) (second term, 3-0-0). Endocrine systems and actions of hormones in vertebrates and invertebrates. Prerequisite: ZOOL 242.

ZOOL 344 Laboratory Exercises in Animal Physiology

★3 (fi 6) (first term, 1-0-4). Physiological topics are reinforced in experimental lab exercises. Labs include computer simulations, artificial tissue models and animal models. Prerequisite: ZOOL 241 or ZOOL 242 or PHYSL 210.

ZOOL 351 Freshwater Invertebrate Diversity

★3 (fi 6) (first term, 3-0-3). Emphasis is on an identified collection of invertebrates found in Alberta's lakes and streams. Lecture material pertains mainly to ecological features of the various fresh water groups. Prerequisite: ZOOL 250. Offered in alternate years.

ZOOL 352 Principles of Parasitism

★3 (fi 6) (first term, 3-3s-0). An introduction to protozoan, helminth and arthropod parasites of animals; principles of host and parasite adaptations, host defense, pathology, epidemiology, and ecology, and control of parasitic infections. World wide web-based laboratory tutorials emphasize morphology, life cycles, behavior, systematics and life history of parasites. Prerequisite: a 200-level Biological Sciences course (ZOOL 250 and IMIN 200 recommended).

ZOOL 354 Wildlife Disease

★3 (fi 6) (second term, 3-0-3). Occurrence, principles, concepts, causes and significance of disease in wildlife. Laboratory exercises emphasize methods for the study of parasites of wild hosts. Prerequisite: one of BIOL 208, ENCS 376, ZOOL 250, ZOOL 301.

ZOOL 370 Ethological Mechanisms

★3 (fi 6) (first term, 3-0-3). Animal behavior from an ethological perspective, with emphasis on the mechanisms underlying a variety of behaviors. The material is intended to complement that of ZOOL 371. Prerequisite or corequisite: ZOOL 241 or 242. Offered in alternate years.

ZOOL 371 Behavioral Ecology

★3 (fi 6) (first term, 3-0-3). Animal behavior from an ecological and evolutionary perspective, with emphasis on social behavior. The material is intended to complement that of ZOOL 370. Prerequisite: BIOL 208

ZOOL 402 Current Topics in Developmental Biology

★3 (fi 6) (second term, 0-3s-0). Discussion of selected topics in animal developmental biology from a molecular and cellular perspective. Evaluation of the primary literature and communication skills are emphasized. Prerequisite: ENT 302, or ZOOL 302 or 303. Credit for this course may be obtained more than once. Offered in alternate years.

ZOOL 405 Biology of Fishes

★3 (fi 6) (first term, 3-0-3). A survey of fish diversity focussing on the morphology, systematics, behavior, and ecology of the major groups. Laboratories feature extensive use of departmental collections, with an emphasis on Alberta species. Prerequisites: ZOOL 224 or 225, and a 300-level Biological Sciences course. Offered in alternate years.

ZOOL 407 Biology of Birds

★3 (fi 6) (first term, 3-0-3). A survey of bird diversity focussing on the morphology, systematics, behaviour, and ecology of the major groups. Laboratories feature extensive use of departmental collections, with an emphasis on Alberta species. Prerequisites: ZOOL 224 or 225, and a 300-level Biological Sciences course. Offered in alternate years.

ZOOL 408 Biology of Mammals

★3 (fi 6) (second term, 3-0-3). A survey of mammal diversity focussing on the morphology, systematics, behavior, and ecology of the major groups. Laboratories feature extensive use of departmental collections, with an emphasis on Alberta species. Prerequisites: ZOOL 224 or 225, and a 300-level Biological Sciences course.

ZOOL 434 Field Course in Animal Ecology

★3 (fi 6) (first term, 0-0-6). Design, execution, analysis, and presentation of field problems in behavioral, population, and community ecology in both terrestrial and aquatic habitats. Field problems and independent projects will take place during the two weeks preceding the Fall term at a field station off the main campus. Presentation of results take place during four weeks of class time in September. Prerequisites: BIOL 331 or 332 or ZOOL 371; a statistics course or BIOL 430. This course requires payment of additional miscellaneous fees. See §22.2.3 for details.

ZOOL 441 Current Topics on Homeostasis

★3 (fi 6) (second term, 0-3s-0). Discussion of selected topics in cardiac, gut, renal, respiratory, temperature, and metabolic physiology. Evaluation of the primary literature and communication skills are emphasized. Prerequisite: ZOOL 340 or 341. Credit for this course may be obtained more than once.

ZOOL 442 Current Topics in Intercellular Communication

★3 (fi 6) (first term, 0-3s-0). Discussion of selected topics in endocrinology,

immunology, and neurobiology from molecular, cellular, and whole-animal perspectives. Evaluation of the primary literature and communication skills are emphasized. Prerequisite: ZOOL 342 or 343 or 352 or PMCOL 371. Credit for this course may be obtained more than once.

ZOOL 452 Experimental Parasitology

★3 (fi 6) (second term, 3-0-3). Experimental approaches to the study of parasitism, including topics on ecology, biochemistry, cell biology, genetics, molecular biology, pathology and immunology of host-parasite relationships. Laboratory exercises cover experimental design, methods of collecting and processing host and parasite samples, and evaluation of parasitic infections in hosts. The emphasis is on parasites of laboratory hosts. Prerequisite: ZOOL 352 or MMI 426 or consent of Department.

ZOOL 465 Wildlife Population Dynamics

★3 (fi 6) (first term, 3-0-3). Principles and concepts of wildlife population dynamics, and applications for management, harvesting and conservation. Credit cannot be obtained for ZOOL 465 by students who already have credit for BIOL 467. Prerequisite: BIOL 331 or 332.

ZOOL 472 Current Problems in Behavioral Ecology

★3 (fi 6) (either term, 3-0-0). Discussion of behavioral problems with ecological implications. Prerequisite: ZOOL 370 or 371 or consent of Department. Offered in alternate years.

ZOOL 474 Research in Animal Behavior

★3 (fi 6) (second term, 0-3s-3). Students conduct individual research in animal behavior. Weekly scheduled meetings deal with experimental design, paper critiques, and preparation and presentation of oral and written research reports. Research is conducted outside of scheduled class time. Students intending on taking this course should consult the instructor in the Fall term to discuss their proposed research. Prerequisite: ZOOL 370 or 371.

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 graduate programs 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.

ZOOL 552 Advanced Parasitology

★3 (fi 6) (second term, 2-1s-3). Formal lectures, seminars and individual projects emphasize the use of parasites as model systems for the study of fundamental questions in biology. Prerequisites: ZOOL 352 and 452 or consent of Department.