

16 Course Information, Regulations and Descriptions

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AGRI 301N2 AGROLOGY INTERNSHIP. (3) (Restriction: Not open to students who have taken AGRI 201D1/D2, except for those enrolled in an Internship Program.) (Prerequisite: AGRI 301N1) (No credit will be given for this course unless both AGRI 301N1 and AGRI 301N2 are successfully completed in a twelve month period) See AGRI 301N1 for course description.

✓ **★AGRI 305 BARBADOS AGRO-ECOSYSTEMS.** (3) Complexities affecting sustainable agriculture of a small island nation. Social, economic and physical factors that influence environmental choices. Includes lectures at Macdonald campus and a 12-day stay at Bellairs, Barbados.

AGRI 320 PROFESSIONAL PRACTICE SEMINAR 3. (0.5) Experiences and responsibilities of Agrologists; legal and ethical aspects of the profession.

AGRI 321 PROFESSIONAL PRACTICE SEMINAR 4. (0.5) Experiences and responsibilities of Agrologists; legal and ethical aspects of the profession.

AGRI 340 PRINCIPLES OF ECOLOGICAL AGRICULTURE. (3) (3 lectures and one 2-hour seminar) (Restriction: Not open to students who have taken AGRI 250) Focus on low-input, sustainable, and organic agriculture: the farm as an ecosystem; complex system theory; practical examples of soil management, pest control, integrated crop and livestock production, and marketing systems.

AGRI 341 ECOLOGICAL AGRICULTURE SYSTEMS. (3) (2 lectures and 1 conference) (Restriction: Not open to students who have taken AGRI 430) An overview and presentation of alternative agricultural production systems including low-input, organic, biodynamic, community supported agriculture, the agroecosystem concept, historical overview, ecological basis, key characteristics and functioning, impact of policies, and the transition process.

AGRI 411 INTERNATIONAL AGRICULTURE. (3) (Winter) (3 lectures and 1 conference) A study of the climate, soils and major economic plant and animal species in tropical and sub-tropical regions; cropping and agro-forestry systems; pest and disease problems; soil and water management; environmental, health and nutrition, and economic issues in rural development; energy and technology for developing countries; the role of international aid and development agencies; case studies on various aspects of



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language. The pros and cons of computerization, differences between mainframe and microcomputers, network basics, discussion of the use of Fortran-90 and C languages to solve engineering problems, electronic spreadsheet analysis and the use of other software packages will be studied from an engineering point of view.

BREE 300 ELEMENTS OF AGRICULTURAL ENGINEERING. (3)

(Restriction: Not open to students who have taken ABEN 200 or ABEN 300.) Principles of the engineering infrastructure supporting the symbiotic/parasitic agricultural ecosystem. Topics include the thermodynamic, equipment, systems and environmental considerations of land development, cultivation, drainage and irrigation; soil and water quality conservation; plant and animal production environments; food and feed harvesting storage and processing; automation, c

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enzymes; the instruction of laboratory techniques such as titration, chromatography, the use of the analytical balance and the pH meter.

FDSC 213 ANALYTICAL CHEMISTRY 1. (3) (Fall) (3 lectures and one 3-hour lab) Theoretical aspects of wet chemical techniques including gravimetric and volumetric analyses, redoximetry, and



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Selected advanced topics on the biophysical and kinetic aspects of enzymatic reactions, particularly the fundamentals and applications of laws of biothermodynamics, biochemical equilibrium, electrochemistry and biochemical kinetics as related to the enzymatic reactions.

FDSC 519 ADVANCED FOOD PROCESSING. (3) (Winter) (3 lectures) (Prerequisite: FDSC 330) (Course offered in even years (check with Graduate Advisor)) Advanced technologies associated with food processing studied in more detail. Topics include food irradiation, reverse osmosis, super critical fluid extraction and extrusion.

★ **FDSC 520 BIOPHYSICAL CHEMISTRY OF FOOD.** (3) (Fall) (3 lectures) (Prerequisite: FDSC 233) (Course offered in even years. Check with Graduate Advisor.) This course will cover recent advances in the application of spectroscopic techniques, including infrared, Raman, near-infrared, circular dichroism, and fluorescence spectroscopy, to the study of biomolecules of relevance to food. Particular emphasis will be placed on the molecular basis of structure-function and structure-functionality relationships.

FDSC 530 ADVANCED ANALYTICAL CHEMISTRY. (3) (Fall) (3 lectures) (Prerequisite: FDSC 213) (Course offered in odd years (check with Graduate Advisor)) Selected instrumental methodologies including advances in automated chromatography, wide band NMR, chemical sensors, and the application of other spectroscopic techniques to the analysis of food constituents.

FDSC 535 FOOD BIOTECHNOLOGY. (3) (Fall) (3 lectures) (Prerequisite: MICR 230) Developments in biotechnology as it relates to food production and processing concerning traditional food fermentations as well as novel food biotechnology enzymes, ingredients, genetic engineering, plant tissue culture and developments for microbiological and food analysis.

MICR – Microbiology (Agricultural & Environmental Sciences)

Offered by: Department of Natural Resource Sciences
Former Teaching Unit Code: 362

MICR 230 INTRODUCTORY MICROBIOLOGY. (3) (Winter) (3 lectures and one 3-hour lab) The occurrence and importance of microorganisms (especially bacteria) in the biosphere. Principles governing growth, death and metabolic activities of microorganisms. An introduction to the microbiology of the

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...sion groups are used for tutorials. Grading is ... through the submission of written assignments.

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isms; survey of soil microflora and fauna; processes and optimal agronomic systems of management consistent with the goals of ecological agriculture.

★**SOIL 410 SOIL CHEMISTRY.** (3) (1 lecture, 1 tutorial, problem sets) (Prerequisite: SOIL 210 or GEOG 305 or permission of instructor) Soil chemical principles are presented in a series of



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WOOD – Woodland Resources

Offered by: Department of Natural Resource Sciences
Former Teaching Unit Code: 374

★**WOOD 300 URBAN FORESTS AND TREES.** (3) (Fall) (3 lectures and one 3-hour lab) (Prerequisites: PLNT 201 and SOIL 210) The effects of environmental factors such as soil fertility, soil contamination and compaction, extremes of temperature and air pollutants on trees and forests growing in an urban environment, and means to increase their tolerance will be discussed. Emphasis in the laboratory will be on diagnosis and solving of tree problems in urban environments.

WOOD 410 THE FOREST ECOSYSTEM. (3) (Fall) (3 lectures and one 3-hour lab) (Prerequisites: PLNT 201 and SOIL 210 or permission of instructor) Interactions among biotic and abiotic components of forests, and their direct and indirect control of productivity and nutrient cycling in forest ecosystems. The laboratory involves

a series of 3-hour field trips to local forests during September and October, followed by analysis of data collected.

WOOD 420 ENVIRONMENTAL ISSUES: FORESTRY. (3) (Winter) (3



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sented, and communicated by anthropologists using film and video. The visual representation of cultures will be critically evaluated.



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instructor) Systems of production, distribution, and consumption in non-industrial societies. Social relationships and economic behaviour as viewed from the perspective of the individual or small group.

ANTH 327 PEOPLES OF SOUTH ASIA. (3) (Fall) (Prerequisite: ANTH 202, or ANTH 205, or ANTH 206, or ANTH 212, or permission of instructor) An exploration of the dominant social institutions, cultural themes and perspectives, and psychological patterns found in India and greater South Asia.

ANTH 329 MODERN CHINESE SOCIETY AND CHANGE. (3) (Winter) (Prerequisites: ANTH 202, or ANTH 205, or ANTH 206, or ANTH 212, or East Asian Studies Honours/Major, or permission of instructor) A study of 20th Century Chinese economic, social and cultural institutions, their transformations and continuities. Topics include village economic development and social change; gender, family and kinship organization, regional differences and minority groups; urban-industrial change; and the effects of revolution and reform.

✓ **ANTH 331 PREHISTORY OF EAST ASIA.** (3) (Fall) (Prerequisite: ANTH 201 or permission of instructor) Comparative study of pre-historic hunting and gathering cultures in China, Japan, Korea, Mongolia and Eastern Siberia; origins and dispersal of food production; cultural processes leading to the rise of literate civilizations in certain regions of East Asia.

✓ **ANTH 333 CLASS AND ETHNICITY.** (3) (Prerequisite: ANTH 202, or ANTH 205, or ANTH 206, or ANTH 212, or permission of instructor) Social, economic, political, symbolic and ideological aspects of ethnicity. Development of ethnic groups. Interplay between social class and ethnicity.

ANTH 335 ANCIENT EGYPTIAN CIVILIZATION. (3) (Winter) (Prerequisite: ANTH 201, or ANTH 202, or permission of instructor) A study of changing ecological, economic, social, political, and reli-



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ANTH 359 HISTORY OF ARCHAEOLOGIC159 713.161 Tm-0.0o 119.039 713.161 Tm22g1m9 713.161 Tm-0.0o 119.039 713(N0056 Tc(A)Tj6.48 0 0 6.48 ,6(ca)w[(le a)-155(04



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nication, interpretation and symbolism. Social aspects of cognition; ideology.

ANTH 443 MEDICAL ANTHROPOLOGICAL THEORY. (3) (Winter) (Prerequisites: ANTH 227 and Honours/Major/Minor status in Anthropology or permission of instructor.) This course is intended to provide a comprehensive survey of the literature that constitutes the theoretical and conceptual core of medical anthropology. Emphasis is given to (1) the ethnographic sources of these ideas, (2) their epistemology, and (3) their methodological implications.

✓ **ANTH 445 PROPERTY AND LAND TENURE.** (3) (Prerequisite: ANTH 212 or ANTH 301 or ANTH 321 or ANTH 322 or ANTH 324 or ANTH 339 or ANTH 349; or permission of instructor. U3 students only) Land tenure systems across major agrarian and environmental settings; cultural constructions of law and customary property rights; private, communal and state property, including parks, reserves, and forests; land reform, villagization, enclosure, privatization and agrarian conflict; debates over development policy; special reference to Africa.

ANTH 461 RESEARCH TECHNIQUES. (3) (Winter) (Prerequisite: ANTH 358 or permission of instructor) (Restriction: U3 student only) Field techniques, interviewing, participant observation, projective, and other testing techniques such as genealogies and life histories, problems of field work, rapport, contact, role definition, culture shock, etc.

ANTH 480 SPECIAL TOPICS.



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in museum professions. Individually designed in consultation with
each one of the professors.



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EAST – Asian Lang & Literature

Offered by: Department of East Asian Studies

Former Teaching Unit Code: 117

Departmental approval is required for First level Chinese, First and Second levels Japanese. Any student taking a language course in

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and industrialization in Europe and their effect on the development of the world economy. Particular emphasis is placed on the economic history of major European nations and their overseas extensions. Topics include technological change, the demographic transition and the gold standard.

ECON 345 THE INTERNATIONAL ECONOMY SINCE 1914. (3) (Prerequisites: ECON 208 and ECON 209 or those listed under Prerequisites above) Studies the history of economic adjustments in the 20th century, with particular reference to the industrialized countries. Topics include: the economic impact of WWI, the



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ECON 451 SEMINAR IN ECONOMIC HISTORY. (3) (Prerequisites: one of ECON 227, ECON 317, ECON 257 or ECON 357 and either ECON 330 or ECON 352) In this course economic theory is explicitly employed to elucidate issues in economic history. The topics will be announced at the beginning of the academic year.

ECON 453D1 (3), ECON 453D2 (3) INTERNATIONAL ECONOMICS - HONOURS. (Prerequisites: ECON 250D1/ECON 250D2 and ECON 352D1/ECON 352D2) (Students must register for both ECON 453D1 and ECON 453D2.) (No credit will be given for this course unless both ECON 453D1 and ECON 453D2 are successfully completed.)



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ENGL 319 THEORY OF ENGLISH STUDIES 3. (3) (Restriction: Limited to students in English Major and Honours Programs) Issues in interpretation: Authorship, performance, reception.

ENGL 320 POSTCOLONIAL LITERATURE. (3)

ENGL 321 CARIBBEAN FICTION. (3)

ENGL 324 20TH CENTURY AMERICAN PROSE. (3)

ENGL 325 MODERN AMERICAN FICTION. (3)

ENGL 326 19TH CENTURY AMERICAN PROSE. (3) American Innocence A study of some of the major prose writers of the 19th Century.

/ **★ENGL 327 CANADIAN PROSE FICTION 1.** (3) A survey of Canadian prose fiction in English, from 19th century historical romance and realist fiction to the emergence of the modernist novel in the decades following the Second World War.

★ENGL 328 DEVELOPMENT OF CANADIAN POETRY 1. (3) A survey of Canadian poetry in English from the 18th century to the end of the Second World War.

ENGL 329 ENGLISH NOVEL: 19TH CENTURY 1. (3) A study of representative novelists of the earlier 19th century.

/ **ENGL 330 ENGLISH NOVEL: 19TH CENTURY 2.** (3) A study of representative novelists of the later 19th century.

/ **★ENGL 331 LITERATURE ROMANTIC PERIOD 1.** (3) A study of the major figures of the first generation of romantic writers, focusing on Blake, Wordsworth and Coleridge.

★ENGL 332 LITERATURE ROMANTIC PERIOD 2. (3) A study of the major figures of the second generation of romantic writers, focusing on Byron, Keats and Shelley.

★ENGL 333 DEVELOPMENT OF CANADIAN POETRY 2. (3) A survey of Canadian poetry in English from the end of the Second World War to the present.

ENGL 334 VICTORIAN POETRY. (3) A study of the major Victorian poets.

ENGL 335 THE 20TH CENTURY NOVEL 1. (3) Topic for 2005-06: Queer Literature. The Novel from the last years of the 19th century to World War II.



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(Préalables: Options Lettres: FREN 251, FREN 353, FREN 396; Option Lettres et traduction: FREN 251, FREN 353.) La création poétique au XVe siècle Cours à contenu variable: un thème (auteur, genre, période, question, etc.) de littérature ou de civilisation française ou francophone.

FREN 464D1 (3), FREN 464D2 (3) MÉMOIRE DE SPÉCIALISATION.

(Fall) (Restriction: Cours réservé aux étudiants en Spécialisation du Département. Autorisation départementale requise.)

(Préalables: Options Lettres: FREN 490, FREN 493, FREN 497; Option Lettres et traduction: FREN 490, FREN 493) (Les étudiants doivent s'inscrire aux cours FREN 464D1 et FREN 464D2) (Aucun crédit ne sera accordé pour ce cours à moins de réussir les deux cours FREN 464D1 et FREN 464D2 suivis en séquence) Travail sur un sujet spécialisé de critique littéraire, de théorie, de traduction ou de création.

/ **FREN 470 POÉSIE QUÉBÉCOISE.** (3) Évolution de la poésie et des idées poétiques au Québec du XIXe siècle à nos jours: l'École de Québec, l'École de Montréal, la querelle de «l'exotisme», les courants modernistes, la «poésie du pays», la «nouvelle écriture». Étude de quelques textes marquants.

FREN 472 QUESTIONS DE LITTÉRATURE 2. (3) (Préalables: Options Lettres: FREN 251, FREN 353, FREN 396; Option Lettres et tra-



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FRSL – French Second Language

Offered by: English and French Language Centre
Former Teaching Unit Code: 127

All FRSL courses require placement tests and departmental permission. Registration is on a first come, first served basis.

400-level courses are classes in functional French.

FRSL 101 BEGINNERS' FRENCH. (6) (Summer) (Language laboratory and oral practice with a French monitor) (Prerequisite: Placement test) (Restriction: Not open to students who have taken FRSL 201 or FRSL 205) A comprehensive introduction to basic vocabulary, grammatical structures and speech patterns of written and oral French for students in any(i)f.(eg[(an)-15 ro)0(r o)-15(r)0.8ogo am1 Tm0S(1-14.9(pa15(n)0(t)-)0(a)-15(n)0()-6.6(.1-6.6(.1)-614.5(e p 1(al)87(t)5(r)-1



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to Goethe through a study of representative texts in English translation.

GERM 260 INDIVIDUAL AND SOCIETY IN GERMAN LITERATURE 2.

(3) (Winter) (Given in English) This course provides a continuation of the overview of the history of German literature and culture from Goethe to the present through a study of representative texts in English translation.

GERM 300 GERMAN LANGUAGE INTENSIVE INTERMEDIATE. (6)

(Winter) (6 hours, plus 1 hour laboratory) (Prerequisite: GERM 200 or GERM 202, 202D1/D2 or equivalent, or permission of Department) (Required for program students) Continuation of GERM 200; covers the second level (GERM 307D1/GERM 307D2) in one term.

GERM 307D1 (3), GERM 307D2 (3) GERMAN LANGUAGE - INTER-

MEDIATE. (Fall, Winter) (Prerequisite: GERM 200 or GERM 202, 202D1/D2, or equivalent, or permission of Department.) (Students must register for both GERM 307D1 and GERM 307D2.) (No credit will be given for this course unless both GERM 307D1 and GERM 307D2 are successfully completed in consecutive terms) Review of grammar, further development of basic skills; literary and cultural readings.

GERM 325 GERMAN LANGUAGE - INTENSIVE ADVANCED. (6) (Fall

or Winter) (6 hours) (Prerequisite: GERM 300 or GERM 307D1/D2, or equivalent, or permission of Department.) (Required for program students.) This course aims at developing post-intermediate proficiency in listening, speaking, reading, and writing skills, with emphasis on oral and written expression. Special attention is given to word formation and to the proper choice of grammatical structures, vocabulary, and phraseology.

/ **GERM 330 LANDESKUNDE.** (3) (Winter) (Given in German) (Prerequisite: GERM 325 or equivalent, or permission of Department.) Introduction to images of modern Germany, perceptions and conceptions of Germany since the Second World War.

/ **GERM 331 GERMANY AFTER REUNIFICATION.** (3) (Given in German) (Prerequisite: GERM 325 or equivalent, or permission of the Department) The events which led to the fall of the Berlin Wall, the reunification of Germany in 1990 and the changing cultural, social, political and economic landscape of the 'New Germany'. Highlighting issues of cultural and social politics, texts discussed include historical, literary and film material.

GERM 336 GERMAN GRAMMAR REVIEW. (3) (Winter) (Given in

German) This advanced-level course offers a comprehensive review of basic German grammar. The course can be taken concurrently with a language course at the third level.

/ **GERM 341 ESSAY WRITING.** (3) (Winter) (Given in German) (Prerequisite: GERM 325 or equivalent, or permission of Department) This course is designed to further develop the writing skills of students having attained the 325-level. The rhetorical strategies of writing will be studied and analyzed with different text genres: letters, curriculum vitae, summaries, book reviews, expository and argumentative essays, minutes, feature stories, term papers, etc. Particular attention will be paid to argumentation, vocabulary, and style.

GERM 342 TRANSLATION. (3) (Fall) (Given in German) (Prerequisite:

GERM 325 or equivalent, or permission of Department) An introductory course, emphasizing practice more than theory. It



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writers, scholars, philosophers, journalists, politicians, and political activists.

/ **GERM 365 MEDIA STUDIES IN GERMAN.** (3) (Winter) (Given in English)

/ **GERM 366 POSTWAR GERMAN LITERATURE/FILM.** (3) (Fall) (Given in English) The course is a study of postwar German literature and film, focusing on the cinematic representation of literary texts. The emphasis is on the representation of German history in both media, on historical memory and gender relations.

/ **GERM 367 TOPICS IN GERMAN THOUGHT.** (3) (Fall) (Given in English) A variety of issues significant to the development of German cultural and intellectual life.

/ **GERM 371 CULTURAL CHANGE AND EVOLUTION OF GERMAN.** (3) (Given in English) Main topics in the evolution of the German language from Charlemagne to the present: language and the Christianization of the Germanic tribes, courtly literature and the knights, Luther's translation of the Bible and the printing press, modern literature since the 18th century and Goethe.

/ **GERM 380 18TH CENTURY GERMAN LITERATURE.** (3) (Winter) (Given in German) (Restriction: Not open to students who have taken GERM 380 and/or GERM 381) (Prerequisite: Germ 325 or equivalent) An introduction to German literature of the 18th century.



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equivalent) A comprehensive first-level course focusing on all oral and written skills. An introduction to the fundamentals of Spanish grammar and syntax and to Hispanic culture.

**HISP 210D1 (3), HISP 210D2 (3) SPANISH LANGUAGE: BEGIN-
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New World's natural resources and indigenous peoples as this is reflected in the literature of the period.

HISP 437 VICEREGAL SPANISH AMERICA. (3) (Fall) Selected topics in the historiography, literature and culture of Spanish America prior to Independence.

/ **HISP 438 TOPICS: SPANISH LITERATURE.** (3) (Prerequisite: the prerequisite for all courses taught in Spanish and numbered at the 300-level and above is completion of any Survey of Literature (HISP 241, HISP 242, HISP 243, HISP 244) or permission of the instructor.) (Note: All Hispanic Studies courses, including HISP 210D1/D2 and HISP 202D1/D2 after the first few weeks, are given in Spanish or Portuguese, with the exception of HISP 225 and HISP 226, which are given in English.) Specific topics of interest in Spanish literature.

HISP 439 TOPICS: SPANISH-AMERICAN LITERATURE. (3) (Winter) (Prerequisite: the prerequisite for all courses taught in Spanish and numbered at the 300-level and above is completion of any



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✓ **HIST 196 FYS: WEATHER/CLIMATE/HISTORY.** (3) (Restriction: Open only to newly admitted students in U0 or U1, who may take only one FYS. Students who register for more than one will be obliged to withdraw from all but one of them.) (Maximum 25) (Restriction: For first year students only.) (Restriction: Not open to students who have taken ATOC 199.) The impact of weather and climate on agriculture, disease, demography, economic cycles and history. Methods to establish linkage between weather, climate and history.

HIST 197 FYS: RACE IN LATIN AMERICA. (3) (Restriction: Open only to newly admitted students in U0 or U1, who may take only one FYS. Students who register for more than one will be obliged to withdraw from all but one of them.) (Maximum 25) This seminar explores what it meant to be native, black, or white in Latin America from the colonial period to the present. It explores how conceptualisations of race and ethnicity shaped colonialism, social organisation, opportunities for mobility, visions of nationhood, and social movements.

✓ **HIST 198 FYS: NATION BUILDING AND NATIONALISM** (3) (Restriction: Open only to newly admitted students in U0 or U1, who may take only one FYS. Students who register for more than one will be obliged to withdraw from all but one of them.) (Maximum 25) An introduction to some of the major theories of nationalism; an exploration of the many varieties of nationalism and forms of nation-building; a particular focus on the historical background to three case studies of current interest: Yugoslavia, Ireland and Québec.

✓ **HIST 199 FYS: MEDIEVAL WOMEN AND MEN.** (3) (Restriction: Open only to newly admitted students in U0 or U1, who may take only one FYS. Students who register for more than one will be obliged to withdraw from all but one of them.) (Maximum 25) This



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1991 and of the Tsarist Empire and Provisional Government in 1917, with some discussion of the reforms that anticipated each cataclysm.

✓ **HIST 317 WAR AND SOCIETY 2.** (3) (Prerequisite: one general course in European history or HIST 305) (Restriction: Not open to students who have taken 101-305D. Not open to U0 students) The rise of permanent armies and navies, military institutions of Eastern Europe; Warfare from Wallenstein to Napoleon; emergence of the national army in Russia; the Western military tradition after Clausewitz, total War in the twentieth century.

✓ **HIST 318 HISTORY OF JAPAN 1.** (3) (Restriction: Not open to students who have taken 101-318D or 101-293A) A survey of Japanese history and culture from earliest times to the 17th century, this course aims to provide students with a broad understanding of important themes in Japanese history.

HIST 319 THE SCIENTIFIC REVOLUTION. (3) (Prerequisite: a 200-level course in early modern history, or a survey course in philosophy, or permission of the instructor) The shift from the medieval to the modern view of man's place in the universe that took place between Copernicus and Newton and its intellectual and social implications.

HIST 320 EUROPEAN THOUGHT AND CULTURE 1. (3) (Prerequisite: HIST 214 or HIST 215) (Restriction: Not open to students who have taken 101-320D) The cultural and intellectual history of Europe from the late Middle Ages to the to the 18th century traces the origins of the modern sense of self in popular culture and in the texts of Erasmus, Luther, Calvin, Descartes, Pascal, Voltaire and Rousseau.

HIST 321 EUROPEAN THOUGHT AND CULTURE 2. (3) (Prerequisite: HIST 320 or consent of the instructor) (Restriction: Not open to students who have taken 101-320D) A cultural and intellectual history of Europe from the French Revolution to the present which traces the origins of the modern sense of self in popular culture and in the texts of Goethe, Comte, Marx and Engels, Nietzsche, Dostoevsky.

✓ **HIST 322 CANADA: AMERICAN PRESENCE SINCE 1939.** (3) (Prerequisite: HIST 202 and HIST 203 or consent of instructor) An examination of Canada's relationship with the United States in the



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focus on the social, political, economic and cultural impact of the two World Wars and the economic crisis of the 1930s. Among the topics will be Canadian external relations, political and social protest, popular culture, demographic changes and prohibition.

HIST 365 17TH - 18TH C. WESTERN EUROPE. (3) (Prerequisite: HIST 214 or consent of instructor) (Restriction: Not open to students who have taken 101-325D) A comparative analysis of the major states of Western Europe: Absolutism and its alternatives; religious and scientific thought; classical and enlightenment cultures; international and colonial rivalries. Special attention will be placed on social and economic changes between the 1630s and the late 18th century.

/ **HIST 366 HISTORY OF ROMAN LAW.** (3) (Prerequisite: HIST 209 or HIST 214 or 3 credits in law or politics, or permission of the instructor) (Restriction: Not open to students who have taken 114-343) A survey of private law in Ancient Rome in the classical period, which deals with the major concepts and rules of the law of Persons, Property and Succession, Contracts and Delicts, with attention to their context in Roman society.

HIST 367 CANADA SINCE 1945. (3) (Prerequisite: HIST 202, HIST 203) Elements of Canada's political, social, economic, and cultural history since World War II. Topics will include constitutional questions, gender and class issues, the role of the state, regionalism, consumer society, the Quiet Revolution, and nationalism in Canada.

/ **HIST 368 GREEK HISTORY: CLASSICAL.** (3) (Prerequisite: HIST 205 or permission of instructor) The course deals with the Classical period of Greek history, from the end of the Persian wars to the death of Alexander the Great (479 - 323 B.C.).

/ **HIST 369 GREEK HISTORY: ARCHAIC.** (3) (Prerequisite: HIST 205 or HIST 214 or permission of instructor) The course deals with

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HIST 388 THE SECOND WORLD WAR. (3) A world-wide political, social, economic, cultural and military survey, from the Treaty of Versailles to the first years of the Cold War.

✓ **HIST 389 RENAISSANCE AND REFORMATION FRANCE.** (3) (Prerequisite: HIST 214 or HIST 225 or permission of instructor) (Restriction: Not open to students who have taken 101-425D) A history of France from the end of the Hundred Year's War to the end of the Thirty Year's War. A reading knowledge of French is recommended.

HIST 390 FRANCE IN THE ANCIEN RÉGIME. (3) (Prerequisite: HIST 214 or HIST 225 or permission of instructor) (Restriction: Not open to students who have taken 101-425D) The history of France from the end of the Thirty Year's War to the eve of the French Revolution. A reading knowledge of French is recommended.

✓ **HIST 39(i)-4(10(i)- hH)]TJ6.48 0 0 6.48 122.2791 578.881 Tm-0.0002 Tc0 Tw[(ISTOR)18.1(Y)]TJ8.04 0 0 8.04 146.279 578.881 Tm0 Tc()Tj6 politic0 6.48 208.679 7 9i7 208.679ttittittitty d 8.679 7 o 0 0 8 6.48 20t(prS104 0 0h5ee10ade-6.2(10r8.679 4)h-6.2(10-14.88fp)0..1(o)SC-6.1(2)a**



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French and European intellectual and cultural history and popular culture.

/ **HIST 585 THEORY FOR HISTORICAL STUDIES.** (3) (Prerequisite (Undergraduate): permission of instructor) Approaches to the interpretation and understanding of historical evidence which are outside the traditional historical discipline - reading of central texts in, for example, psychoanalytic theory, gender theory, or literary criticism and exercises in the use of these theories for historical research.

/ **HIST 590 TOPICS: THE BRITISH EMPIRE.** (3) (Prerequisite (Undergraduate): permission of instructor) Topics in the history of British formal and informal imperialism and the colonial encounter from the eighteenth to the twentieth centuries.

/ **HIST 594D1 (3), HIST 594D2 (3) TOPICS: TUDOR AND STUART ENGLAND.** (Prerequisite: any university course in British history or consent of instructor) (Students must register for both HIST 594D1 and HIST 594D2.) (No credit will be given for this course unless both HIST 594D1 and HIST 594D2 are successfully completed in consecutive terms) Topics will vary from year to year and may cover any aspect of early modern British history. Topics for the class presentation and seminar paper (also discussed in class) are assigned to each student according to student interest and availability of sources.

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required.) Supervised reading and preparation of a research report under the direction of a member of staff.

INTD 492D1 (3), INTD 492D2 (3) HONOURS THESIS. (Students must register for both INTD 492D1 and INTD 492D2.) (No credit will be given for this course unless both INTD 492D1 and INTD 492D2 are successfully completed in consecutive terms) (INTD 492D1 and INTD 492D2 together are equivalent to INTD 492) Supervised reading and preparation of a research report under the direction of a member of staff.

INTD 492N1 HONOURS THESIS. (3) (Students must also register for INTD 492N2) (No credit will be given for this course unless both INTD 492N1 and INTD 492N2 are successfully completed in a twelve month period) (INTD 492N1 and INTD 492N2 together are equivalent to INTD 492) Supervised reading and preparation of a research report under the direction of a member of staff.

INTD 492N2 HONOURS THESIS. (3) (Prerequisite: INTD 492N1) (No credit will be given for this course unless both INTD 492N1 and INTD 492N2 are successfully completed in a twelve month period) (INTD 492N1 and INTD 492N2 together are equivalent to INTD 492) See INTD 492N1 for course description.

INTD 497 RESEARCH SEMINAR ON INTERNATIONAL DEVELOPMENT. (3) (Restriction: Open only to students in final year of an IDS Concentration) An interdisciplinary research seminar on topics of common interest to staff and students of the International Development Studies programs. See <http://www.mcgill.ca/ids/courses/intd497>

INTD 499 INTERNSHIP: INTERNATIONAL DEVELOPMENT STUDIES. (3) (Restriction: Open to U2 and U3 students with a minimum CGPA of 2.7, and permission of the departmental Internship Advisor. This course will not normally fulfill program requirements for seminar or 400-level courses. A letter from a supervisor at the institution must attest to successful completion of the student's tenure.) Internship with an approved host institution or organization.

ISLA – Islamic Studies

Offered by: Institute of Islamic Studies

Former Teaching Unit Code: 397

Note: The following non-language courses are open only to U2 and U3 undergraduates and graduate students: ISLA 505, ISLA 506, ISLA 510D1/ISLA 510D2, ISLA 511D1/ISLA 511D2, and ISLA 531D1/ ISLA 531D2.

ISLA 410 HISTORY: MIDDLE-EAST 1798-1918. (3) (Fall) (3 hours) A study of the Middle East from Napoleon's invasion of Egypt to the end of WW I. Emphasis will be on the emergence of nationalisms in the context of European imperialism; political, social, and economic transformation; religion and ideology; and changing patterns of alliances.

ISLA 411 HISTORY: MIDDLE-EAST 1918-1945. (3) (Fall) (3 hours) The impact of WW I on Middle Eastern society and politics; the British and French mandates; the growth of nationalisms, revolutions and the formation of national states; WW II and the clash of political interests within the region.

✓ **ISLA 501 THE QUR'AN: TEXT AND HISTORY.** (3) A study of the Qur'an's teachings, structures, style, and history in the light of classical and modern scholarship.

ISLA 505 ISLAM: ORIGIN AND EARLY DEVELOPMENT. (3) (3 hours) The Qur'an, Hadith, the Shari'a and their major themes. The early development of law, theology and Sufism. The development and formation of an Islamic "orthodoxy", the development and nature of competing interpretations of Islam during the Classical Period. Topics: God, revelation, prophecy, the community and the individual and the meaning of history.

ISLA 506 I



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ISLA 542D1 (3), ISLA 542D2 (3) LOWER INTERMEDIATE PERSIAN. (Fall and Winter) (3 hours) (Prerequisite: ISLA 541 or equivalent) (Students must register for both ISLA 542D1 and ISLA 542D2.) (No credit will be given for this course unless both ISLA 542D1 and ISLA 542D2 are successfully completed in consecutive terms)

ISLA 551D1 (3), ISLA 551D2 (3) INTRODUCTORY URDU. (Fall and Winter) (3 hours) (Students must register for both ISLA 551D1 and ISLA 551D2.) (No credit will be given for this course unless both ISLA 551D1 and ISLA 551D2 are successfully completed in consecutive terms) Introduction to the basic grammatical structures and vocabulary of the Urdu language, including drills in pronunciation and sentence structures.

ISLA 552D1 (3), ISLA 552D2 (3) INTERMEDIATE URDU. (Fall and Winter) (3 hours) (Prerequisite: ISLA 551 or equivalent) (Students must register for both ISLA 552D1 and ISLA 552D2.) (No credit will be given for this course unless both ISLA 552D1 and ISLA 552D2 are successfully completed in consecutive terms) Assuming a knowledge of basic grammar and vocabulary, this course continues with the study of more complex grammatical structures. Reading and composition exercises in Urdu script are designed to give intermediate competency in the language.

ITAL – Italian (Arts)

Offered by: Department of Italian Studies

Former Teaching Unit Code: 132

Courses taught in English are clearly indicated. For courses taught in Italian, students must have completed at least ITAL 215D1/



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ical strategist, playwright and observer of his times. Reading of The Prince as well as selected plays, letters and other writings.

ITAL 470 HONOURS THESIS. (3) (Fall or Winter) (Restriction: Compulsory for Honours and Joint Honours students.)

ITAL 477 ITALIAN CINEMA AND VIDEO. (3) (Winter) (Restriction: Not open to students who have taken ITAL 377) Different Italian film maker or videomaker every year, presenting a selection of his/her significant works. Discussions will include script analysis, interviews, articles and books by the director in focus, in addition to theoretical and critical statements by scholars. Established and new directors will be considered alternately.

ITAL 499 INTERNSHIP: ITALIAN STUDIES. (3) (Fall or Winter) (Prerequisite: ITAL 377)



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during the mandate (1917 - 1948). Discussion of writers such as Mendele Mocher Sforim, Bialik, Agnon, Shlonsky and Shamir will focus on the striking emergence of modern Hebrew as a vehicle for secular art.

/ **JWST 412 TOPICS: MODERN HEBREW LITERATURE 2.** (3) (Pre-requisite: Knowledge of advanced Hebrew essential) R1(r)0.7(ew)-13nc



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MEST – Middle East Studies

Offered by: Faculty of Arts

Former Teaching Unit Code: 193

MEST 496 INDEPENDENT READING AND RESEARCH. (3)

MUAR – Music - Arts Faculty

Offered by: Department of Theory (Faculty of Music)

Former Teaching Unit Code: 210

MUAR courses are considered to be courses taught in the Faculty of Arts, but they cannot be credited toward the B.A. or B.Sc. Music programs.

Students who have completed MUTH 110, MUTH 111, MUTH 210, or MUTH 211, or who have Matriculation Music or McGill Conservatory Theory Secondary V or its equivalent may not register for MUAR 201 or MUAR 202.

Students who read music and have an instrumental or vocal background may proceed directly to MUAR courses at the 300 level.

MUAR 201 BASIC MATERIALS: WESTERN MUSIC. (3) (3 hours) A combination of elementary theory and ear training (sightsinging and aural recognition), and basic piano skills. Topics include: notation of pitch and rhythm, intervals, scales and modes, concept of key, triads and seventh chords, introductory melody and accompaniment writing.

MUAR 202 BASIC MATERIALS: WESTERN MUSIC 2. (3) (3 hours) (Prerequisite: MUAR 201 or permission of instructor) Integrated course in music theory with creative applications of acquired skills. Analysis and writing: concepts of melodic organization, elementary harmonic progressions, two-part contrapuntal techniques, fundamental formal procedures, examination of popular song and jazz. Development of individual skills: intermediate sightsinging, aural recognition, keyboard techniques, small group performance in class.

MUAR 211 THE ART OF LISTENING. (3) (3 hours) An introduction to the major forms and styles in Western music from the baroque to the present, with emphasis on guided listening in the classroom. The ability to read music is not a prerequisite.

MUAR 260 BASIC MATERIALS OF JAZZ. (3) Study of contemporary and traditional jazz improvisation. Exploration of harmonic framework of music from the jazz repertoire (melody, voice leading, traditional jazz writing). Characteristic sounds of predominant scales and modes and their potential uses. Common song forms and their harmonic devices.



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PHIL 370 PROBLEMS IN ANALYTIC PHILOSOPHY. (3) An introduction to the central questions in the analytic tradition, through the works of important early figures in that tradition. Philosophers to be discussed may include: Frege, Russell, Wittgenstein, Ramsay, Carnap and the "logical positivists".

PHIL 375 E



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✓ **PHIL 497N1 TUTORIAL.** (1.5) (Students must also register for PHIL 497N2) (No credit will be given for this course unless both PHIL 497N1 and PHIL 497N2 are successfully completed in a twelve month period) (PHIL 497N1 and PHIL 497N2 together are equivalent to PHIL 497) Open to third year Full Honours students in Philosophy, and to students in Philosophy, and to Department.

✓ **PHIL 497N2 TUTORIAL.** (1.5) (Prerequisite: PHIL 497N1) (No credit will be given for this course unless both PHIL 497N1 and PHIL 497N2 are successfully completed in a twelve month period) (PHIL 497N1 and PHIL 497N2 together are equivalent to PHIL 497) See PHIL 497N1 for course description.

PHIL 498 TUTORIALS. (3) Open to third year Joint Honours students in Philosophy, and to other students, with consent of the Department.

✓ **PHIL 498N1 TUTORIALS.** (1.5) (Students must also register for PHIL 498N2) (No credit will be given for this course unless both PHIL 498N1 and PHIL 498N2 are successfully completed in a twelve month period) (PHIL 498N1 and PHIL 498N2 together are equivalent to PHIL 498) Open to third year Joint Honours students in Philosophy, and to other students, with consent of the Department.

✓ **PHIL 498N2 TUTORIALS.** (1.5) (Prerequisite: PHIL 498N1) (No credit will be given for this course unless both PHIL 498N1 and PHIL 498N2 are successfully completed in a twelve month period) (PHIL 498N1 and PHIL 498N2 together are equivalent to PHIL 498) See PHIL 498N1 for course description.

✓ **PHIL 499 TUTORIALS.** (6) Open to third year Full Honours students in Philosophy, and to other students, with consent of the Department.

PHIL 499D1 (3), PHIL 499D2 (3) TUTORIALS. (Students must register for both PHIL 499D1 and PHIL 499D2.) (No credit will be given for this course unless both PHIL 499D1 and PHIL 499D2 are successfully completed in consecutive terms) (PHIL 499D1 and PHIL 499D2 together are equivalent to PHIL 499) Open to third year Full Honours students in Philosophy, and to other students, with consent of the Department.

PHIL 499N1 TUTORIALS. (3) (Students must also register for PHIL 499N2) (No credit will be given for this course unless both PHIL 499N1 and PHIL 499N2 are successfully completed in consecutive terms) (PHIL 499N1 and PHIL 499N2 together are equivalent to PHIL 499) Open to third year Full Honours students in Philosophy, and to other students, with consent of the Department.

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✓ **PHIL 560 SEMINAR: 17TH CENTURY PHILOSOPHY.** (3) (Prerequisite: PHIL 360 or written permission of the instructor) (Restriction: Seminars are open only to graduate students and final year Philosophy Majors, Honours and Joint Honours students, except by written permission of the Department) An advanced course on a seventeenth-century philosopher or philosophical issue.

PHIL 561 SEMINAR: 18TH CENTURY PHILOSOPHY. (3) (Prerequisite: PHIL 361 or written permission of the instructor) (Restriction: Seminars are open only to graduate students and final year Philosophy Majors, Honours and Joint Honours students, except by written permission of the Department) An advanced course on an eighteenth-century philosopher or philosophical issue.

✓ **PHIL 567 SEMINAR: 19TH CENTURY PHILOSOPHY.** (3) (Prerequisite: PHIL 366 or PHIL 367 or written permission of the instructor) (Restriction: Seminars are open only to graduate students and final year Philosophy Majors, Honours and Joint Honours stu-



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Canadian political culture; socialization and political participation; the electoral system; elections and voting; the role and structure of political parties; and the influence of organized interest.

POLI 226 LA VIE POLITIQUE QUÉBÉCOISE. (3) (Restriction: An ability to understand and read French is required; writing and speaking ability are not.) (This course is offered in English and French in alternate years. For 2005-06 it will be offered in English) Une introduction à la vie politique québécoise à travers l'étude des institutions, des idéologies et des comportements politiques. Une attention particulière sera accordée à la structure et aux changements dans le système politique québécoise.

POLI 227 DEVELOPING AREAS/INTRODUCTION. (3) (Winter) An introductory course in political science.



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POLI 434 HISTORY



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and enforcement of human rights legislation; and the Charter of Rights and Freedoms.

POLI 490 INDEPENDENT READING AND RESEARCH. (3) (Fall and Winter) Final year Honours students wishing to pursue a specialized interest will be allowed to undertake a program of independent reading and/or research in that area under the supervision of a member of staff. Such programs may be undertaken by students either individually or in small groups. It is the responsibility of the student to obtain the instructor's consent prior to registration.

POLI 499 HONOURS ESSAY. (3) (Fall and Winter) (Restriction: Open to Honours students only) Regular meetings between students and professors, the writing of a well researched essay and its oral defense. The essay should demonstrate some experience with primary sources, the ability to explore various theoretical perspectives as well as to organize and present a set of arguments in a systematic and thorough manner.

POLI 521 SEMINAR: CANADIAN POLITICS AND GOVERNMENT. (3) (Restriction: Open to graduate students, final year Honours students, and other advanced undergraduates with the permission of



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gram of RUSS 215 and RUSS 316, students will complete their study of the fundamental structure of modern literary Russian, including the morphology and syntax of the nominal and verbal systems.

RUSS 416 ADVANCED RUSSIAN L



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of the postmodernist simulacrum, self-proclaimed international style and/or uniquely Russian 20th-century project.

SOCI – Sociology (Arts)

Offered by: Department of Sociology
Former Teaching Unit Code: 166

Although students from outside the Department may take courses in the Department without having had SOCI 210 Sociological Perspectives (except where noted otherwise) nevertheless this course is recommended.

✓ **SOCI 199 FYS: TRANSITION FROM SCHOOL TO WORK.** (3) (Restriction: Open only to newly admitted students in U0 or U1, who may take only one FYS. Students who register for more than one will be obliged to withdraw from all but one of them.) (Maximum 25) An examination of the vocational preparation provided by various levels of the educational system (including adult education); the relationship between the preparation and subsequent labour market experience; and the organization of training with particular reference to government training policy. International comparisons are central to the content of this course.

SOCI 210 SOCIOLOGICAL PERSPECTIVES. (3) Major theoretical perspectives and research methods in sociology. The linkages of theory and method in various substantive areas including: the family, community and urban life, religion, ethnicity, occupations and stratification, education, and social change.

SOCI 211 SOCIOLOGICAL INQUIRY. (3) (Prerequisite or Corequisite: SOCI 210) An introductory review of methods of sociological research including research design, elementary quantitative data analysis, observation, and use of official statistics. Detailed examination of published examples of the use of each of the major techniques of data analysis and collection.

✓ **SOCI 215 GENDER FAMILY AND SOCIAL CHANGE.** (3) An introduction to feminisms from the point of view of the social sciences. The first part takes off from the nature of gendered inequality to discuss "tools for feminist analysis", i.e., feminist frameworks, specific theories and concepts, and feminist methodology. The second part addresses various issues of concern to feminisms. The main object of the course is to facilitate and evaluate a feminist analysis of women's lives.

✓ **SOCI 216 SOCIAL PSYCHOLOGY.** (3) (Restriction: Not open to students who have taken PSYC 215, PSYC 330, or MGCR 221) Introduction to significant elements of theory and research related to micro-level social interactional processes involved in the development of self, perceptions, and behaviour. Topics will include socialization, attitudes, persuasion, social cognition, the behaviour of groups, emotion, prejudice and discrimination, and violence and aggression.

✓ **SOCI 217 CANADIAN MASS COMMUNICATIONS.** (3) An introduction to the history, structure and functions of the mass media in Canada and the way ownership patterns affect message content. The focus is comparative, stressing differences between the U.S. and Canada and policy interrelationships resulting from overflow programming.

SOCI 219 SOCIOLOGY OF CULTURE. (3) A survey of theoretical approaches and substantive topics in the culture. Topics include: norms and values in national cultures; negotiation of cross-cultural interpersonal exchanges; structural codes and cultural classifications; production constraints on cultural objects; the differential reception of cultural products.

SOCI 222 URBAN SOCIOLOGY. (3) Comparative analysis of the process of urbanization in Europe, North America and the Third World; effects of urbanization upon social institutions and individ-

uals; theories of urbanization and urbanism; the Canadian urban system; urban problems in comparative view.

SOCI 225 MEDICINE AND HEALTH IN MODERN SOCIETY. (3) Socio-medical problems and ways in which sociological analysis and research are being used to understand and deal with them. Canadian and Québec problems include: poverty and health; mental illness; aging; death and dying; professionalism; health service organization.

SOCI 230 SOCIOLOGY OF ETHNIC RELATIONS. (3) (Prerequisite: SOCI 210 or permission of instructor) A2(si)1.5(0)18(n)-1.5(st)0.6(.5(rpe)13

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SOCI 489 GENDER, DEVIANCE AND SOCIAL CONTROL. (3) (Course for Women's Studies Concentrations) (Prerequisite: Permission of instructor) (Restriction: open to U3 students concentrating on social problems.) This seminar examines how the definition of deviance, reactions to deviance and explanations deviance are gendered. Specific topics vary from year to year.

✓ **SOCI 495 SOCIAL PROBLEMS AND CONFLICTS.** (3) (Prerequisite: permission of instructor) This course explores the social construction of "social problems". It focuses on the social conflicts involved in the definition of social issues and on how and why "problems" change over time. Issues such as drinking, smoking, drug use, pornography, abortion, and homosexuality will be discussed.

SOCI 499 I.3(d)-7.7(i)1.6(s)11(c)-4(u)7.3(s)-4(s)-4(e)7.3e,



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EDEA 303 MUSICIANSHIP FOR TEACHERS 2. (3) (Prerequisites: EDEA 201 or EDEA 214 and permission of instructor) Advanced course in the study of the elements of music theory through techniques of aural training, sight singing, keyboard or ukulele.

EDEA 304 PAINTING 3. (3) (Prerequisite: EDEA 205) Continuation of course EDEA 205 with emphasis on drawing and structure.

EDEA 305 PAINTING 4. (3) Continuation of course EDEA 304 with emphasis on advanced composition.

EDEA 306 3RD YEAR PROFESSIONAL SEMINAR. (2) (Prerequisites: EDEA 207 and EDFE 206.) (Corequisite: EDFE 305) This seminar emphasizes classroom management in the elementary classroom and the development of strategies for teaching music to large groups; critical examination of the school, the program, the teacher and the student body and how these elements converge in the elementary classroom.

EDEA 307 DRAWING 2. (3) (Prerequisite: EDEA 204) A course designed to further the individual's natural drawing ability, and to develop a keen, perceptive approach to varied subject matter, including figure drawing.

EDEA 314 INSTRUMENTS IN THE CLASSROOM. (3) (The ability to read notation is not a prerequisite) Rhythmic and melodic instruments are introduced and their potential to enhance songs, poems, stories and movement is explored through students' active participation.

† **EDEA 332 ART CURRICULUM AND INSTRUCTION - ELEMENTARY.** (3) An introduction to theories on children's visual expression and perception, lesson planning, and classroom-oriented studio practice.

EDEA 341 LISTENING FOR LEARNING. (3) (Offered through Distance Education) (The ability to read notation is not a prerequisite) Musical knowledge is developed and articulated through a structured approach to listening. Using recorded examples, students learn how to recognize, identify and discuss musical elements, devices, styles and genres.

† **EDEA 342 CURRICULUM AND INSTRUCTION IN DRAMA EDUCATION.** (3) Pedagogical theory and practical applications in the teaching of developmental drama, dramatic forms, improvisation and theatre arts.

† **EDEA 345 MUSIC CURRICULUM AND INSTRUCTION FOR GENERALISTS.** (3) Study of materials and instructional techniques grounded in an understanding of basic musical concepts and contemporary theories of music teaching and learning. Definition of musical objectives and rationales, selection and development of materials, review of MEQ guidelines. Participation through singing, movement, listening, discussion and lesson planning and implementation.

EDEA 352 MUSIC LISTENING IN EDUCATION. (3) A perceptual development approach to music listening focusing on the relationship between the affective response and the musical stimulus. Designed to enhance the listening experience and to facilitate meaningful discourse about music. No formal music training is required.

EDEA 362 MOVEMENT, MUSIC AND COMMUNICATION. (3) Coordination of musical perception and movement and development of communication skills that arise from this combination. Structured and improvised eurhythmic activities are used to explore the relationship between time, space and energy. Classroom applications are explored. No formal music training is required.

EDEA 394 CREATIVE DRAMATICS FOR CLASSROOM. (3) (Offered through Continuing Education) A participatory course in

creative drama and the use of improvisational techniques in the pursuit of student development.

EDEA 396 SPEECH IN DRAMA EDUCATION. (3) (Offered through Continuing Education) A study of the elements of voice production in teaching public speaking and drama, including train-



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EDEC – Curriculum and Instruction

Offered by: Department of Integrated Studies in Educati(at)t5.4(i)2.1(37.(t)0(t)5.4(i)2.1(3d6U4(i1(a)1 49.439i5n)74439 717.001(ion)]TJ/F1 1 Tf8.04 812



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403) (Restriction: Open to B.Ed. K/Elem. students only) This seminar accompanies the second major block of student teaching. Measurement and evaluation will be central to the concerns and



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EDEE 296 MOHAWK SECOND LANGUAGE 1. (3) Students will develop a basic knowledge of the Mohawk phonological system and have some understanding of the morphological and syntactic rules, the stress and intonation patterns which control the language, and how Mohawk culture is reflected in the language.

EDEE 297 MOHAWK LANGUAGE 1. (3) Students will learn the Mohawk phonological system (including glottal stop, length mark, up and down stress). Syntactically and morphologically, they will focus on the pronoun system (tense included). Word generation conventions will be analyzed and Mohawk labels developed to describe how the language functions.

EDEE 298 MOHAWK LANGUAGE 2. (3) (Prerequisite: EDEE 297) Students will complete their earlier study of the predictable items in the language, and then will focus on the non-predictable items in Mohawk: irregular verbs, reflexive and semi-reflexive verbs, purposive stem, translocative, etc. Importance will be placed on developing reading and writing skills.

EDEE 325 CHILDREN'S LITERATURE. (3) (Restriction: Not open to students who have taken ENGL 240, ENGL 341) (Limited enrollment) Selection and use of literature suitable for children in the elementary school.

EDEE 332 TEACHING MATHEMATICS 1. (3) (Prerequisite: EDEE 230.) Curriculum trends in teaching mathematics to children. Programs, methods, materials and evaluation procedures appropriate for the elementary school. Please check timetable information for labs schedule.

EDEE 340 SPECIAL TOPICS: CULTURAL ISSUES. (3) Seminars on Inuit culture or on selected aspects of the culture of First Nations peoples. Topics will include historical cultural contacts, native oral tradition, religious beliefs and cultural change. Preparation of a project on an aspect of First Nations or Inuit life will be required.

EDEE 341 INUKTITUT FOR BEGINNERS. (3) An introduction to the basic structures of Inuktitut, with intensive drill and classroom practice in the use of the language.

EDEE 342 INTERMEDIATE INUKTITUT/AMERINDIAN LANGUAGE. (3) (Prerequisite(s): EDEE 249 or equivalent, e.g. EDEE 295, EDEE 298 or permission of Director) A study for Inuktitut/Amerindian language speakers, of Inuktitut/Amerindian language phonology and structure, emphasizing the connection between the two, demonstrating the orderliness of many dialectic differences.

EDEE 344 ADVANCED INUKTITUT/AMERINDIAN LANGUAGE. (3) (Prerequisite(s): EDEE 342 or permission of Director) The final course in a set dealing with Inuktitut/Amerindian Language phonology and structure. An understanding of basic Inuktitut/Amerindian Language syntax in particular, rules governing verb and possessive endings.

EDEE 345 LITERATURE AND CREATIVE WRITING 1. (3) A study of the development of oral and written poetry and prose in the various ANDge1410



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EDEM 450 CURRICULUM ALTERNATIVES. (3) (Offered through Summer Studies) An examination of various curriculum designs which cross boundaries of subject, method and culture, and the applications to programs for different populations of students.



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with moral, religious, social, and political values with a view to determining their relevance to basic educational issues.

EDER 409 WOMEN AND EDUCATION. (3) (Core course for the Women's Studies Minor Program) The school as a sexist institution in both historical and contemporary perspectives; identifies women's contributions to intellectual history and the development of educational ideas and practices; analyses problems such as those of prejudice in schools, women teachers and promotion, sex role stereotypes in texts. Interdisciplinary approach. Guest speakers.

EDER 411 TEACHING YIDDISH AS SECOND LANGUAGE. (3) Up-to-date methods and theories relating to the teaching of Yiddish. This course will also offer students the opportunity to discuss some of the motivational and attitudinal issues unique to the contemporary Yiddish class.

EDER 420 TEACHING JEWISH HISTORY. (3) Approaches, strategies and techniques of teaching Jewish history from ancient times to the present. Particular attention will be paid to creating educational materials that teach an understanding of history and that relate Jewish history to general world history, primarily at the secondary level.

EDER 421 TEACHING THE HOLOCAUST. (3) Approaches, strategies and techniques of teaching the holocaust. Examination of the holocaust to learn how to teach about it and how to use it as a base of teaching about prejudice, cultural identity, racism, human rights and moral responsibility.

EDER 451 TUTORIAL IN JEWISH EDUCATION. (3) A reading course for students who wish to explore intensively the literature in a particular area related to teaching Jewish studies.

EDER 461 SOCIETY AND CHANGE. (3) Factors influencing patterns of stability and change in major social institutions and the implications for formal and non-formal education.

EDER 462 LEARNING IN CONTEMPORARY SOCIETY. (3) Structures and services to promote education in a variety of contexts outside of the formal school system, especially in the exercise of professions in government services and in volunteer organizations.

EDER 473 LIVING WITH INSIGHT. (3) An examination of the moral and spiritual challenges of the modern and post-modern world. Emphasis will also be placed on the role and responsibility of education in meeting these challenges.

EDER 491 THEOLOGICAL THEMES. (3) A study of several theological themes central to Christianity. Particular emphasis on faith and sacramental life.

EDER 494 ETHICS IN PRACTICE. (3) Fundamental principles of ethics as applied to current moral issues such as abortion, drugs, nuclear war, and discrimination.

EDER 505 EDUCATION AND SOCIAL ISSUES. (3) A study of the philosophical aspects of major social issues to education, and of selected approaches to fostering critical thinking concerning such issues.

EDER 520 ISSUES IN JEWISH EDUCATION. (3) (Restriction: Not open to students who have taken 422-320 / EDER 320) An exploration of dissenting and complementary perspectives on the purpose of Jewish education. Challenges facing the field of Jewish education are examined. Developments in general education of relevance to Jewish education are considered.

EDER 523 TEACHING JUDAISM: BIBLE. (3) (Restriction: Not open to students who have taken 422-401 / EDER 401) (Prerequisite: Knowledge of Hebrew, with permission of instructor) A study of selected narrative, poetic and legal portions of the Pentateuch with a view to teaching this material in Jewish schools. An examination of some of the techniques presently used in the teaching of Bible.

EDER 525 TEACHING JUDAISM: HOLIDAYS. (3) (Restriction: Not open to students who have taken 422-250 / EDER 252) An exploration of the rituals, customs, values and historical development of Jewish holidays. Methods of applying this material to the Jewish studies classroom are examined.

EDER 526 TEACHING JUDAISM: LITURGY. (3) (Restriction: Not open to students who have taken 422-400 / EDER 407) (Prerequisite: Knowledge of Hebrew, with permission of instructor.) An exploration of curriculum developed for teaching prayer and fostering spirituality within Jewish educational frameworks. Selected portions of the High Holy Day liturgy are examined with a view to teaching this material in Jewish settings.

EDER 527 TEACHING JUDAISM: SPECIAL TOPICS. (3) In-depth examination of topics in Jewish education. Content will vary from year to year.

EDER 528 TEACHING JUDAISM: THE HOLOCAUST. (3) (Restriction: Not open to students who have taken 422-421 / EDER 421) An exploration of approaches and techniques for the teaching of the Holocaust. Strategies for using Holocaust education as a basis for discussing prejudice and moral responsibility are examined.

EDES – Secondary Education

Offered by: Department of Integrated Studies in Education
Former Teaching Unit Code: 425

EDES 201 EFFECTIVE WRITTEN COMMUNICATION. (3) (Offered through Distance Education) Designed to help develop the quality of academic and professional communication (in English). Emphasis on the writing process: problem solving strategies; ways of gen-



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EDES 366 L



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EDFE 407 4TH FIELD EXPERIENCE MUSIC. (7) (Prerequisite: EDFE 305.) (Corequisite: EDEA 407.) (Restriction: Students in B.Ed. in Music and the Concurrent B.Ed./B.Mus.) Thirty-five days of teaching in a secondary school under the supervision of a cooperating music teacher. Students will gradually assume more responsibility for student learning, formative and summative evaluation, and will be expected to experience a full teaching load.

EDFE 409 FOURTH YEAR FIELD EXPERIENCE (ESL/FSL). (8)

EDFE 425 ABORIGINAL EDUCATION PRACTICUM 4. (3) (Restrictions: Not open to students who have taken EDFE 394. Open to students registered in the Certificate in Education for First Nations and Inuit.) Teach18(R)]TJ()JTJIO



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strategies. Principles of research on teaching in physical education are translated into practical techniques for application in the field.

EDKP 443 RESEARCH METHODS. (3) (Prerequisites: PSYC 204 or equivalent.) How to conduct and understand research in physical activity, including a complete overview of the research process, statistical and measurement concepts in research, the various types of research including both quantitative and qualitative aspects, as well as ways of presenting research.

EDKP 444 ERGONOMICS. (3) (Prerequisites: EDKP 205, EDKP 206, EDKP 331.) An examination of ergonomic issues including: injury mechanisms, evaluation and assessment techniques, occupational health and safety legislation, and ergonomic inventions.

EDKP 445 EXERCISE METABOLISM. (3) (Prerequisites: PHGY 201, PHGY 202, EDKP 391.) The biochemical structure and regulation of major biochemical pathways related to exercise. Examine the hormonal regulation of lipid, carbohydrate and protein metabolism during short and prolonged exercise as well as the influence of physical training. Examine gender-related differences and exercise metabolism.

EDKP 446 PHYSICAL ACTIVITY AND AGEING. (3) (Prerequisite: EDKP 391.) Review of ageing-related changes in circulatory, respiratory, neuromuscular, hormonal, metabolic and immune systems as they relate to functional limitations and the physiological responses to acute and chronic exercise. Examination of the role of exercise in mitigating ageing response.

EDKP 447 MOTOR DEVELOPMENT 2. (3) (Prerequisites: ANAT 316, EDKP 205, PHGY 201, PHGY 202, EDKP 261.) An examination of the basic concepts and processes of biological growth, maturation and ageing and a consideration of the outcome of these processes for physical performance and exercise responses across the lifespan.

EDKP 448 EXERCISE AND HEALTH PSYCHOLOGY. (3) (Prerequisites: EDKP 261, EDKP 393.) The psychological aspects of health and participation in exercise and physical activity. The application of psychological knowledge and methodology within exercise and health. Theory and evidence on selected topics in this area of study.

EDKP 449 EXERCISE PATHOPHYSIOLOGY 2. (3) (Prerequisites: EDKP 391, EDKP 485.) Review of the physiological bases of selected disorders of the immune, renal, neurological and muscular-skeletal systems and an examination of the particularities of exercise responses and the effects of exercise conditioning in these populations. A special emphasis on the scientific bases for exercise prescription.

† **EDKP 450 PRACTICUM 3.** (3) (Prerequisites: EDKP 250 and EDKP 350) A work-study experience with a focus on administration and program development in fitness. Work will be in a community placement under a qualified sponsor selected with the approval of the Department.

EDKP 450D1 (1.5), EDKP 450D2 (1.5) PRACTICUM 3. (Students must register for both EDKP 450D1 and EDKP 450D2.) (No credit will be given for this course unless both EDKP 450D1 and EDKP 450D2 are successfully completed in consecutive terms) (EDKP 450D1 and EDKP 450D2 together are equivalent to EDKP 450) A work-study experience with a focus on administration and program



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cold), hypobaric (medium and high altitude), hyperbaric (diving and chambers), and microgravity.

EDKP 550 ANALYZING INSTRUCTIONAL BEHAVIORS. (3) Students



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EDPC 510 FAMILY LIFE EDUCATION AND MARRIAGE. (3) (Offered through Continuing Education.) The contribution of central concepts of psychological theories and therapeutic systems to the understanding of marriage and relationships. Special attention will be given to gender and ethnicity issues in order to increase the sensitivity of students to the issues typically confronted in the modern marriage and family.

EDPC 540 FOUNDATION OF FAMILY LIFE EDUCATION. (3) (Restriction: Not open to students who have taken EDPC 640) (Offered through Continuing Education.) An examination of the psychological and sociological foundations of family life education tracing the evolution of theory, research and practice within this domain.

EDPC 542 COUNSELLING ROLE OF THE TEACHER. (3) (Offered through Continuing Education or Summer Studies.) Theory and practice in inter14.8(d8(r)-50m)9.6(s3m)-21.3(m)-6.4713.2(: cd8(Hmu(EC6(s3m)-nd)-14.8o-14.8o-30.2(m)-F 0bi7 0bi7 0bi7)-F 0bi7v2.5(e)ir)-50mi(l)-53.5

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ment to focus on the tasks of constructing instructional materials. Areas to be considered include behaviour analysis, concept formation, and test construction.

EDPE 555 APPLIED COGNITIVE SCIENCE. (3) Examination of foundations of cognitive science including contributions by psychology, linguistics, and computer science. Consideration of theory and methodology or cognitive science in educational and instructional contexts.

EDPE 560 HUMAN DEVELOPMENT. (3) (Offered through Continuing Education.) A review of current theory and knowledge of human development through the life cycle. Particular attention is given to



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practice concerning creativity, with special attention to creativity in students and educational settings.

EDPI 536 PRACTICUM GIFTED EDUCATION 1. (3) (Prerequisite: EDPI 526) (Normally available in July only during the Explorations Gifted Summer School) (Restriction: Permission to register is required from Explorations) Supervised practice in demonstration classrooms for gifted and talented children, with supporting seminars.

EDPI 537 PRACTICUM GIFTED EDUCATION 2. (3) (Prerequisite: EDPI 526) (Restriction: Normally taken with EDPI 536. Permission



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tional media or educational computing production undertaken by the student after consultation with the Director of the Educational Technology Program.

EDPT 408 INTERNET RNETNET



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ARCH 202 ARCHITECTURAL GRAPHICS AND ELEMENTS OF DESIGN.

(6) (2-10-6) (Prerequisite: ARCH 201) Introduction to architectural design; consideration of building form in relation to program, structural system, material selection, site and climate; further development of skills in model making, conventional architectural drawing, axonometric and perspective drawing, sketching and architectural rendering. The course is based in the studio and includes lectures, seminars and field trips.

ARCH 217 FREEHAND DRAWING 1. (1) (0-2-1) Development of skills in drawing and observation through a series of exercises based on the study of the human figure in a studio setting. Media include pencil, charcoal, conte crayon, and pen and ink.

ARCH 218 FREEHAND DRAWING 2. (1) (0-2-1) (Prerequisite: ARCH 217) Continuation of ARCH 217. Development of graphic skills and visual literacy through exercises in life drawing. Introduction to basic colour theory: hue, intensity/dilution, temperature and emotional power. Additional media include coloured chalk and gouache.

ARCH 240 ORGANIZATION OF MATERIALS IN BUILDINGS. (3) (2-3-4)

The characteristics of basic building materials: wood, steel, masonry and concrete. How building materials are shaped into building components, and how these components are integrated into the building envelope. Problems, laboratory projects and field trips to illustrate principles.

ARCH 250 ARCHITECTURAL HISTORY 1. (3) (3-0-6) The study of architecture in relation to landscape, urban form and culture, from Antiquity to the end of the Middle Ages.

ARCH 251 ARCHITECTURAL HISTORY 2. (3) (3-0-6) (Prerequisite: ARCH 250) Overview of early 20th century architecture with emphasis on a thematic approach to buildings and cities, architects and ideologies. The lectures will examine the origins, development and impact of canonical figures and buildings of Modernism.

ARCH 303 DESIGN AND CONSTRUCTION 1. (6) (2-10-6) (Prerequisite: ARCH 202) An exploration of the design of buildings. Projects emphasize the major social, technological, environmental, and symbolic aspects of the design process. Introduction to specific modelling, presentation, and documentation techniques. Discussions, readings, field trips and practical ex.9(f1.c6(i)-6.2(s)-12.9(e)-16.ssm.)]TJ/F2 1 Tf0 -1.5075 TD0.0104 Tc-0.0048 Tw[(A)16(RCH)16(30)14.4(3)14.9(D



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rem; flowmeters, pipeline systems, non-Newtonian fluids, microscopic balances leading to continuity and Navier-Stokes equations; boundary layer approximation; turbulence. Laboratory exercises.

CHEE 315 HEAT AND MASS TRANSFER. (4) (3-2-7) (Prerequisite: CHEE 314) Transport of heat and mass by diffusion and convection; transport of heat by radiation; diffusion; convective mass transfer; drying; absorption; mathematical formulation of problems and equipment design for heat and mass transfer; laboratory exercises.

CHEE 340 PROCESS MODELLING. (3) (3-1-5) (Prerequisites: MATH 261 or MATH 263; MATH 264 or MATH 265; CHEE 314) Principles of mathematical modelling in chemical engineering:



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design; dust cleaning methods, design of scrubbers, case studies in the Canadian context.

CHEE 474 BIOCHEMICAL ENGINEERING. (3) (3-0-6) (Prerequisite: CHEE 370.) (Corequisite: CHEE 423.) Bioreactor design for biotechnology and environmental applications; microbial growth kinetics; application of transport phenomena and selected chemical engineering unit operations. Bioreactor instrumentation and performance optimization. Air and media sterilization processes. Selected operations of downstream processing and product recovery.

CHEE 481 POLYMER ENGINEERING. (3) (3-0-6) (Corequisites: CHEE 315 or MIME 356.) The application of engineering fundamentals to the preparation and processing of polymers emphasizing the relationship between polymer structure and properties. Topics include: polymer synthesis techniques, characterization of molecular weight, crystallinity, glass transition, phase behaviour, mechanical properties, visco-elasticity and rheology, and polymer processing for use in blends and composite materials.

CHEE 484 MATERIALS ENGINEERING. (3) (3-0-6) (Prerequisites: CHEE 315, CHEE 380) Processes for forming and producing engineering materials such as amorphous, semicrystalline, textured and crystal-oriented substances and composites. Effect of



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CIVE 385 STRUCTURAL STEEL AND TIMBER DESIGN. (3) (3-1-5)
(Prerequisite: CIVE 283.) (Corequisite: ARCH 240) Structural loadings, load factors, code requirements and design procedures. Characteristics of structural steel and structural timber in building construction. Structural design of axially loaded tension and compression members, joists, beams, girders, trusses and framing



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analysis of continuous-time LTI systems, application of transform techniques to electric circuit analysis.

ECSE 304 SIGNALS AND SYSTEMS 2. (3) (3-0-6) (Prerequisite: ECSE 303) (Tutorials assigned by instructor.) Application of transforms to the analysis of LTI single-loop feedback systems, the discrete-time Fourier series, the discrete-time Fourier transform, the Z transform, time and frequency analysis of discrete-time LTI systems, sampling systems, application of continuous and discrete-time signal theory to communication systems.



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Programming models for parallel computing: data flow, shared memory, message passing, systolic, and data parallel. Theory of parallel programming and analysis of fundamental algorithms on different architectures. Architecture dependent/independent parallel programming languages: Unity, Id, Linda, C*, C-Paris, CM-Fortran, and MPL.

ECSE 421 EMBEDDED SYSTEMS. (3) (3-0-6) (Prerequisites: ECSE 322, ECSE 323.) Definition, structure and properties of embedded



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ECSE 461 ELECTRIC MACHINERY. (3) (3-0-6) (Prerequisite: MECH 383) (Not open to students in Electrical Engineering) (Tutorials assigned by instructor.) Electric and magnetic circuits. Notions of electromechanical energy conversion applied to electrical machines. Basic electrical machines - transformers, direct-current motors, synchronous motors and generators, three phase and single phase induction machines. Elements of modern electronically controlled electric drive systems.

ECSE 462 ELECTROMECHANICAL ENERGY CONVERSION. (3) (3-0-6) (Prerequisite: ECSE 361) Lumped parameter concepts of electro-mechanics. Energy, co-energy in the derivation of torques and forces. Examples of electric machines: - dc, synchronous and induction types. Steady-state, transient and stability analysis. Power electronic controllers.

ECSE 464 POWER SYSTEMS ANALYSIS 1. (3) (3-0-6) (Prerequisite: ECSE 361) (This course is offered by the Power Engineering Institute.) Basic principles of planning and operating interconnected power systems with emphasis on Canadian conditions. Mathematical models for system. Steady-state analysis of power systems, load flow formulation and solution algorithms. Operating strategies, economic dispatch, voltage reactive power regulation, frequency and tie-line power control.

ECSE 465 POWER ELECTRONIC SYSTEMS. (3 rd(mn Tc()T67.2(s)3o-3(r)-((-6.1(a)8(n)-7(s)11ea)8(n)-7a 50us)3o-3(r)-(0 0)-15.4()14.6.48 90((3)-1t-10(JTJ



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tion through experimental investigation. Results are reported in a seminar at the end of term and in a technical paper.

ECSE 495 SOFTWARE ENGINEERING DESIGN PROJECT. (3) (0-5-4)
(Prerequisites: ECSE 321 and at least 42 Departmental credits from Electrical and Computer Eng. and Computer Science) Self-managed design and implementation of a complex software sys-



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ECSE 526 ARTIFICIAL INTELLIGENCE. (3) (3-0-6) (Prerequisite: ECSE 322) Design principles of autonomous agents, agent architectures, machine learning, neural networks, genetic algorithms, and multi-agent collaboration. The course includes a term project that consists of designing and implementing software agents that collaborate and compete in a simulated environment.

ECSE 527 OPTICAL ENGINEERING. (3) (3-0-6) (Prerequisites: ECSE 304 and ECSE 352) A structure introduction to modern optical engineering. Topics covered include the propagation of light through space, refraction, diffraction, polarization, lens systems, ray-tracing, aberrations, computer-aided design and optimization techniques, Gaussian beam analysis, micro-optics and computer generated diffractive optical elements. Systems and applications will be stressed throughout.



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tors, GTO's, bipolar transistors, MOSFET's. Switch mode power amplifiers. Buck and boost principles. Modulation methods -PWM,



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urements, such as measurement of strain, pressure, force, position, and temperature.

MECH 262 STATISTICS AND MEASUREMENT LABORATORY. (3) (3-3-3) Introduction to probability: conditional probability, binomial and Poisson distributions, random variables, laws of large numbers. Statistical analysis associated with measurements; regression and correlation. Basic experimental laboratory techniques, including the measurement of strain, pressure, force, position, and temperature.

MECH 289 DESIGN GRAPHICS. (3) (3-3-3) (Restriction: Not open to students who have taken MECH 290 or MECH 291.) Preliminary

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issues present in product life cycle demands. Computer-aided systems. Rapid prototyping. Design for manufacturability. Integration of mechanics, electronics and software in products. Effect on design of product cost, maintainability, recycling, marketability.

MECH 529 DISCRETE MANUFACTURING SYSTEMS. (3) (3-0-6) (Prerequisite (Undergraduate): Permission of the instructor) An overview of present day production machines and systems with special emphasis on automation, computer control and integration techniques. Material handling, automatic inspection, process monitoring, maintenance. Socio-economic and environmental issues. Laboratory experience with factory simulation.

MECH 530 MECHANICS OF COMPOSITE MATERIALS. (3) (3-0-6) (Corerequisite: MECH 321 or equivalent/instructor's permission) Fiber-reinforced composites. Stress, strain, and strength of composite laminates and honeycomb structures. Failure modes and failure criteria. Environmental effects. Manufacturing processes. Design of composite structures. Computer modelling of composites. Computer techniques are utilized throughout the course.

MECH 531 AEROELASTICITY. (3) (3-1-5) (Prerequisite (Undergraduate): MECH 419 or MECH 315 and MECH 533) (Prerequisite (Graduate): MECH 533) Wing divergence using strip-theory aerodynamics. Effect of aircraft flexibility on the control and stability. Flutter calculations for two-dimensional wings with discussion of three-dimensional effects. Some examples of aeroelastic instability, and the relevant analysis of non-aeronautical problems.

MECH 532 AIRCRAFT PERFORMANCE, STABILITY AND CONTROL.



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MECH 553 DESIGN AND MANUFACTURE OF MICRODEVICES. (3) (3-0-6) (Prerequisite: Instructors' Permission.) Introduction to micro-electromechanical systems (MEMS). Micromachining techniques (thin-film deposition; lithography; etching; bonding). Microscale mechanical behaviour (deformation and fracture; residual stresses; adhesion; experimental techniques). Materials- and process-selection. Process integration. Design of microdevice components to meet specified performance and reliability targets using realistic manufacturing processes.

MECH 554 MICROPROCESSORS FOR MECHANICAL SYSTEMS. (3) (2-3-4) (Prerequisite (Undergraduate): MECH 383 and COMP 208) Digital logic and circuits - asynchronous and synchronous design. Microcontroller architectures, organization and programming - assembly and high-level. Analog/ digital/hybrid sensors and actuators. Sensing and conditioning subsystems. Interfacing issues.



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MIME 212 ENGINEERING THERMODYNAMICS. (3) (3-1-5) Macro versus microscopic approach: patterns of Nature. First and second laws and their uses. Property relationships: free energies, chemical potentials, activities, heat capacity. Chemical equilibrium. Reaction kinetics. Phase equilibrium for a pure substance. Experimental methods. Engineering applications: high-temperature metallurgical reactors, turbines, mixtures and solutions, phase diagrams, superconductivity.

MIME 221 ENGINEERING PROFESSIONAL PRACTICE. (2) (3-1-2) Introduction to the engineering profession. Rights and code of conduct for students. Regulation of the engineering profession. Law/liability. Principles of engineering ethics. Ethical problems of engineers in industry, management, and private practice. The engineer's duty to society and the environment. Occupational health and safety. Engineering case histories.

MIME 260 MATERIALS SCIENCE AND ENGINEERING. (3) (2-2-5) Structure properties and fabrication of metals, polymers, ceramics, composites; engineering properties: tensile, fracture, creep, oxidation

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ENVR 401 ENVIRONMENTAL RESEARCH. (3) (Fall) (Prerequisite: ENVR 301) (Restriction: B.A. Faculty Program in Environment, B.Sc.(Ag.Env.Sc.) and B.Sc. Major in Environment, and Diploma in Environment) (Downtown Campus only) Students work in an interdisciplinary team on a real-world research project involving problem definition, methodology development, social, ethical and environmental impact assessment, execution of the study, and dissemination of results to the research community and to the people affected. Teams begin defining their projects during the preceding spring.

ENVR 451 RESEARCH IN PANAMA. (6) (Winter) (Restriction: students in the Panama Field Semester program. Offered in Panama only) Research projects will be developed by instructors in consultation with Panamanian universities, government agencies and non-governmental organizations. Project groups will consist of four to six students working with a Panamanian institution. Topics will be relevant to Panama: e.g., protection of the Canal watershed, economical alternatives to deforestation, etc.

ENVR 465 ENVIRONMENT AND SOCIAL CHANGE. (3) (Students must enroll in Bay of Fundy Field Semester. Offered on Bay of Fundy only.) (Prerequisites: ENVR 201, ENVR 203 and ENVR 202 or permission of instructor) (Corequisites: GEOG 497 and CANS 407 and ENVR 466) Impacts of globalization upon coastal and resource-based communities in terms of relationships between the environment, new technologies and global market. Emphasis is on the complexity of change and the conflicts and compromises inevitable in global-local interactions.

ENVR 466 RESEARCH IN ATLANTIC CANADA. (6) (Restriction: students in Bay of Fundy Field Semester. Offered on Bay of Fundy only.) (Corequisites: GEOG 497 and CANS 407 and ENVR 465) Students will work in teams on research topics relevant to sustainability of regional environments, economies and cultures, such as aquaculture, forestry, traditional fisheries, water quality, and ecotourism.

ENVR 480 TOPICS IN ENVIRONMENT 2. (3) (Restriction: Normally open only to U3 MSE students) Intermediate-level seminars and discussion of interdisciplinary aspects of current problems in environment led by staff and/or special guests. This course is offered on an irregular basis.

ENVR 485 READINGS IN ENVIRONMENT 1. (3) (Restriction: Normally open only to U3 MSE students) Interdisciplinary literature project/essays related to environment, enabling independent study under guidance of qualified MSE staff in areas outside the scope of individual departments. Proposed topic and method of evaluation must be approved by the Associate Director one month before the beginning of term. Contact the Program Coordinator for information.

ENVR 540 ECOLOGY OF SPECIES INVASIONS. (3) (Prerequisite: BIOL 208 or permission of instructor) (Restrictions: Not open to U1 or U2 students. Not open to students who are taking or have taken BIOL 540.) Causes and consequences of invasion, as well as risk assessment methods and management strategies for dealing with this global problem.

ENVR 580 TOPICS IN ENVIRONMENT



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ments, the study and evaluation of internal controls in an accounting system.

ACCT 486 BUSINESS TAXATION



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ment. Also covered are: determinants of stock prices, growth models and portfolio diversification.

FINE 442 CAPITAL MARKETS AND INSTITUTIONS. (3) (Prerequisite: MGCR 341) (Restriction: Only one of FINE 442 or ECON 302 can be counted for credit.) Functions of the capital market through flow of funds analysis and an examination of portfolio activities of financial intermediaries. Also covered are: securities regulations and ethical

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INSY 444 MANAGING KNOWLEDGE WITH INFORMATION TECHNOLOGY. (3) (Prerequisite: MGCR 331.) Types of organizational knowledge and their value for organizations, analyzing knowledge processes, and assessing tools and technologies for managing knowledge.

INSY 450 INFORMATION SYSTEMS PROJECT MANAGEMENT. (3) (Prerequisite: MGCR 331.) Practical principles of project management essential to successful IS development projects or other complex undertakings within an organization; includes methods for



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mentation process, manufacturing planning and design, design for manufacturability and the engineering/manufacturing interface. The course will present in detail operational issues related to management (design and control) of automated systems.

MGSC 602 MANUFACTURING STRATEGY. (3) A review of the basic framework of competitive strategies, and the role of manufacturing in the elaboration of the firm's overall strategy. Specific manufacturing determinants of competitiveness include: technology, processes, integration, manufacturing-marketing-design interface, location, product mix, cost, quality and timeliness.

MGSC 603 LOGISTICS MANAGEMENT. (3) (Prerequisite (Undergraduate): MGSC 472) The management of the logistics functions in a manufacturing firm. Internal logistics includes the design and operation of a production-distribution system, with emphasis on the management of supply chains in global manufacturing companies. External logistics includes an analysis of the prevailing sourcing strategies and alternative means of customer satisfaction. Important tools such as forecasting techniques and information technology are also covered.

MGSC 605 TOTAL Q1c(ua)r(e)-1AQ



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MUEN 492 CHAMBER JAZZ ENSEMBLE. (2) (Restriction: Open to Jazz Performance students only.) This ensemble will deal with the extensive repertoire of music which exists for small jazz orchestra (9-13 instruments).

MUEN 493 CHORAL ENSEMBLES. (2) (4 hours) (Prerequisite: audition) (Section 01 Chamber Singers: a group of approximately 24 mixed voices which explores the a capella repertoire of all periods as well as works with chamber accompaniment) (Section 02 Concert Choir: an ensemble of approximately 60 voices (S.A.T.B.) which performs the repertoire)



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MUIN 562 ARTIST DIPLOMA RECITAL.8. (8) (1.5 hours) (Prerequisite: MUIN 560) Individual practical lessons and recital.

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MUIN 569 ARTIST D



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MUJZ 224 JAZZ IMPROVISATION/M



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MUMT 202 FUNDAMENTALS OF NEW MEDIA. (3) (3 hours) (Prerequisites: none) (Restriction: Open only to students in Music Technology, including those in Minor Programs, and students in Sound Recording, and Composition) Combining theory and practice, the course covers the areas of MIDI, sound/image/MIDI sequencing, sampling, mixing, soundfile processing and editing, elementary music systems programming, and use of the Internet for sound/music/image.

MUMT 203 INTRODUCTION TO DIGITAL AUDIO. (3) (3 hours) (Prerequisite: MUMT 202) An introduction to the theory and practice of digital audio. Topics include: sampling theory; digital sound synthesis methods (additive, subtractive, summation series); sound processing (digital mixing, delay, filters, reverberation, sound localization); software-based samplers; real-time sound processing; interactive audio systems. Hands-on exercises are included.

MUMT 300D1 (3), MUMT 300D2 (3) INTRODUCTION TO MUSIC RECORDING. (3 hours lecture plus 4 hours studio time) (Prerequisite: MUCO 242 or MUCO 341. Prerequisites or corequisites: MUTH 211 and permission of instructor.) (It is recommended that all students taking this course register concurrently for PHYS 224 Physics and Psychophysics of Music if they do not already have a background in this subject.) (Students must register for both MUMT 300D1 and MUMT 300D2.) (No credit will be given for this course unless both MUMT 300D1 and MUMT 300D2 are successfully completed in consecutive terms) The theory and practice of music recording including a study of recording environments, equipment and studio techniques. The analysis of music scores and recordings with respect to the requirements and possibilities of the recording studio. Studio work will include recording sessions, recording of live concerts, editing, mixing and music p.a.

MUMT 301 MUSIC AND THE INTERNET. (3) (3 hours) (Prerequisite: MUMT 201 OR MUMT 202) Technologies and resources of the Internet (access tools, data formats and media) and Web authoring (HTML) for musicians; locating, retrieving and working with information; putting information online; tools for music research, music skills development, technology-enhanced learning, music productivity, and promotion of music and musicians.



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MUPG 213 GERMAN DICTION. (2) (2 hours) (Prerequisite: MUPG 212) Study of German pronunciation in singing using song and opera texts.

MUPG 214 DICTION - EAST EUROPEAN LANGUAGES. (2) (2 hours) Basic rules of pronunciation utilizing the International Phonetic Alphabet.

MUPG 272D1 (2), MUPG 272D2 (2) CONTINUO. (2 hours) (Prerequisites: MUTH 111 AND permission of instructor. Enrollment limited to 6) (Students must register for both MUPG 272D1 and MUPG 272D2.) (No credit will be given for this course unless both MUPG 272D1 and MUPG 272D2 are successfully completed in consecutive terms) An historically-oriented study of the principles of figured-bass. The student will realize at sight elementary bass patterns. Standard idioms from historical treatises will be introduced.

MUPG 302 SEMINAR IN PIANO PEDAGOGY. (1)

MUPG 305 VOCAL MUSIC PRACTICES. (3)

MUPG 315D1 (2), MUPG 315D2 (2) INTRODUCTION TO ORCHESTRAL CONDUCTING. (2 hours) (Prerequisites: MUTH 211, MUSP 229, MUCO 261, MUGT 215, and permission of instructor) (Students must register for both MUPG 315D1 and MUPG 315D2.) (No credit will be given for this course unless both MUPG 315D1 and MUPG 315D2 are successfully completed in consecutive terms) Emphasis on classical repertoire (Haydn, Mozart, Beethoven). Practical analysis and score preparation, style, and interpretation. Development of clear and expressive technique. Some practical experience.

MUPG 370 KEYBOARD IMPROVISATION 1. (2) (2 hours) (Prerequisites: audition and Piano Major Performance 1 Examination or audition for students in programs other than Performance. Open to all keyboard instruments except Jazz) Development of harmonic skills necessary for simple improvised accompaniment, using .5(l)7.6AU63ca(t, u)-8.3(s)-0.1()JTJT*-5.0044 Tc-7.0101 Tw[(si)15.22asifosi ananoanos c-91i np7the.34rd15.7()mpt



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MUTH – Music Theory and Analysis

Offered by: Department of Theory

Former Teaching Unit Code: 211

MUTH 110 MELODY AND COUNTERPOINT. (3) (4 hours) (Prerequisite: Matriculation Music or McGill Conservatory Theory Secondary V or its equivalent. Corequisites: MUSP 129 and MUSP 170 or permission of co-ordinator or instructor) Introduction to principles of melodic and contrapuntal structure through the traditional species of counterpoint: first through fifth species in two parts; first species in three parts. Analysis and compositional modelling of repertoire in medieval-renaissance and 20th-century idioms. Notation, elementary acoustics, review of rudiments.

MUTH 111 ELEMENTARY HARMONY AND ANALYSIS. (3) (4 hours) (Prerequisite: MUTH 110.) (Corequisites: MUSP 131 and MUSP 171) Diatonic chords, harmonic progression, the concept and practice of tonality, simple modulation, seventh chords and secondary dominants. Small forms from c.1700 to the early 19th Century will be analyzed. Written four-part exercises will be required.

MUTH 210 TONAL THEORY AND ANALYSIS 1. (3) (3 hours) (Prerequisites: MUTH 110 and MUTH 111.) (Corequisite: MUSP 229.) (Prerequisite or corequisite: MUSP 171.) Compositional resources of early and mid-18th Century music. Thorough review of elementary harmonic procedure. Introduction to chromatic alteration and linear chords, and to analysis of imitative and invertible counterpoint. Analysis of common forms of the period c.1700 - 1770, including principal Baroque forms, but not including the Classical sonata.

MUTH 211 TONAL THEORY AND ANALYSIS 2. (3) (3 hours) (Prerequisite: MUTH 210.) (Corequisite: MUSP 231) Compositional resources of late 18th and early 19th Century music. Analysis of forms common to the period c.1770 - 1830, including Classical sonata forms in several media. Writing of short pieces for keyboard, piano and voice, and string quartet.

MUTH 301 MODAL COUNTERPOINT 1. (3) (3 hours) (Prerequisites: MUTH 211 or MUCO 240 and MUSP 231 and MUSP 171) Polyphonic techniques



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RELG 253 RELIGIONS OF EAST ASIA. (3) (Winter) Harmony with nature, society, and cosmos to be explored through the religions of the Far East (Confucianism, Taoism, Buddhism and Shinto).

RELG 254 I



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RELG 323 THE CHURCH IN HISTORY 2. (3) (Winter) Significant events and persons in the history of western Christianity from 1500 - 1948 will be studied. Attention is focused on mainline denominations in Britain and continental Europe.

RELG 324 ARMENIAN APOSTOLIC TRADITION. (3) (Prerequisite: RELG 322) History of the Armenian Orthodox Apostolic Church from its foundation to the present: apostolic beginnings; St Gregory the Illuminator and the establishment of Christianity in Armenia in the fourth century; development of doctrine, ecumenical discussions; theology, mystical thought, liturgy, sacred art and architecture.

RELG 325 VARIETIES RELIGIOUS EXPERIENCE IN CHRISTIANITY. (3) (Summer)

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Western religious dialogues, addressing the history and diversity of debates concerning religion. Texts to be discussed include dialogues by Plato, Cicero, Augustine, Boethius, Anselm, Cusanus, Leo Hebraeus, Erasmus, Thomas More, Jean Bodin, Leibniz and Hume.

RELG 442 PURE LAND BUDDHISM. (3) (Fall) (Prerequisite: RELG 252 and RELG 253, or RELG 342 or RELG 344, or permission of instructor) The concept of Buddha Countries and Pure Lands in Buddhism, the Western Pure Land of Amida (Jodokyo) and its basic scriptures, the Chinese Buddhist schools, the introduction to Japan and the foundation of the Pure Land school by Honen, the Pure Land School of Shinran and its development, and the other Pure Land related schools.

RELG 443 JAPANESE ESOTERIC BUDDHISM. (3) (Prerequisites: RELG 252 and RELG 253, or RELG 342, or RELG 344) The development of esoteric Buddhism in India and Tibet; its Chinese formation and introduction to Japan; Kukai, Shingonshu and Tendai esotericism; the Tachikawa traditions of sexual esotericism; Mandal, iconography and liturgy.

★RELG 451 ZEN: MAXIMS AND METHODS. (3) (Fall) (Prerequisites: RELG 252, RELG 342 or RELG 344, or permission of instructor) Through the reading of such key Zen writings as The Platform Sutra and selections from Zen Masters Chinul of Korea and Dôgen of Japan, an attempt will be made to relate Zen anecdote to meditational practice.

RELG 452 EAST ASIAN BUDDHISM. (3) (Winter) (Prerequisite: RELG 253 or RELG 344) Topic for 2000: Precept and Ritual in East Asian Buddhism and Confucianism.

RELG 454 MODERN HINDU THOUGHT. (3) (Prerequisite: RELG 252) A study of the developments in religious thought with special reference to such thinkers as Ram Mohan Roy, Dayananda Saraswati, Ramakrishna, Vivekananda, Gandhi, Tilak, Aurobindo, and Radhakrishnan.



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of the instructor) Introduction to Vedanta, especially Advaita, with focus on it as a living tradition and as constituting an Indian philosophy of religion.

RELG 548 INDIAN BUDDHIST PHILOSOPHY. (3) (Prerequisites: RELG 252 or RELG 342 or permission of instructor) The rise of buddhist schools of philosophy, especially the Theravada and Sauntranika, as an attempt to systematize the canonical teachings and defend Buddhism against its critics.

★**RELG 549 EAST ASIAN BUDDHIST PHILOSOPHY.** (3) (Prerequisites: RELG 253 and RELG 342 or RELG 344 or approval of instructor) A study of basic issues in Chinese and Japanese schools of Buddhist and Neo-Confucian philosophy through an examination of representative texts and commentary.

RELG 550 COMPARATIVE RELIGION. (3) (Winter and Summer) Tutorials and guided reading in the field of Comparative Religion.

RELG 551 INDIAN LOGIC 1. (3)

RELG 552 ADVAITA VEDANTA. (3) (Fall) (Prerequisites: 6 credits in Indian religions) The relation of Nyaya-Vaisesika and Mimamsa to Kevaladvaita with concentration on Sankara's Brahmasutrabhasya, Pada 1 and 2.

RELG 553 RELIGIONS OF SOUTH INDIA 1. (3) (Winter) (Prerequisite: 6 credits in Indian religions) Topics include: definitions of Tamil identity, the relation of akam to bhakti poetry, the theology of the Alvars and Nayanmars, inter-religious and sectarian competition, the motif of pilgrimage, questions of caste and women.

★**RELG 554 RELIGIONS OF SOUTH INDIA 2.** (3) (Winter) (Prerequisite: RELG 553) Analysis of the following: sampradaya; ubhayavedanta; comparison of Visistadvaita and Saiva Siddhanta with reference to selected themes that illustrate the Tamil contribution; the relationship of theology to the sociology of knowledge in Tamilnad.

RELG 555 HONOURS SEMINAR. (3) (Winter) (Restriction: For Religious Studies Honours students or with permission of the Chair of the Religious Studies B.A. Committee) Current trends in the study of religion, including the approaches of critical theory, feminism, post-modernism, and post-colonialism.

RELG 556 ISSUES IN BUDDHIST STUDIES. (3) (Winter) (Prerequisite: permission of instructor) A graduate seminar taught by the Numata Visiting Professor on critical issues in contemporary Buddhist Studies. Emphasis will be placed on the intensive application



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organ systems of the human body, with emphasis on those



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ATOC 250 NATURAL DISASTERS. (3) (Fall) (3 hours lectures)



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atmospheres, atmospheric and oceanic pollution, coastal currents, and research reviews.

/ **ATOC 558 NUMERICAL METHODS AND LABORATORY.** (3) (Winter)



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BIOL 306 NEUROBIOLOGY AND BEHAVIOUR. (3) (Fall) (3 hours lecture) (Prerequisites: BIOL 201, BIOL 205) Mechanisms of animal



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of genetic cis-regulation, developmental constraint and evolvability, heterochrony, phenotypic plasticity, and canalization.

BIOL 570 ADVANCED SEMINAR IN EVOLUTION. (3) (Winter) (3 hours seminar) (Restriction: Open to undergraduates by permission) Detailed analysis of a topic in evolutionary biology, involving substantial original research.

BIOL 571 EXPERIMENTAL EVOLUTION/ECOLOGY. (3) (Winter) (1 hour lecture, 4 hours laboratory) (Prerequisite: BIOL 435 or equivalent) (Restriction: Restricted to U3 and Graduate students.) Basic principles and processes of evolution and ecology will be demonstrated using microbial model systems. Topics include mutation, fitness, selection, adaptive radiation, properties of mixtures and



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mission of instructor) (Restriction: Not open to students who have taken or are taking PHYS 534) Topics discussed include scanning probe microscopy, chemical self-assembly, computer modelling, and microfabrication/micromachining.

CHEM 543 CHEMISTRY OF PULP AND PAPER. (3) (Fall) (2 lectures plus a reading/research project.) (Prerequisite: CHEM 302 or permission of instructor.) The industrial processes for converting wood to paper are described with emphasis on the relevant organic, physical, surface chemistry and colloid chemistry. The structure and organization of the polymeric constituents of wood are related to the mechanical, optical and other requisite properties of paper.

CHEM 547 LABORATORY AUTOMATION. (3) (Winter) (Two 1.5 hour lectures, lab) (Prerequisite: CHEM 377, equivalent or permission of instructor) Automation and data handling with respect to modern chemical laboratory instrumentation. Basic electronics, data acquisition, evaluation of laboratory needs, data processing methodologies.

CHEM 552 PHYSICAL ORGANIC CHEMISTRY. (3) (Fall) (Prerequisite: CHEM 302) The correlation of theory with physical measurements on organic systems; an introduction to photochemistry; solvent and substituent effects on organic reaction rates, etc.; reaction mechanisms.

CHEM 555 NMR SPECTROSCOPY.



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tems. How can robots move and interact. Robotic hardware systems. Kinematics and inverse kinematics. Sensors, sensor data interpretation and sensor fusion. Path planning. Configuration spaces. Position estimation. Intelligent systems. Spatial mapping.



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COMP 567 DISCRETE OPTIMIZATION 2. (3) (Winter) (3 hours) (Pre-requisites: COMP 566 or MATH 417) Formulation, solution and applications of integer programs. Branch and bound, cutting plane, and column generation algorithms. Combinatorial optimization. Polyhedral methods. A large emphasis will be placed on modeling. Students will select and present a case study of an application of



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EPSC 320 ELEMENTARY EARTH PHYSICS. (3) (Fall) (3 hours lectures) (Prerequisite: MATH 222) Physical properties of Earth and the processes associated with its existence as inferred from astronomy, geodesy, seismology, geology, terrestrial magnetism and thermal evolution.

/ **EPSC 330 EARTHQUAKES AND EARTH STRUCTURE.** (3) (Winter) (3 hours lectures, tutorial as required) (Prerequisites: MATH 314, EPSC 320.) (Corequisites: MATH 319) Seismic wave theory; body waves, surface waves and free oscillations; seismicity and earthquakes; seismology and Earth's internal structure.

EPSC 331 FIELD SCHOOL 2. (3) (Winter) (Two-week intensive field school to a range of national and international locations.) (Prerequisites: enrollment in U2 or U3 EPS program and permission of the instructor.) (Alternates years with EPSC 341.) Two week field studies in selected branches of the geosciences.

/ **EPSC 334 INVERTEBRATE PALEONTOLOGY.** (3) (Winter) (2 lectures and one laboratory period) Preservation of fossils; the fossil record of invertebrates; use of fossils in stratigraphy and paleoecology; fossils in evolutionary studies. Fossils of invertebrates



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stable isotopes, and applications to petrology and mineral deposits.

EPSC 525 SUBSURFACE MAPPING. (3) (Winter) (Prerequisites: EPSC 455 or permission of instructor) This course will provide participants the opportunity to learn how different types of data (wireline logs, seismic, etc.) are employed to map geological features in the subsurface. Lectures will teach participants about the physical basis of each of the data types, and the basic mapping and analytical techniques (e.g., geostatistics, gridding) that are employed in subsurface mapping. The principal focus will be on applying these



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topics covered are hormones of the hypothalamus, pituitary, adrenals, thyroids, parathyroidsdses 8 Tw(a)1



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tal study of the principles governing the movement of water at or near the Earth's surface and how the research relates to the chemistry and biology of ecosystems.

GEOG 331 URBAN SOCIAL GEOGRAPHY. (3) (Fall) (3 hours) (Prerequisite: GEOG 216 or GEOG 217 or permission of instructor) Social space and social time. The reflection of social structure in the spatial organization of the city. Historical perspective on changing personal mobility, life cycle, family structure and work organization. The appropriation and alienation of urban spaces.

GEOG 350 ECOLOGICAL BIOGEOGRAPHY. (3) (Fall) (3 hours) (Prerequisite: GEOG 203 or ENVR 200 or ENVR 202) The study of the patterns of distribution of organisms in space and time with emphasis on plant communities. Ecological, geographical, historical and anthropological factors affecting these distribution patterns will be discussed. Particular consideration is given to methods for description and classification of plant communities.

GEOG 351 QUANTITATIVE METHODS. (3) (Fall) (3 hours) (Prerequisite: MATH 240 or MATH 241 or MATH 242 or MATH 243 or MATH 244 or MATH 245 or MATH 246 or MATH 247 or MATH 248 or MATH 249 or MATH 250 or MATH 251 or MATH 252 or MATH 253 or MATH 254 or MATH 255 or MATH 256 or MATH 257 or MATH 258 or MATH 259 or MATH 260 or MATH 261 or MATH 262 or MATH 263 or MATH 264 or MATH 265 or MATH 266 or MATH 267 or MATH 268 or MATH 269 or MATH 270 or MATH 271 or MATH 272 or MATH 273 or MATH 274 or MATH 275 or MATH 276 or MATH 277 or MATH 278 or MATH 279 or MATH 280 or MATH 281 or MATH 282 or MATH 283 or MATH 284 or MATH 285 or MATH 286 or MATH 287 or MATH 288 or MATH 289 or MATH 290 or MATH 291 or MATH 292 or MATH 293 or MATH 294 or MATH 295 or MATH 296 or MATH 297 or MATH 298 or MATH 299 or MATH 300 or MATH 301 or MATH 302 or MATH 303 or MATH 304 or MATH 305 or MATH 306 or MATH 307 or MATH 308 or MATH 309 or MATH 310 or MATH 311 or MATH 312 or MATH 313 or MATH 314 or MATH 315 or MATH 316 or MATH 317 or MATH 318 or MATH 319 or MATH 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numerical solutions of differential equations. Programming assumed. Some lab work necessary.

MATH 318 MATHEMATICAL LOGIC. (3) (Fall) (Restriction: Not open to students who are taking or have taken PHIL 210) Propositional calculus, truth-tables, switching circuits, natural deduction, first order predicate calculus, axiomatic theories, set theory.

MATH 319 PARTIAL DIFFERENTIAL EQUATIONS. (3) (Winter) (Prerequisites: MATH 223 or MATH 236, MATH 314, MATH 315) First order equations, geometric theory; second order equations, classification; Laplace, wave and heat equations, Sturm-Liouville theory, Fourier series, boundary and initial value problems.

★**MATH 320 DIFFERENTIAL G**



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butions with special reference to the Binomial, Poisson, Gamma and Normal distributions. Characteristic functions. Weak law of large numbers. Central limit theorem.

MATH 357 HONOURS STATISTICS. (3) (Winter) (Prerequisite: MATH 356 or equivalent) (Restriction: Not open to students who have taken or are taking MATH 324) Data analysis. Estimation and hypothesis testing. Power of tests. Likelihood ratio criterion. The chi-squared goodness of fit test. Introduction to regression analysis and analysis of variance.

MATH 363 DISCRETE MATHEMATICS. (3) (3-0-6) (Prerequisites: MATH 265 and either MATH 270 or consent of instructor) (Restriction: Open only to students in the Faculty of Engineering.) Logic and combinatorics. Mathematical reasoning and methods of proof. Sets, relations, functions, partially ordered sets, lattices, Boolean algebra. Propositional and predicate calculi. Recurrences and graph theory.

MATH 366 HONOURS COMPLEX ANALYSIS. (3) (Prerequisite: MATH 248.) (Corequisite: MATH 354.) (Restriction: Not open to students who have taken or are taking MATH 466, MATH 249, MATH 316, MATH 381.) Functions of a complex variable, Cauchy-Riemann equations, Cauchy's theorem and its consequences. Uniform convergence on compacta. Taylor and Laurent series, open mapping theorem, Rouché's theorem and the argument prin-



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mulation and treatment of realistic mathematical models descri-
ing biological phenomena through such qualitative and
quantitative mathem



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MIMM 314 IMMUNOLOGY. (3) (Winter) (3 hours of lecture) (Prerequisite: BIOL 200 and BIOL 201 or BIOC 212) An introduction to the immune system, antigens, antibodies and lymphocytes. The course will cover the cellular and molecular basis of lymphocyte development and mechanisms of lymphocyte activation in immune responses.

MIMM 323 MICROBIAL PHYSIOLOGY. (3) (Fall) (3 hours of lecture) (Prerequisite: MIMM 211) An introduction to the composition and structure of microbial cells, the biochemical activities associated with cellular metabolism and how these activities are regulated and coordinated. The course will have a molecular and genetic approach to the study of microbial physiology.

MIMM 324 FUNDAMENTAL VIROLOGY. (3) (Fall) (3 hours of lecture) (Prerequisites: MIMM 211, BIOL 200, BIOL 201 or BIOC 212) A study of the fundamental properties of viruses and their interactions with host cells. Bacteriophages, DNA- and RNA-containing animal viruses, and retroviruses are covered. Emphasis will be on phenomena occurring at the molecular level and on the regulated control of gene expression in virus-infected cells.

MIMM 386D1 (3), MIMM 386D2 (3) LABORATORY IN MICROBIOLOGY AND IMMUNOLOGY. (Fall) (1 hour lecture, 6 hours laboratory, 1 hour follow-up) (Prerequisites: MIMM 211, MIMM 212. Corequisites: MIMM 314, MIMM 323, MIMM 324) (Students must register for both MIMM 386D1 and MIMM 386D2.) (No credit will be given for this course unless both MIMM 386D1 and MIMM 386D2 are successfully completed in consecutive terms) A series of illustrative exercises in bacterial classification, bacterial and viral molecular genetics and immunological techniques. The objective is to provide a practical introduction to microbiological and immunological research and technology.

MIMM 387 APPLIED MICROBIOLOGY AND IMMUNOLOGY. (3) (Winter) (Prerequisite: MIMM 211) The ability to select and manipulate genetic material has led to unprecedented interest in the industrial applications of procaryotic and eucaryotic cells. Beginning in the 1970s the introduction of and subsequent refinements to recombinant DNA technology and hybridoma technology transformed the horizons of the biopharmaceutical world. This course will highlight the important events that link basic research to clinical/commercial application of new drugs and chemicals.

MIMM 413 PARASITOLOGY. (3) (Winter) (Prerequisite: MIMM 314 or equivalent - ANAT 261 is strongly recommended) A study of the biology, immunological aspects of host-parasite interactions, pathogenicity, epidemiology and molecular biological aspects of



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white blood-cell production and control of respiration by CO₂. Both normal physiological and abnormal pathophysiological rhythms will be treated.

PHGY 199 FYS: HISTORY OF GENETIC ENGINEERING. (3) (Winter) (3 hours seminar per week) (Restriction: Open only to newly admitted students in U0 or U1, who may take only one FYS. Students who register for more than one will be obliged to withdraw from all but one of them.) (Maximum 20) The history of molecular biology and genetic engineering will be surveyed through a series of essays and reviews written by historic figures and prominent scientists of today. The course will trace key players and principal advances in our understanding of the gene, its manipulation, and the future of genetic engineering.

✓ **PHGY 201 HUMAN PHYSIOLOGY: CONTROL SYSTEMS.** (3) (Fall) (3 hours lecture weekly) (Prerequisites: collegial courses in biology or anatomy, and in chemistry and physics; with CHEM 212 or equivalent, as a pre-/co-requisite) (Restriction: For students in Physical and Occupational Therapy, Nursing, and others with permission of the course coordinator) (Restriction: Not open to students who have taken PHGY 209) Physiology of body fluids, blood, nerve and muscle, peripheral nerves, central nervous system, special senses, autonomic nervous system, defense mechanisms.

✓ **PHGY 202 HUMAN PHYSIOLOGY: BODY FUNCTIONS.** (3) (Winter) (3 hours lecture weekly) (Prerequisites: collegial courses in biology or anatomy and in chemistry and physics; with CHEM 212 or equivalent, as a pre-/co-requisite) (Restriction: For students in Physical and Occupational Therapy, Nursing, Education, and others with permission of the course coordinator) (Restriction: Not open to students who took 552-201 in 1976-77 or earlier, or PHGY 210) Physiology of the cardiovascular, respiratory, excretory, endocrine, and digestive system organic and energy metabolism.

PHGY 209(14)(o)-M

AMMALIAN PHYSIOLOGY 1. (3) (Fall) (3 hours lectures weekly) (Prerequisites: as for PHGY 201 and PHGY 202. Pre-/co-requisites: BIOL 200, BIO 201 or BIO 212) (Restriction: Not open to students who have taken PHGY 211 or PHGY 201) (Restriction: For students in the Faculty of Science, and other studies by permission of the instructor) Those who take physiology of (14)(o)-body fluids, (14)(o)-blood, (14)(o)-body defense mechanisms, (14)(o)-peripheral and central nervous system, muscle. Students must be prepared to attend evening (19:00 - 20:00) class tests.

PHGY 210(14)(o) HUMAN PHYSIOLOGY 2. (3) (Winter) (3 hours lectures weekly) (Prerequisites: as for PHGY 201 and PHGY 202. Pre-/co-requisite: BIOL 200, BIOL 201 or BIOC 212) (Restriction: Not open to students who have taken PHGY 211 or PHGY 202) (Restriction: For students in the Faculty of Science, and other studies by permission of the instructor) (Although PHGY 210 may be taken without having taken PHGY 209, students should be aware that they may have some initial difficulties (14)(o)-because of overlap of familiar concepts introduced in PHGY 209) Physiology of the autonomic nervous system; cardiovascular, respiratory and digestive and renal systems; exercise physiology.

PHGY 212D1 (1), PHGY 212D2 (1) INTRODUCTORY PHYSIOLOGY LABORATORY. (Fall) (One 3-hour lab and one 1-hour lecture every second week) (Corequisites: PHGY 209 and PHGY 210) (Require for Physiology students enrolling in PHGY 209)



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315, or permission of the instructor) The control of physiological system function from a theoretical standpoint. The basic roles of mass and momentum transport, pacemaker activity and wave propagation, and neural information processing are emphasized. These are related to the concepts of feedback, stability, and oscillation in normal and patho-physiological states.

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PHYS 242 ELECTRICITY AND MAGNETISM. (2) (Winter) (2 hours lectures) (Prerequisites: CEGEP Physics, MATH 222) Properties of electromagnetic fields, dipole and quadropole fields and their interactions, chemical binding of molecules, electromagnetic properties of materials, Maxwell's equations and properties of electromagnetic waves, propagation of waves in media.

PHYS 251 CLASSICAL MECHANICS 1. (3) (Fall) (3 hours lectures) (Prerequisite: CEGEP physics.) (Corequisite: MATH 222) (Restriction: Not open to students taking or having taken PHYS 230.) Newton's laws, work energy, angular momentum. Harmonic oscillator, forced oscillations. Inertial forces, rotating frames. Central forces, centre of mass, planetary orbits, Kepler's laws.

PHYS 253 THERMAL PHYSICS. (3) (Fall) (3 hours lectures) (Prerequisite: CEGEP physics.) (Corequisite: MATH 222) (Restriction: Not open to students taking or having taken PHYS 232.) Energy, work, heat; first law. Temperature, entropy; second law. Absolute zero; third law. Equilibrium, equations of state, gases, liquids, solids, magnets; phase transitions.

PHYS 257 EXPERIMENTAL METHODS 1. (3) (Fall) (6 hours of laboratory and classroom work) (Corequisite: PHYS 230 or PHYS 251) Introductory laboratory work and data analysis as related to mechanics, optics and thermodynamics. Introduction to computers as they are employed for laboratory work, for data analysis and for numerical computation. Previous experience with computers is an asset, but is not required.

PHYS 258 EXPERIMENTAL METHODS 2. (3) (Winter) (6 hours of laboratory and classroom work) (Prerequisite: PHYS 257) Advanced laboratory work and data analysis as related to mechanics, optics and thermodynamics. Computers will be employed routinely for



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PSYC 481D1 (3), PSYC 481D2 (3) HONOURS THESIS RESEARCH. (9 hours. Research) (Restriction: U3 Honours students only) (Please see regulations concerning Project Courses) (Prerequisite: PSYC 380D1/PSYC 380D2) (Students must register for both PSYC 481D1 and PSYC 481D2.) (No credit will be given for this course unless both PSYC 481D1 and PSYC 481D2 are successfully completed in consecutive terms) Under the supervision of an adviser approved by the Department, students design and carry out a research project and report their results in the form of an undergraduate thesis.

PSYC 482 ADVANCED HONOURS SEMINAR 1. (3) (Fall) (2 lectures, plus student presentations, debates, and discussions.) (Restrictions: Not open to students who have taken 204-480D. For Honours students only.) Ethical issues in Scientific and Clinical Psychology, Scientific Psychology and Social Policy; and in Search of a Unitary Theory of Psychology.

PSYC 483 ADVANCED HONOURS SEMINAR 2. (3) (Winter) (Restriction: Not open to students who have taken 204-480D) (2 lectures) (Restriction: For Honours students only) Design of clinical research studies, interviewing techniques and clinical diagnosis.

PSYC 488D1 (1.5), PSYC 488D2 (1.5) (Restrictions: Requires departmental approval. Please see regulations concerning Project courses.) (Students must register for both PSYC 488D1 and PSYC 488D2.) (No credit will be given for this course unless both PSYC 488D1 and PSYC 488D2 are successfully completed in consecutive terms) (Note: A written proposal detailing the plans for se167(414.9(PSYC14)8.9(8)-6.19s-)-3.00



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dents with the basic components of clinical psychiatry, preparatory to the Clerkships.



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