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Grant proposal and participate in mock grant review panels. Depending on enrolment, the course may be limited to HMG students only.

Carleton University course codes are marked (CU) and University of Ottawa courses (UO). Course equivalencies are indicated in square brackets.

General Regulations of the FGPS.

(Préalable: ORA 5512)

ORA 6542 Amplification II
Étude de l'origine et de l'importance clinique des potentiels évoqués du tronc cérébral pour l'évaluation audiologique. (Préalable: ORA 5510; concomitant ORA 6541 Évaluations électrophysiologiques)

Étude des composantes des principaux appareils utilisés en pratique audiologique et du rôle de l'instrumentation lors du diagnostic et de l'intervention.

Rehabilitation terminology will be presented.

Anatomie et physiologie détaillées des systèmes articulatoire et respiratoire et un aperçu du système phonatoire. Révision de la phonétique systématique et des phénomènes binauraux et intelligibilité de la parole.

ORA 5511 Sciences de l'ouïe
Introduction à l'étude des déterminants neuroanatomiques et neurophysiologiques essentiels à la communication humaine.

(REA 5940) qui peut être recommandé ou exigé selon la compétence linguistique du candidat.

4. a) avoir obtenu un minimum de 3 crédits pertinents en sciences linguistiques*, de préférence en phonétique générale (LIN 1320/1720) ou en
b) avoir obtenu un minimum de 9 crédits en sciences linguistiques* comprenant:

4. a) an anatomie et phonétique
b) an psycholinguistique et phonétique

La formation en audiologie couvrira les domaines du diagnostic audiologique, de la réadaptation auditive, de la pédoaudiologie, de l'audiologie en
La formation en audiologie couvrira les domaines du diagnostic audiologique, de la réadaptation auditive, de la pédoaudiologie, de l'audiologie en

Le Programme de M.Sc.S. (Maîtrise ès sciences de la santé) en audiologie et en orthophonie a pour objectif de former des professionnels de la

Introduction
Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche en anthropologie

In-depth examination of a question or topic linked to new trends or research areas in social and cultural anthropology.

ANT 6102 Social and Cultural Anthropology: Fundamental Issues

Course will also focus on the development and the points of convergence and divergence of these currents throughout the history of anthropological thought as

A language test for either language.

Admission

PHYS 4407, PHYS 5101

MCG 5342 (MECH 5402) Gas Turbines

The convected wave equation; theory of subsonic and supersonic jet noise; propeller and helicopter noise; fan and compressor noise; boundary layer noise,

Smart Structures: multifunctional materials, collocation principles, geometric filtering and control authority. Applications in aero-acoustics and

Professor approved by the director of graduate studies and leading to the writing of an in-depth report (approx. 30-40 pages). Graded S (satisfactory) or NS

Selection of sensors and actuators for the control of mechanical systems. Modelling and simulation for the design of mixed dynamic systems. Precludes

MCG 5179 (MAAJ 5709) Manufacturing System Analysis

The principles of production management. Methods engineering, manufacturing control.


MCG 5552 (MAAJ 5409) Théorie de Turbulence

Gaseous jet flames, combustion of liquid droplets, atomization, spray flames, coal combustion, fluidized bed combustion.

Equations and boundary conditions. Numerical solution by direct and iterative Gauss-Seidel relaxation methods. Considerations of stability, convergence, and

Schwarz-Christoffel theorems. Airfoil theory, circulation and lift.
Advanced Materials and Manufacturing (MASc / MEng)

Ottawa-Carleton Joint Program

General Information

Established in 1983, the Ottawa-Carleton Institute for Mechanical and Aerospatial Engineering (OCIMAE) combines the research strengths of the Department of Mechanical Engineering at the University of Ottawa and the Department of Mechanical and Aerospace Engineering at Carleton University. The Institute offers graduate programs leading to masters (MASc / MEng) and doctoral (PhD) degrees in Mechanical Engineering and in Advanced Materials and Manufacturing.

Members of the Institute are engaged in six main research fields: thermal and fluid engineering; solid mechanics and design; materials and manufacturing; controls and robotics; biomedical engineering; and, aeronautical and space engineering. Additional information is posted in the departmental website.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocijp.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate program in advanced materials and manufacturing is governed by the General Regulations of the Ottawa-Carleton Institute for Mechanical and Aerospace Engineering (OCIMAE) and by the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Most of the requirements of these programs must be fulfilled in English. A very good knowledge of this language is therefore required.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a bachelor’s degree with a specialization, or a major in mechanical engineering (or equivalent) with a minimum average of 70% (B);
2. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
3. Identify, for the MASc and the MEng (with project), at least one professor who is willing and available to act as a project/thesis supervisor.

Note: Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Program Requirements

Master's Degree Requirements

Master of Applied Science (15cr):

1. 15 course credits of graduate courses at the 5000 level or above approved by the thesis supervisor and the Department;
2. Participation and the regular attendance at the departmental seminar series;

Master of Engineering (30cr):

Master's with project:

1. Successful completion of 24 course credits at the 5000 level or above approved by the Department;
2. Participation in the Mechanical and Aerospace Engineering departmental seminar series;
3. Completion of the project MCG6998.

Master's by course work:
• 30 credits of graduate courses at the 5000 level or above approved by the Department.

Minimum standards
The passing grade in all courses is B. Students who fail 6 credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Residence
All students must complete a minimum of three sessions of full-time registration.

Duration of the program
The requirements of the MASc program are usually fulfilled within two years of full-time study and within one year of full-time study for the MEng by course work. The maximum time permitted whether full-time or part-time is four years from the date of initial registration.

Transfer from Master’s to PhD Program
Outstanding students enrolled in the MASc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

Note: In accordance with the B.2.7 regulation, all students of the master’s program by course work are expected to complete the major part of their program requirements while registered at the University of Ottawa.

Courses

Les étudiants peuvent, avec l'approbation de leur directeur de recherche ou du comité consultatif, choisir des cours supérieurs offerts dans l'une ou l'autre université. Les cours du programme d'études supérieures sont énumérés ci-dessous. Les descriptions de cours figurent dans les sections relatives aux départements concernés dans les annuaires appropriés. Tous les cours durent une session. Les cours des deux départements sont identifiés par les préfixes suivants :

MCG 5XXX Département de génie mécanique, Université d'Ottawa

MAAJ XXXX Département de génie mécanique et aéspatial, Carleton University

Tous les cours énumérés ne sont pas offerts tous les ans.

In all programs, the student may choose graduate courses from either university with the approval of the Advisor or Advisory Committee. The available graduate courses are listed below. Course descriptions are to be found in the departmental section of the calendar concerned. All courses are of one session duration. Courses of each department are indicated by the prefix of the first number given as follows:

MCG 5XXX Department of Mechanical Engineering, University of Ottawa

MAAJ XXXX Department of Mechanical and Aerospace Engineering, Carleton University

The following courses are not necessarily all given each year.

Mécanique des solides et des matériaux / Solid Mechanics and Materials

MCG5101 (MAAJ 5001) THEORY OF ELASTICITY (3cr.)

MCG5102 (MAAJ 5002) ADVANCED STRESS ANALYSIS (3cr.)
Solutions to special beam problems including beams on elastic foundations, curved beams, multispans, etc., as well as some axisymmetric problems. The significance of assumptions is discussed and solution techniques including series solutions and energy methods are utilized.

MCG5103 (MAAJ 5003) THEORY OF PERFECTLY PLASTIC SOLIDS (3cr.)
metal-forming processes.

**MCG5104 (MAAJ 5004) THEORY OF PLATES AND SHELLS** (3cr.)
A general coverage of various approaches to plate problems and the application of these methods to practical cases. A study of the theory of shells including deformation of shells without bending, stresses under various loading conditions, general theory of shells, shells forming surfaces of revolution.

**MCG5105 (MAAJ 5505) CONTINUUM MECHANICS** (3cr.)

**MCG5106 (MAAJ 5006) ADVANCED TOPICS IN ELASTICITY** (3cr.)

**MCG5107 (MAAJ 5507) ADVANCED DYNAMICS WITH APPLICATIONS** (3cr.)

**MCG5108 (MAAJ 5008) FINITE ELEMENT ANALYSIS** (3cr.)

**MCG5109 (MAAJ 5009) ADVANCED TOPICS IN FINITE ELEMENT ANALYSIS** (3cr.)

**MCG5110 (MAAJ 5100) MICROMECHANICS OF SOLIDS** (3cr.)

**MCG5114 (MAAJ 5104) ANALYSIS AND DESIGN OF PRESSURE VESSELS** (3cr.)

**MCG5117 (MAAJ 5107) INTRODUCTION TO COMPOSITE MATERIALS** (3cr.)
Review of strengthening mechanism in metals and polymers. Fiber-reinforced composite materials: strengthening mechanism, prediction of strengths and moduli, specific properties, fracture mechanisms, toughness, fatigue, creep, effect of environment; fabrication methods and engineering applications. Laminates; mechanical properties and engineering applications.

**MCG5118 (MAAJ 5108) INTRODUCTION TO PLASTICITY** (3cr.)

**MCG5119 (MAAJ 5109) FRACTURE MECHANICS** (3cr.)

**MCG5126 (MAAJ 5206) DEFORMATION OF MATERIALS** (3cr.)
The deformation and fracture properties of metals, ceramics and polymers. Introduction to dislocation theory. Rheological models. Analysis and interpretation of constant strain rate, constant stress and stress relaxation tests in terms of the material structure.

**MCG5129 (MAAJ 5209) HOT WORKING OF METALS** (3cr.)
High temperature mechanical properties in metals. Types of recovery, recrystallization and precipitation in metals and their effects on hot strength and structure. Hot rolling of metals. Selection of rolling schedules. Influence of as-rolled structures on room temperature tensile and fracture stresses, impact strength.

**MCG5137 (MAAJ 5307) SPECIAL STUDIES IN SOLID MECHANICS AND MATERIALS** (3cr.)

**MCG5138 (MAAJ 5308) ADVANCED TOPICS IN MECHANICAL ENGINEERING** (3cr.)
Duration of the program

Admission

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either of the following languages: English or French, as long as both parts of a student’s academic program are presented in the same language. To obtain a bilingual diploma, the student must present a bilingual program. The student has the option of choosing his or her own language for the thesis/dissertation. It is also possible to write either an English or French thesis/dissertation within a bilingual program as long as it is written in English or French. To obtain a bilingual diploma, the student must present a bilingual program. The student has the option of choosing his or her own language for the thesis/dissertation. It is also possible to write either an English or French thesis/dissertation within a bilingual program as long as it is written in English or French.

The requirements of the MA with thesis are the following:

1. Completion of a research project using new research techniques, under the supervision of participating faculty member(s). (PSYC6204, BIOL6204 (CU))

2. Examination of the student’s professional skills in a placement or internship at a place of employment.

3. Examination of the student’s professional skills in a placement or internship at a place of employment.

4. Examination of the student’s professional skills in a placement or internship at a place of employment.

5. Examination of the student’s professional skills in a placement or internship at a place of employment.

6. Examination of the student’s professional skills in a placement or internship at a place of employment.

7. Examination of the student’s professional skills in a placement or internship at a place of employment.

In-depth examination of a question or topic linked to new trends or research areas in social and cultural anthropology.

ANT6103 THE 'CULTURE' QUESTION IN ANTHROPOLOGY

The fundamental equations and theorems for non-viscous fluid flow; solution of two-dimensional and axisymmetric potential flows; low-speed airfoil and cascade analysis. The effects of viscosity, turbulence, and free shear flow on the flow field. The dynamics of the fluid medium. The fluid medium as a continuum. The Navier-Stokes equations and their application to fluid mechanics. The boundary layer and boundary layer theory. The stability of fluid flow. The heat transfer by conduction. Heat transfer by convection. Heat transfer by radiation.

Thermofluides / Thermofluids

MC5111 (MAAJ 5101) GAS DYNAMICS (3cr.)


MC5131 (MAAJ 5301) HEAT TRANSFER BY CONDUCTION (3cr.)


MC5132 (MAAJ 5302) HEAT TRANSFER BY CONVECTION (3cr.)


MC5133 (MAAJ 5303) HEAT TRANSFER BY RADIATION (3cr.)


MC5134 (MAAJ 5304) HEAT TRANSFER WITH PHASE CHANGE (3cr.)


MC5136 (MAAJ 5306) SPECIAL STUDIES IN FLUID MECHANICS AND HEAT TRANSFER (3cr.)

MC5141 (MAAJ 5401) STATISTICAL THERMODYNAMICS (3cr.)


MC5151 (MAAJ 5501) LAMINAR FLOW THEORY (3cr.)

Derivation and exact solutions of the Navier-Stokes equations. Low Reynolds number flows, Stokes flow. Oseen flow, lubrication theory. Laminar boundary layers. Introduction to hydrodynamic stability.

MC5152 (MAAJ 5502) THEORY OF TURBULENCE (3cr.)


MC5155 (MAAJ 5505) INVISCID FLOW THEORY (3cr.)


MC5156 (MAAJ 5506) MEASUREMENT IN FLUID MECHANICS (3cr.)

MCG5157 (MAAJ 5507) NUMERICAL COMPUTATION OF FLUID DYNAMICS AND HEAT TRANSFER (3cr.)

MCG5158 (MAAJ 5508) INDUSTRIAL FLUID MECHANICS (3cr.)
Application of simple flows to analysis of more complex systems. Pipe and duct systems, flow separation and control, aerosols, separation of particulates from flow, cavitation, unsteady flow.

MCG5161 (MAAJ 5601) ENVIRONMENTAL ENGINEERING (3cr.)

MCG5191 (MAAJ 5901) COMBUSTION IN PREMIXED SYSTEMS (3cr.)
Stoichiometry, thermo-chemistry, ignition, flame propagation, flame stabilization, diffusion flames, turbulent combustion, modelling.

MCG5192 (MAAJ 5902) COMBUSTION IN DIFFUSION SYSTEMS (3cr.)
Gaseous jet flames, combustion of liquid droplets, atomization, spray flames, coal combustion, fluidized bed combustion.

MCG5551 (MAAJ 5408) THÉORIE D'ÉCOULEMENT VISQUEUX (3cr.)

MCG5552 (MAAJ 5409) THÉORIE DE LA TURBULENCE (3cr.)

MCG5557 (MAAJ 5500) MÉTHODES NUMÉRIQUES EN MÉCANIQUE DES FLUIDES (3cr.)

Génie industriel - de la fabrication - et du design / Design - Manufacturing - Industrial Engineering

MCG5115 (MAAJ 5105) NON-LINEAR OPTIMIZATION (3cr.)

MCG5159 (MAAJ 5509) ADVANCED PRODUCTION PLANNING AND CONTROL (3cr.)

MCG5168 (MAAJ 5608) INDUSTRIAL ORGANIZATION (3cr.)

MCG5169 (MAAJ 5609) ADVANCED TOPICS IN RELIABILITY ENGINEERING (3cr.)

MCG5170 (MAAJ 5700) CAD/CAM (3cr.)
The design process. Structure of computer aided drafting software. Analysis and optimization software. Software integration. Parametric design. Major group design project which integrates concepts from all major areas of mechanical engineering. Exclusion: May not be taken for credit with MCG4322.

MCG5171 (MAAJ 5701) APPLIED RELIABILITY THEORY (3cr.)

MCG5172 (MAAJ 5702) INTRODUCTION TO MANAGEMENT OF AUTOMATION (ROBOTICS AND NUMERICAL CONTROLS) (3cr.)
MCG5173 (MAAJ 5703) SYSTEMS ENGINEERING AND INTEGRATION (3cr.)
Introduction to modelling methods employed for the planning and design of sub-systems and complex systems. Discrete and continuous time, lumped and distributed parameters models. State estimation. Parameters identification. Discretization and stochastic effects. Technological systems modelling and simulation examples.

MCG5176 (MAAJ 5706) INDUSTRIAL CONTROL SYSTEMS (3cr.)
Concept, analysis and design of classical and modern industrial control systems. Computer based control systems for robotics, automation, manufacturing and instrumentation applications. Design project of industrial control and automation systems. Not accessible to students who have taken MCG 4108.

MCG5177 (MAAJ 5707) ROBOT MECHANICS (3cr.)
Robotics overview. Transformations. Basics of robot kinematics, statics and dynamics. Introduction to practical robots, control and programming. Project in analysis, design or application of manipulators. Not accessible to students who have taken MCG 4132.

MCG5178 (MAAJ 5708) ADVANCED TOPICS IN CAD/CAM (3cr.)
Overview of totally integrated CAD/CAM systems. Details of design and manufacturing software tools. Methods of linking design and manufacturing tools to form an integrated CAD/CAM system. Students will undertake projects which will provide them with a "hands on" experience.

MCG5179 (MAAJ 5709) MANUFACTURING SYSTEM ANALYSIS (3cr.)

MCG5184 MECHATRONICS (3cr.)
Models for passive and active components for electro-mechanical systems. Network representation of signals and energy transmission and conversion. Selection of sensors and actuators for the control of mechanical systems. Modelling and simulation for the design of mixed dynamic systems. Precludes additional credit for MCG 4136.

MCG5185 (MAAJ 5805) MULTIVARIABLE DIGITAL CONTROL (3cr.)

MCG5186 (MAAJ 5806) NON-LINEAR DISCONTINUOUS DYNAMICS AND CONTROL (3cr.)

Cotes de cours généraux / General Course Codes
MCG6000 RAPPORT EN GÉNIE MÉCANIQUE / MECHANICAL ENGINEERING REPORT (9cr.)

MCG6998 PROJET / PROJECT (6cr.)
Projet en génie mécanique ou en matériaux avancés et fabrication dirigé par un professeur approuvé par le directeur des études supérieures et donnant lieu à la rédaction d'un rapport approfondi (30-40 pages approx). Noté S (satisfaisant) ou NS (non satisfaisant) par le directeur du projet et un autre professeur nommé par le directeur des études supérieures en génie mécanique. Le projet est normalement complété en une session d'études à temps plein. Préalable : approbation du directeur des études supérieures en génie mécanique. / Project in mechanical engineering or in advanced materials and manufacturing supervised by a professor approved by the director of graduate studies and leading to the writing of an in-depth report (approx. 30-40 pages). Graded S (satisfactory) or NS (not satisfactory) by the supervisor and by another professor appointed by the director of graduate studies in mechanical engineering. The project can normally be completed in one session of full-time study. Prerequisite: approval of director of graduate studies in mechanical engineering.

MCG7999 THÈSE DE MAÎTRISE / MA.Sc THESIS

MCG9997 PRÉPARATION DU PROJET DE THÈSE DE DOCTORAT / PREPARATION FOR PhD THESIS PROPOSAL
À la suite de la réussite à l'examen de synthèse, inscription requise de tous les candidats au doctorat jusqu'à ce que le projet de thèse soit accepté par le Comité consultatif. / Following completion of the comprehensive examination, registration required for all PhD candidates until the thesis proposal is accepted by the Advisory Committee.

MCG9998 PRÉPARATION À L'EXAMEN GÉNÉRAL DE DOCTORAT / PREPARATION FOR PhD COMPREHENSIVE EXAMINATION
Inscription requise de tous les candidats au doctorat jusqu'à la réussite à l'examen de synthèse. / Registration required for all PhD candidates until the comprehensive examination is passed.

MCG9999 THÈSE DE DOCTORAT / PhD THESIS
Department of Mechanical and Aerospace Engineering Carleton University

Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings, please consult the Registration Instructions and Class Schedule booklet published in the summer. Carleton University course numbers (in parentheses) follow the University of Ottawa course number.

MCG5300 (MECH 5000) FUNDAMENTALS OF FLUID DYNAMICS (3cr.)
Differential equations of motion. Viscous and inviscid regions. Potential flow: superposition; thin airfoils; finite wings; compressibility corrections. Viscous flow: thin shear layer approximation; laminar layers; transition; turbulence modelling. Convective heat transfer: free versus forced convection; energy and energy integral equations; turbulent diffusion. Also offered at the undergraduate level, with different requirements, as AERO 4302, for which additional credit is precluded.

MCG5301 (MECH 5001) THEORY OF VISCOUS FLOWS (3cr.)
Navier-Stokes and boundary layer equations; mean flow equations for turbulent kinetic energy; integral formulations. Stability, transition, turbulence, Reynolds stresses; separation. Calculation methods, closure schemes. Compressibility, heat transfer, and three-dimensional effects.

MCG5303 (MECH 5003) INCOMPRESSIBLE NON-VISCOUS FLOW (3cr.)
The fundamental equations and theorems for non-viscous fluid flow; solution of two-dimensional and axisymmetric potential flows; low-speed airfoil and cascade theory; wing-lifting theory; panel methods.

MCG5304 (MECH 5004) COMPRESSIBLE NON-VISCOUS FLOW (3cr.)
Steady isentropic, frictional, and diabatic flow; shock waves; irrotational compressible flow, small perturbation theory and similarity rules; second-order theory and unsteady, one-dimensional flow.

MCG5308 (MECH 5008) EXPERIMENTAL METHODS IN FLUID MECHANICS (3cr.)
Fundamentals of techniques of simulation of fluid dynamic phenomena. Theoretical basis, principles of design, performance and instrumentation of ground test facilities. Applications to aerodynamic testing.

MCG5309 (MECH 5009) ENVIRONMENTAL FLUID MECHANICS RELATING TO ENERGY UTILIZATION (3cr.)
Characteristics of energy sources and emissions into the environment. The atmosphere; stratification and stability, equations of motion, simple winds, mean flow, turbulence structure and dispersion near the ground. Flow and dispersion in groundwater, rivers, lakes and oceans. Physical and analytical modelling of environmental flows.

MCG5310 (MECH 5100) PERFORMANCE AND ECONOMICS OF AIRCRAFT (3cr.)
Aircraft performance analysis with emphasis on factors affecting take-off, landing and economic performance; high lift schemes; operating economics.

MCG5311 (MECH 5101) DYNAMICS AND AERODYNAMICS OF FLIGHT (3cr.)
Static stability theory. Euler's equations for rigid body motion; the linearized equations of motion; stability derivatives and their estimation. Longitudinal and lateral dynamic response of an aircraft to control and disturbance. Also offered at the undergraduate level, with different requirements, as AERO 4308, for which additional credit is precluded.

MCG5314 (MECH 5104) GROUND TRANSPORTATION SYSTEMS AND VEHICLES (3cr.)
Performance characteristics, handling and directional stability, ride comfort and safety of various types of ground vehicle systems including road vehicles, terrain-vehicle systems, guided transport systems, and advanced ground transport technology.

MCG5315 (MECH 5105) ORBITAL MECHANICS AND SPACE CONTROL (3cr.)
Orbital dynamics and perturbations due to the Earth's figure, the sun, and the moon with emphasis on mission planning and analysis. Rigid body dynamics applied to transfer orbit and on-orbit momentum management and control of spacecraft. Effects of flexible structures on a spacecraft control system.

MCG5121 (MECH 5106) SPACE MISSION ANALYSIS AND DESIGN (3cr.)
Review of solar system and space exploration. Space mission design and geometry. Analysis of orbit design, transfers, interplanetary trajectories. Effect of environment on spacecraft design. Space propulsion and launch vehicle design. Launch sequence, windows, cost. Reusable launch systems. Also offered at the undergraduate level, with different requirements, as AERO 4802.

MCG5317 (MECH 5107) EXPERIMENTAL STRESS ANALYSIS (3cr.)

MCG5321 (MECH 5106/MECH 5201) METHODS OF ENERGY CONVERSION (3cr.)
Technical, economic and environmental aspects of present and proposed large-scale systems of energy conversion.

MCG5122 (MECH 5202) SMART STRUCTURES (3cr.)
MCG5330 (MECH 5300) ENGINEERING ACOUSTICS (3cr.)
Review of acoustic waves in compressible fluids; acoustic pressure, intensity and impedance; physical interpretation and measurement; transmission through media; layers, in-homogeneous media, solids; acoustic systems; rooms, ducts, resonators, mufflers, properties of transducers; microphones, loudspeakers, computational acoustics.

MCG5331 (MECH 5301) AEROACOUSTICS (3cr.)
The convected wave equation; theory of subsonic and supersonic jet noise; propeller and helicopter noise; fan and compressor noise; boundary layer noise, interior noise; propagation in the atmosphere; sonic boom; impact on environment.

MCG5332 (MECH 5302) INSTRUMENTATION TECHNIQUES (3cr.)
An introduction for the non-specialists to the concepts of digital and analog electronics with emphasis on data acquisition, processing and analysis. Topics covered include operational amplifiers, signal processing, digital logic systems, computer interfacing, noise in electronic systems. Hands-on sessions illustrate theory and practice.

MCG5334 (MECH 5304) COMPUTATIONAL FLUID DYNAMICS OF COMPRESSIBLE FLOWS (3cr.)
Solution techniques for parabolic, elliptic and hyperbolic equations developed for problems of interest to fluid dynamics with appropriate stability considerations. A staged approach to solution of full Euler and Navier-Stokes equations is used. Grid generation techniques appropriate for compressible flows are introduced.

MCG5344 (MECH 5400) GAS TURBINE COMBUSTION (3cr.)
This course covers two major topics: combustion fundamentals and gas turbine combustor design. Combustion fundamentals include fuel evaporation, chemistry of combustion, chemical kinetics and emission formation and introduction to computational combustion modeling. Combustor design addresses the interrelationship between operational requirements and combustion fundamentals. Precludes additional credit for MECH 5800 (MCG 5480) when MECH 5800 was offered with this topic.

MCG5341 (MECH 5401) TURBOMACHINERY (3cr.)
Types of machines. Similarity: performance parameters; characteristics; cavitation. Velocity triangles. Euler equation: impulse and reaction. Radial pumps and compressors: analysis, design and operation. Axial pumps and compressors: cascade and blade-element methods; staging; off-design performance; stall and surge. Axial turbines. Current design practice. Also offered at the undergraduate level, with different requirements, as MECH 4305, for which additional credit is precluded.

MCG5342 (MECH 5402) GAS TURBINES (3cr.)

MCG5343 (MECH 5403) ADVANCED THERMODYNAMICS (3cr.)
The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics. The third topic includes an introduction to statistical thermodynamics.

MCG5347 (MECH 5407) CONDUCTIVE AND RADIATIVE HEAT TRANSFER (3cr.)
Analytical, numerical and analog solutions to steady-state and transient conduction heat transfer in multi-dimensional systems. Radiative heat exchange between black, grey, non-grey diffusive and specular surfaces, including effects of athermanous media.

MCG5348 (MECH 5408) CONVECTIVE HEAT AND MASS TRANSFER (3cr.)
Analogies between heat, mass and momentum transfer. Forced and free convection relations for laminar and turbulent flows analytically developed where possible and otherwise deduced from experimental results, for simple shapes and in heat exchangers. Mass transfer theory and applications.

MCG5350 (MECH 5500) ADVANCED VIBRATION ANALYSIS (3cr.)
General theory of discrete multi-degree-of-freedom vibrating systems. Emphasis on numerical techniques of solving complex vibrating systems, with selected applications from aeronautical, civil, and mechanical engineering.

MCG5125 (MECH 5501) ADVANCED DYNAMICS (3cr.)
Developing and applying the governing equations of motion for discrete and continuous mechanical systems. Includes Newton-Euler and Lagrangian formulations; classical and finite element approaches for continuous systems; and linear stability, frequency response, and propagation solution methods. Precludes additional credit for MECH 5500.

MCG5352 (MECH 5502) OPTIMAL CONTROL SYSTEMS (3cr.)

MCG5353 (MECH 5503) ROBOTICS (3cr.)
The history of and introduction to robotics methodology. Robots and manipulators; homogeneous transformation, kinematic equations, solving kinematic equations, differential relationships, motion trajectories, dynamics. Control; feedback control, compliance, servomotors, actuators, external and internal sensors,
grippers and vision systems. Microprocessors and their application to robot control, Programming.

MCG5354 (MECH 5504) GUIDANCE, NAVIGATION AND CONTROL (3cr.)

MCG5355 (MECH 5505) STABILITY THEORY AND APPLICATIONS (3cr.)
Fundamental concepts and characteristics of modern stability definitions. Sensitivity and variational equations; linear variational equations; phase space analysis; Lyapunov's direct method. Autonomous and nonautonomous systems; stability in first approximation; the effect of force type on stability; frequency method.

MCG5356 (MECH 5506) NEURO AND FUZZY CONTROL (3cr.)

MCG5124 (MECH 5507) ADVANCED KINEMATICS (3cr.)
Algebraic-geometry applications; kinematic calibration of serial and in-parallel robots; kinematic synthesis of planar, spherical, spatial mechanisms. Various DH-parametrisations, Jacobian formulations. Topics in: projective geometry; Cayley-Klein geometries; Plücker line coordinates; Gröbner bases; Grassmannians; kinematic mapping; Burmester theory. Emphasis on practical applications.

MCG5361 (MECH 5601) CREATIVE PROBLEM SOLVING AND DESIGN (3cr.)
Problem-solving processes and how they can be applied in engineering design. Emphasis on learning methodologies rather than accumulating information. Techniques can be successfully applied in any engineering specialty. (Also offered as IDES 5301)

MCG5362 (MECH 5602) FAILURE PREVENTION (FRACTURE MECHANICS AND FATIGUE) (3cr.)
Design of engineering structures to ensure against failure due to fatigue or brittle fracture. Nature of fatigue and brittle fracture; selection of suitable material, geometry, and inspection procedures for the load and environmental conditions.

MCG5364 (MECH 5604) COMPUTATIONAL METALLURGY (3cr.)

MCG5365 (MECH 5605) FINITE ELEMENT ANALYSIS I (3cr.)
An introduction to the finite element methodology, with emphasis on applications to heat transfer, fluid flow and stress analysis. The basic concepts of Galerkin's method, interpolation, numerical integration, and isoparametric elements are taught using simple examples.

MCG5366 (MECH 5606) FINITE ELEMENT ANALYSIS II (3cr.)
Time marching heat flow problems with linear and nonlinear analysis. Static plasticity. Time-dependent deformation problems; viscoplasticity, viscoelasticity, and dynamic analysis. Isoparametric elements and numerical integration are used throughout.

MCG5367 (MECH 5607) THE BOUNDARY ELEMENT (BEM) METHOD (3cr.)
Integral equations. The BEM for potential theory and for elastostatics in two-dimensions. Boundary elements and numerical integration schemes. Practical applications.

MCG5368 ADVANCED ENGINEERING MATERIALS (3cr.)
The physical metallurgy of important engineering metals and alloys: analytical techniques, crystallography and structure of alloys, dislocation interactions and dissociation, metallurgical thermodynamics and transformations and strengthening mechanisms. Highlights the physical phenomena controlling the properties. Prerequisite: MECH 2700 or the equivalent.

MCG5123 (MECH 5609) MICROSTRUCTURE AND PROPERTIES OF MATERIALS (3cr.)
Essential microstructural features of metals and alloys; crystal structure, dislocations, grain boundaries. The importance of these features in controlling mechanical properties is emphasized. Analytical techniques observing microstructure in metals and other materials: TEM, SEM, electron diffraction, spectrometry. Precludes additional credit for MECH 5804.

MCG5345 (MECH 5700) SURFACES AND COATINGS (3cr.)
Surface characteristics of solid materials and surface degradation/failure mechanisms including wear, fretting, oxidation, corrosion, and erosion are introduced. Coating methods including PVD, CVD, laser, thermal spray and electrochemical deposition are discussed in the context of failure prevention measures.
MCG5374 (MECH 5704) INTEGRATED MANUFACTURING CIMS (3cr.)
Topics essential to CIMS including computer graphics, geometric modelling, numerically controlled machining, and flexible manufacturing. The fundamental data structures and procedures for computerization of engineering design, analysis and production. Also offered at the undergraduate level, with different requirements, as MECH 4704, for which additional credit is precluded.

MCG5375 (MECH 5705) CAD/CAM (3cr.)

MCG5480 (MECH 5800) SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING (3cr.)

MCG5489 (MECH 5801) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
Topics will vary from year to year.

MCG5483 (MECH 5802) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG5488 (MECH 5803) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG5482 (MECH 5805) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG5486 (MECH 5806) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG5487 (MECH 5807) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)

MECH5909 MASthESIS
MCG5398 (MECH 5908) INDEPENDENT ENGINEERING STUDY (3cr.)
Students pursuing a master's degree by course work carry out an independent study, analysis, and solution of an engineering problem or design project. The results are given in the form of a written report and presented at a departmental seminar. Carried out under the general direction of a faculty member.

MECH6909 PhDThESIS

Other Courses of Particular Interest

Biomedical Engineering
BMG5300

Chemical Engineering
CHG8188

Civil and Environmental Engineering
CIVE 5101, CIVE 5102, CIVE 5103, CIVE 5204, CIVE 5304, CIVE 5602

Mathematics and Statistics
MATH 4806, MATH 5806

Physics
PHYS 4407, PHYS 5101

Systems and Computer Engineering
SYSC 5001, SYSC 5004, SYSC 5005, SYSC 5401, SYSC 5402, SYSC 5502, SYSC 5503

Anthropology (MA)
The Department of Sociology and Anthropology offers a program leading to the Master of Arts (MA) in Anthropology. The MA program is offered both full- and part-time and is offered in French and in English. All students must, however, complete at least one course given in French. Linguistic support for this partial French immersion is available. In accordance with the University of Ottawa regulation, students have
a right to produce their work, their thesis, and to answer examination questions in French or in English. Two options are available for the MA, the MA with thesis and the MA with research paper. All programs operate under the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS), which can be accessed on the FGPS Website.

**Admission**

**Admission Requirements**

Students who have a BA with honours or major in anthropology with a minimum average of 70% (B), calculated in accordance with FGPS guidelines, may be admitted to the MA program.

Students who have an honours BA with a minimum average of 70% (B) in another discipline, calculated in accordance with FGPS guidelines, may be accepted into a qualifying program, requiring them to complete a maximum of eight courses.

All applicants must have proficiency in understanding, speaking and writing either English or French. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS. Students must indicate in their application the language in which they plan to take the majority of their courses. Since the program includes a requirement to take a common course (ANT 6550 Problématique de recherche en anthropologie) in French, all applicants must have at least a passive knowledge of French. Where the level of French is inadequate, the applicant may be admitted but will need to take a language course during the first session in the program to be able to successfully complete ANT 6550, which is offered in the second session of the first year. The department reserves the right to require a language test for either language.

**Program Requirements**

**MA with thesis**

The requirements of the MA with thesis are the following:

1. 9 compulsory credits (ANT5100, ANT5141 and ANT6550)
2. 3 elective credits
3. 3 language credits
4. Research Proposal (ANT7900)
5. MA Thesis (ANT7999)

Candidates must begin the process of selecting a thesis topic and a supervisor from the beginning of their program. The supervisor must be a member of the department and the Faculty of Graduate and Postdoctoral Studies (FGPS). The choice of thesis topic and supervisor must be registered in the FGPS no later than the end of the second session.

One three-credit graduate course from another program may be included as an elective in the master’s program with thesis, subject to the approval of the coordinator of graduate studies in anthropology and following consultation with the department responsible for the course.

**MA with research paper**

The requirements of the MA with research paper are the following:

1. 9 compulsory credits (ANT5100, ANT5141 and ANT6550)
2. 3 elective credits
3. 3 language credits
4. Research Proposal (ANT7990)
5. Research Paper (ANT7998)

Up to two graduate courses (6 credits) from another program may be counted as coursework for the master's program with research paper, subject to the approval of the coordinator of graduate studies in anthropology, and following consultation with the department responsible for the course concerned.

**Minimum standards**

The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), or the research proposal or whose research progress is deemed unsatisfactory must withdraw from the program.

**Residence**

Students admitted full-time must register full-time for at least three sessions.
Duration of the program

Full-time students are expected to fulfill all requirements of the thesis option within two years and the research paper option within sixteen months. The maximum time permitted is four years from the date of initial registration in the program.

1. The language credit required may be in French, English or another language depending on the student. This is decided at the time of admission.
2. The language credit required may be in French, English or another language depending on the student. This is decided at the time of admission.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits. Not all of the courses listed are given each year. The course is offered in the language in which it is described.

ANT5100 COMPARATIVE THEORETICAL APPROACHES IN ANTHROPOLOGY: THE FRENCH AND ANGLO-AMERICAN TRADITIONS (3cr.)
In-depth and comparative examination of the main theoretical currents in social and cultural anthropology in the French and Anglo-American traditions. The course will also focus on the development and the points of convergence and divergence of these currents throughout the history of anthropological thought as well as on their relative influence on anthropology in Francophone and Anglophone Canada.

ANT5141 RESEARCH METHODOLOGY IN ANTHROPOLOGY (3cr.)
Methodological approaches specific to anthropology: ethnographic fieldwork methods; validation problems; content analysis; relationship between research question, methods, theoretical framework, and results. Debates about the analysis of anthropological data collected in “traditional” and “modern” societies in the West and elsewhere; the qualitative-quantitative continuum; objectivity, involvement of the researcher and reflexivity; research ethics and responsibilities of the researcher.

ANT5500 APPROCHES THÉORIQUES COMPARÉES EN ANTHROPOLOGIE : LES TRADITIONS FRANÇAISES ET ANGLO-AMÉRICAINES (3cr.)
Examen approfondi et comparé des principaux courants théoriques en anthropologie sociale et culturelle dans les traditions française et anglo-américaine. Le développement de ces courants et leurs points de convergence et de divergence tout au long de l’histoire de la pensée anthropologique ainsi que leur résonance au sein de l’anthropologie au Canada francophone et anglophone seront aussi examinés.

ANT5541 MÉTHODOLOGIE DE LA RECHERCHE EN ANTHROPOLOGIE (3cr.)
Approches méthodologiques propres à l’anthropologie : méthodes de terrain ethnographique; problèmes de validation; analyse de contenu; rapport entre problématique, méthodes, cadre théorique et résultats. Débats sur l’analyse de données anthropologiques collectées dans les sociétés « traditionnelles » et « modernes », ici comme ailleurs; continuum qualitatif-quantitatif; objectivité, implication du chercheur et réflexivité; éthique de la recherche et responsabilités du chercheur.

ANT6101 SELECTED TOPICS IN POLITICAL ANTHROPOLOGY AND SOCIOCULTURAL CHANGE (3cr.)
In-depth analysis of selected questions in the field of political anthropology and socio-cultural change (relating, for example, to indigenous peoples, immigration, cultural diversity, globalization, minority-majority relations, citizenship, gender relations, governance, security, human rights, environmental management, health, knowledge, and technology).

ANT6102 SOCIAL AND CULTURAL ANTHROPOLOGY: FUNDAMENTAL ISSUES (3cr.)
In-depth analysis of fundamental issues touching on one or more of the broad domains of social and cultural anthropology with the exception of political anthropology.

ANT6103 THE ‘CULTURE’ QUESTION IN ANTHROPOLOGY (3cr.)
Historical and critical in-depth analysis of the contributions and limitations of the notion of “culture” in anthropology revolving around major issues in the discipline: identity transformations; decolonization; socio-economic upheavals and migration; global dynamics and problems of pluralism; multiculturalism and interculturalism.

ANT6112 SELECTED TOPICS IN CONTEMPORARY ANTHROPOLOGY I (3cr.)
In-depth examination of a question or topic linked to new trends or research areas in social and cultural anthropology.
ANT6122 SELECTED TOPICS IN CONTEMPORARY ANTHROPOLOGY II (3cr.)
In-depth examination of a question or topic linked to new trends or research areas in social and cultural anthropology.

ANT6501 THÈMES CHOISIS EN ANTHROPOLOGIE POLITIQUE ET CHANGEMENTS SOCIOCULTURELS (3cr.)
Analyse approfondie de questions ciblées dans le champ particulier de l’anthropologie politique et des changements socioculturels (notamment, les questions relatives aux autochtones, à l’immigration, à la diversité culturelle, à la mondialisation, aux relations minorités/majorité, à la citoyenneté, aux rapports de sexe, à la gouvernance, à la sécurité, aux droits humains, à la gestion de l’environnement, à la santé, aux savoirs et aux technologies).

ANT6502 ANTHROPOLOGIE SOCIALE ET CULTURELLE : ENJEUX FONDAMENTAUX (3cr.)
Analyse approfondie d’enjeux fondamentaux s’inscrivant dans un ou plusieurs des grands domaines de l’anthropologie sociale et culturelle, en dehors de l’anthropologie politique.

ANT6503 QUESTIONS AUTOUR DE LA NOTION DE « CULTURE » EN ANTHROPOLOGIE (3cr.)
Analyse historique et critique approfondie des apports et limites de la notion de « culture » en anthropologie autour de laquelle se concentrent les enjeux majeurs de la discipline : transformations identitaires, (dé)colonisation, bouleversements socio-économiques et migrations, dynamiques mondiales et problématiques du pluralisme, du multiculturalisme et de l’interculturalisme.

ANT6512 THÈMES CHOISIS EN ANTHROPOLOGIE CONTEMPORAINE I (3cr.)
Analyse approfondie d’une problématique ou d’une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche en anthropologie sociale et culturelle.

ANT6522 THÈMES CHOISIS EN ANTHROPOLOGIE CONTEMPORAINE II (3cr.)
Analyse approfondie d’une problématique ou d’une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche en anthropologie sociale et culturelle.

ANT6550 PROBLÉMATIQUE DE RECHERCHE EN ANTHROPOLOGIE (3cr.)
Réflexion approfondie sur la conception et la mise en forme d’une problématique de recherche afin de permettre aux étudiant-es de concevoir un projet de recherche et de discuter (collectivement) de chaque étape. Préalables : ANT5541/5141 et ANT5500/5100.

ANT6932 LECTURES DIRIGÉES EN ANTHROPOLOGIE/DIRECTED READINGS IN ANTHROPOLOGY (3cr.)
Cours individuel ayant pour objectif d’approfondir les connaissances de l’étudiant dans un domaine particulier ou de lui permettre de se familiariser avec un nouveau domaine. Le sujet est déterminé et développé en consultation avec le professeur responsable et en conformité avec les directives du département. Le travail remis dans ce cours doit être différent de ce qui a pu être soumis dans d’autres cours, y compris le projet de recherche, la thèse ou le mémoire. On permet un maximum d’un cours de lectures dirigées par étudiant et la permission n’est accordée que dans des circonstances exceptionnelles. Préalable : permission du responsable des études supérieures en anthropologie. / Individual course aimed at deepening a student’s knowledge of a particular area or at gaining knowledge of a new area. The topic is selected and developed in consultation with the supervising professor in accordance with departmental guidelines. The work submitted for this course must be different from that submitted for other courses, including the research proposal, the thesis or the research paper. Maximum of one directed readings course per student and permission granted only under exceptional circumstances. Prerequisite: Permission of the Director of graduate studies in anthropology.

ANT7990 PROJET DE RECHERCHE/RESEARCH PROPOSAL
Projet individuel. Examen critique approfondi de documents dont la liste est établie conjointement par l’étudiant-e et le directeur ou la directrice de thèse ou de mémoire. Rédaction d’un projet de thèse ou de mémoire soumis à l’évaluation de deux autres membres du corps professoral (thèse) ou d’un autre (mémoire). Note : S (satisfaisant) / NS (non satisfaisant). Préalables : ANT 5500 et ANT 5541 / Individual Project. Critical review of a set of readings selected jointly by student and advisor. Drafting of a thesis or research paper proposal. Submission of the thesis or research paper proposal for evaluation by two other professors in the case of a thesis or one other professor in the case of the research paper. Graded: S(Satisfactory)/NS (Not satisfactory). Prerequisite: ANT5100 and ANT5141

ANT7998 MÉMOIRE/RESEARCH PAPER
Mémoire d’une cinquantaine de pages préparé sous la direction d’un ou deux membres du corps professoral choisis en accord avec la personne responsable des études supérieures. Le mémoire est évalué par le ou les personnes qui l’ont dirigé et un autre membre du corps professoral. Noté : S (satisfaisant) / NS (non satisfaisant). Préalable : ANT 7990 / Fifty-page research paper prepared under the direction of one or two professors chosen in consultation with the department’s graduate studies coordinator. The paper is evaluated by the (co-)advisor(s) and another professor. Graded: S(Satisfactory)/NS (Not satisfactory). Prerequisite: ANT7990

ANT7999 THÈSE DE MAÎTRISE/MASTER'S THESIS
Préalable : ANT7990 / Prerequisite : ANT7990

Audiologie / Orthophonie (M.Sc.S.)

Introduction
Le Programme de M.Sc.S. (Maîtrise ès sciences de la santé) en audiologie et en orthophonie a pour objectif de former des professionnels de la santé capables de travailler en français en Ontario. Les candidats devront posséder une connaissance des principes fondamentaux de la psychologie et de la linguistique et recevront une formation hautement spécialisée dans le domaine des troubles de la communication.

Le volet audiologie vise à former des cliniciens capables de faire des évaluations poussées des troubles du système auditif périphérique et central. La formation en audiologie couvrira les domaines du diagnostic audioloque, de la réadaptation auditive, de la pédoaudiologie, de l’audiologie en milieu de travail, et de l’audiologie pour personnes âgées.

Le volet orthophonie vise à former des cliniciens capables de faire des analyses et d’intervenir dans les cas de troubles du langage et de la parole, tels que des troubles de voix et de résonance, du bégaiement, de la dysphagie, des troubles de communication d’origine neurologique, et des troubles du développement du langage chez l’enfant.

Renseignements généraux

Le programme d’audiologie et d’orthophonie offre deux volets d’études de deuxième cycle, soit l’audiologie et l’orthophonie, comprenant certains cours en commun.


Le programme à l’Université d’Ottawa est contingenté et requiert six sessions d’études à temps plein y compris les stages et l’externat de 300 heures. Les stages obligatoires au programme peuvent s’effectuer dans le sein des hôpitaux, des conseils scolaires, et des centres de réadaptation de la région de la capitale nationale. Ces stages peuvent également avoir lieu à l’extérieur de la région.

Les buts du programme sont la formation de professionnels de la santé et la poursuite de recherches en orthophonie et en audiologie, de façon à fournir des services en priorité à la population francophone. La maîtrise de la langue française étant l’outil nécessaire à la pratique de la profession, la langue première d’enseignement est le français. Aussi, à moins de permission de la part d’un responsable de cours, il est exigé que les travaux écrits, y compris les examens, soient rédigés en français et que la langue d’usage de l’étudiant soit le français. Les stages de formation clinique se font dans les deux langues.

Les règlements qui régissent ce programme sont établis par la Faculté des études supérieures et postdoctorales. Ces règlements sont disponibles sur Internet au lien suivant :

www.etudesup.ottawa.ca/règlementsgénéraux

Consortium national de formation en santé pour Francophones (CNFS)

Le CNFS est un organisme pancanadien dont le financement est assuré par Santé Canada. Il regroupe dix institutions d’enseignement postsecondaire offrant des programmes d’études en français dans différentes disciplines de la santé. Il vise à faciliter l’accès à des études en sciences de la santé et en médecine à des étudiants provenant de milieux francophones en contexte minoritaire. Le CNFS a permis l’ajout de places supplémentaires en audiologie/orthophonie pour des francophones issus des provinces autres que le Québec et l’Ontario. Il est prévu que les étudiants accueillis dans le cadre du CNFS fassent la majorité de leurs stages cliniques dans leur province d’origine.

Admission

Conditions d’admission

Pour les deux volets (audiologie et orthophonie)

1. détenir un baccalauréat de spécialisation (ou l’équivalent) avec une moyenne d’au moins B (70%);
2. avoir une excellente connaissance du français écrit et parlé. Il faut aussi être capable de communiquer oralement en anglais et de comprendre des articles scientifiques rédigés dans cette langue. Afin d’évaluer ces compétences linguistiques, des tests de français et (ou) d’anglais, sont exigés. Les coûts des tests de compétences linguistiques devront être assumés par le candidat;
3. a) avoir obtenu un minimum de 3 crédits en statistiques de niveau intermédiaire ou en méthodes quantitatives (par exemple PSY 2116/2516). Ces crédits ne sont pas inclus dans le nombre de crédits mentionné au point 4b) suivant.
   b) avoir obtenu un minimum de 3 crédits en physiologie ou en anatomie humaine (par exemple PSY 2301/2701 Fondements biologiques). Ces crédits ne sont pas inclus dans le nombre de crédits mentionné au point 4b) suivant.
   c) avoir obtenu 3 crédits en acoustique ou en analyse du son ou de la parole (par exemple HSS 2525.)

Pour le volet orthophonie

a) avoir obtenu un minimum de 9 crédits en sciences linguistiques* comprenant :
   - 3 crédits soit en phonétique générale (LIN 1920/1720) ou en phonétique-phonologie.
   - 3 crédits en syntaxe (LIN 2310/2710) ou en morphologie (LIN 3328/3728) ou en morphosyntaxe.
   - 3 crédits pertinents de niveau avancé au 1er cycle en linguistique, de préférence en sémantique, acquisition du langage, bilinguisme, neurolinguistique ou psycholinguistique.

b) avoir obtenu un minimum de 12 crédits en psychologie, comprenant : psychologie du développement - l’enfance (PSY 2105/2505);

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Les cotes de cours entre parenthèses représentent des équivalents à l'Université d'Ottawa, et sont donnés à titre d'exemples pour aider le candidat dans son choix de cours.

* Il est entendu que ces crédits doivent être reconnus comme des crédits en étude du langage dans le cadre de la linguistique contemporaine, et non en étude d'une langue particulière, de la littérature, de la rédaction, de la culture, ou du folklore, peu importe le département dans lequel ils ont été suivis.

**Pour le volet audiologie**

4. a) avoir obtenu un minimum de 3 crédits pertinents en sciences linguistiques*, de préférence en phonétique générale (LIN 1320/1720) ou en phonétique-phonologie;

b) avoir obtenu un minimum de 3 crédits en psychologie dans un domaine pertinent (par exemple : développement de l'enfant (PSY 2105/2505), vieillissement (PSY 3128/3528), perception (PSY 3108/3508).

Les cotes de cours entre parenthèses représentent des équivalents à l'Université d'Ottawa et sont donnés à titre d'exemples pour aider le candidat dans son choix de cours.

* Il est entendu que ces crédits doivent être reconnus comme des crédits en étude du langage dans le cadre de la linguistique contemporaine, et non en étude d'une langue particulière, de la littérature, de la rédaction, de la culture, ou du folklore, peu importe le département dans lequel ils ont été suivis.

N.B. Des connaissances en linguistique, en psychologie ou en biologie humaine au-delà des exigences minimales décrites ci-dessus sont souhaitables. De même, le Comité d'admission sera bien disposé à l'égard des dossiers qui démontrent une familiarité avec la discipline proposée.

**Cours de conversation anglaise**

Pour préparer les étudiants à passer leurs stages en milieu bilingue, l'Ecole des sciences de la réadaptation offre un cours de conversation anglaise (REA5940) qui peut être recommandé ou exigé selon la compétence linguistique du candidat.

**Documents exigés pour l'admission**

Les documents à soumettre au Comité d'admission du Programme d'audiolinguistique et d'orthophonie sont les suivants :

1. formulaire « Demande d'admission - 2e et 3e cycles » dûment rempli. Les frais pour les demandes d'admission sont précisés dans le formulaire;
2. relevé de notes officiel de tout établissement post-secondaire fréquenté par le candidat;
3. deux lettres de recommandation de la part de personnes connaissant les aptitudes scolaires et professionnelles du candidat (des formulaires à cet effet sont remis avec le formulaire « Demande d'admission - 2e et 3e cycles - »). Au moins une des deux lettres doit provenir d'un professeur universitaire si le candidat a terminé ses études depuis moins de 3 ans;
4. Curriculum vitae détaillé (par exemple : scolarité, emplois, bénévolat, activités parascolaires, accomplissements et distinctions, recherche);
5. Formulaire « liste de contrôle pour l'admission au Programme d'audiolinguistique » ou « liste de contrôle pour l'admission au Programme d'orthophonie » dûment rempli.

N.B. Entrevues personnelles : Pour la sélection finale, seuls les candidats jugés admissibles seront invités à participer à une entrevue avec des représentants du programme de maitrise en orthophonie et audiologie.

Ces documents devraient être envoyés directement à l'adresse suivante :

Polly-Anne Léveillé
Agente d'administration scolaire aux cycles supérieurs
Faculté des sciences de la santé
Université d'Ottawa
451, chemin Smyth, pièce 2016
Ottawa ON K1H 8M5
CANADA
Téléphone : (613) 562-5310
Télécopieur : (613) 562-5257
sante.health@uOttawa.ca

**Program Requirements**

**Exigences de la maîtrise**

Une moyenne globale non cumulative calculée pour chacune des sessions doit être maintenue à un minimum de B (70%). La note de passage dans chaque cours individuel est 65% (C). L'étudiant qui subit deux échecs (l'équivalent de six crédits) doit se retirer du programme. De point de vue de ce règlement, les stages I, II, III, et IV sont équivalents à trois crédits chacun et l'externat (ORA 5660) est équivalent à six crédits.
Le programme est composé des éléments suivants :

- des cours communs obligatoires (total : 18 crédits)
- des cours obligatoires spécifiques à chaque volet (36 crédits en audiologie et 36 crédits en orthophonie)
- un projet de recherche obligatoire (6 crédits)
- un stage durant les sessions 1, 2, 4, et 5 (réussite obligatoire)
- un séminaire en matière de pratique professionnelle durant la première et la deuxième session (réussite obligatoire)
- un externat durant la sixième session (10-12 semaines à temps plein; réussite obligatoire)

Le programme est régis par les règlements généraux de la FÉSP. Ces règlements sont disponibles sur le site Internet de la FÉSP à l'adresse http://www.etudesup.uOttawa.ca/

Courses

La réussite dans les cours de pratique professionnelle, les stages, l'externat et le projet de recherche est obligatoire. Ces cours, qui ne portent pas de note alphabétique, seront notés S (satisfaisant) ou NS (non satisfaisant).

Il est entendu que le stage en audiologie comprendra des expériences en clinique d'orthophonie et que le stage en orthophonie comprendra des expériences en clinique d'audiologie.

Cours en commun

**ORA5510 ANATOMIE ET PHYSIOLOGIE DU SYSTÈME NERVEUX POUR TROUBLES DE LA PAROLE ET DU LANGAGE** (3cr.)
Introduction à l'étude des déterminants neuroanatomiques et neurophysiologiques essentiels à la communication humaine.

**ORA5511 SCIENCES DE L'OUÏE** (3cr.)
Anatomie et physiologie détaillées du système auditif. Phénomènes acoustiques et psychoacoustiques de l'audition. Seuls, effet de masque, intensité, timbre, phénomènes binéraux et intelligibilité de la parole.

**ORA5512 SCIENCES DE LA PAROLE** (3cr.)

**ORA5520 MÉTHODOLOGIE DE LA RECHERCHE** (3cr.)
Étude, analyse critique et évaluation des méthodes de recherche employées en orthophonie et audiologie.

**ORA5530 SÉMINAIRE OU TRAVAIL DIRIGÉ (COURS FACULTATIF)** (3cr.)
Présentation et discussion d'un thème contemporain relativement à l'étude des troubles d'audition ou à l'étude des troubles de la parole et du langage. (Ce cours, destiné aux étudiants souhaitant approfondir un sujet particulier, est un cours supplémentaire au programme.)

**ORA5540 COUNSELLING** (3cr.)
Apprentissage des principes du counselling et de leurs applications aux divers stades de la relation entre le spécialiste de la réadaptation et son client. (préalable: ORA5529)

**ORA5550 RÉADAPTATION DE L'ENFANT AVEC DÉFICIENCE AUDITIVE** (3cr.)
Analyse critique des différentes pratiques d'intervention auprès de l'enfant déficient auditif. Les différentes méthodes de réadaptation, la perception de la parole, les prothèses auditives et les implants cochléaires. (préalables: ORA5511; ORA5512 et ORA6520-audiologie ou ORA6710-orthophonie)

**ORA5640 PROJET DE RECHERCHE** (6cr.)
Sous supervision d'un membre du corps professoral, exécution d'un projet de recherche permettant d'acquérir une expérience touchant aux principes élémentaires de la recherche en audiologie et en orthophonie. (La réussite est obligatoire). (concomitant: ORA5520)

**ORA5518 PRATIQUE PROFESSIONNELLE I**
Étude des modèles de supervision, de déontologie et d'affaires professionnelles. Discussion sur le déroulement des stages.

**ORA5528 PRATIQUE PROFESSIONNELLE II**
Étude des modèles de supervision, de déontologie et d'affaires professionnelles. Discussion sur le déroulement des stages. (préalable: ORA5518)

**ORA5519 STAGE I**

Sous supervision professionnelle, les étudiants compléteront des sessions d'observation dans différents milieux cliniques et scolaires.

**ORA5529 STAGE II**

Sous supervision professionnelle, les étudiants apprendront à intégrer des attitudes, des connaissances, des méthodes et des aptitudes propres à la pratique de leur future profession. (préalable: ORA5519)

**ORA5549 STAGE III**

Sous supervision professionnelle, les étudiants apprendront à intégrer des attitudes, des connaissances, des méthodes et des aptitudes propres à la pratique de leur future profession. (préalable: ORA5529)

**ORA5559 STAGE IV**

Sous supervision professionnelle, les étudiants apprendront à intégrer des attitudes, des connaissances, des méthodes et des aptitudes propres à la pratique de leur future profession. (préalable: ORA5549)

**ORA5660 EXTERNAT**

Stage intensif de 12 à 14 semaines intégrant la théorie et le travail pratique menant à l'indépendance clinique de l'audiologiste ou de l'orthophoniste. (préalable: ORA 5559)

**REA5940 CONVERSATION ANGLAISE POUR LES STAGES EN RÉADAPTATION/ENGLISH CONVERSATION FOR CLINICAL PLACEMENTS IN REHABILITATION**

Cours visant la préparation des diplômés en réadaptation pour l’intervention ayant lieu en anglais : relation d’aidé, entretien initiale, consentement aux soins, évaluation, intervention, congé et rédaction de notes de dossier à l’aide de la méthode SOAP (Subjective, Objective, Assessment, Plan). La terminologie spécifique aux différents domaines de la réadaptation est abordée. Noté (S) satisfaisant ou (NS) non satisfaisant. Cours réservé aux étudiants inscrits à l’un des programmes de maîtrise professionnels de l’École des sciences de la réadaptation. / Course aimed at preparing students to converse effectively with English-speaking colleagues and clients. Topics will include English terms and dialogue related to forming a therapeutic relationship, the initial interview, obtaining informed consent, assessment, intervention, discharge and the charting of notes using the SOAP (Subjective, Objective, Assessment, Plan) method. Specific rehabilitation terminology will be presented. Graded (S) satisfactory or (NS) non satisfactory. Course reserved for students registered in one of the professional master’s programs within the School of Rehabilitation Sciences.

**REA6547 SANTÉ ET RÉADAPTATION AU TRAVAIL** (1.5cr.)


**Cours en audiology**

**ORA5521 RÉADAPTATION DE L'ADULTE AVEC DÉFICIENCE AUDITIVE** (3cr.)

Étude des approches à l'intervention auprès de l'adulte atteint de déficience auditive. Méthodes d'évaluation des capacités de communication de la personne et des caractéristiques des environnements de communication. (préalables: ORA 5511, ORA 5512, ORA 6520, ORA 6521; concomitant: ORA 6543)

**ORA6510 CONCEPTS D'ORTHOPTHONIE PERTINENTS A L'AUDIOLOGIE** (3cr.)

Sensibilisation aux problèmes d'enfants et d'adultes présentant des troubles de la parole et du langage et aux méthodes d'intervention utilisées en orthophonie.

**ORA6511 PRINCIPES FONDAMENTAUX DE L'AUDIOLOGIE** (3cr.)

Étude approfondie de la physiopathologie et de la psychoacoustique des troubles de l'audition. (préalables: ORA 5511, ORA 5512, ORA 6520)

**ORA6520 ÉVALUATION AUDIOLOGIQUE I** (3cr.)

Méthodes d'observation et d'évaluation du système auditif périphérique (oreille moyenne, cochlée) et central. Interprétation des résultats et diagnostic audiological.

**ORA6521 AMPLIFICATION I** (3cr.)

Étude des composantes et dimensions électroacoustiques des systèmes d'amplification pour malentendants. Travaux pratiques. (concomitant: ORA 6511)

**ORA6522 INSTRUMENTATION EN AUDIOLOGIE** (3cr.)

Étude des composantes des principaux appareils utilisés en pratique audiological et du rôle de l'instrumentation lors du diagnostic et de l'intervention. (préalables: ORA 5511, ou ORA 6520)

**ORA6540 PÉDOAUDIOLOGIE** (3cr.)

Étude du développement normal de la fonction auditive, des corrélatés médicaux des troubles auditifs et des méthodes de prévention et d'évaluation utilisées en pédoaudiologie. (préalables: ORA 5510, ORA 6511, ORA 6521, ORA 6541; concomitant ORA 6543)
Theoretical and practical aspects of various methods currently used to analyze the plethora mountain of –omics data. Methods:

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master's thesis. For

The Department may require students to take additional courses depending on their backgrounds.

Further information is posted on the departmental website.

Members of the Department are involved in three main research fields: general biochemistry, molecular biology, and, nutrition and metabolism.

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Cours en orthophonie

ORA5548 SÉMINAIRE CLINIQUE ET DE RECHERCHE EN ORTHOPHONIE (3cr.)
Étude des outils d'évaluation en orthophonie. Discussion sur les outils d'évaluation utilisés durant les stages. Présentations de cas cliniques et de recherches spécifiques dans le domaine des troubles de la communication. (préalable: ORA 5520; concomitant: ORA 5549 ou ORA 5559)

ORA6710 CONCEPTS D'AUDIOLOGIE PERTINENTS A L'ORTHOPHONIE (3cr.)
Sensibilisation aux méthodes d'évaluation et d'intervention en audiology chez l'enfant et l'adulte présentant un déficit auditif.

ORA6711 TROUBLES DU LANGAGE CHEZ L'ENFANT (3cr.)
Introduction à la nature des troubles d'acquisition et de développement du langage ainsi qu'aux perturbations acquises de cette fonction. Étiologie, notions épidémiologiques, semiologie et évolution en termes de déficiences, incapacités et désavantages.

ORA6720 ÉTUDE AVANCÉE DES TROUBLES DU LANGAGE CHEZ L'ENFANT (3cr.)
Étude des facteurs complexes, tels que le bilinguisme et le milieu multiculturel, inhérents aux troubles d'acquisition et de développement du langage. (préalable: ORA 6711)

ORA6721 TROUBLES DE PHONOLOGIE ET D'ARTICULATION (3cr.)
Révision du développement phonologique de l'enfant. Diagnostic et méthodes d'intervention pour troubles articulatoires et phonologiques chez l'enfant. (préalable: ORA 5512)

ORA6722 TROUBLES DE LANGAGE D'ORIGINE NEUROLOGIQUE I (3cr.)
Étude des facteurs théoriques et méthodologiques reliés à l'évaluation du langage chez l'adulte cérébroléssé. (préalable: ORA 5510)

ORA6740 TROUBLES DE PAROLE ET DE LANGAGE CHEZ DES POPULATIONS PARTICULIÈRES (3cr.)
Présentation de modules comprenant les troubles chez des populations particulières et reliés à des facteurs spécifiques. Discussion des thèmes suivants : fissure palatine, communication suppléante et alternative, bilinguisme et multiculturalisme. (préalables: ORA 6711, ORA 6721; concomitant ORA 6722)

ORA6741 TROUBLES DE LA PAROLE D'ORIGINE NEUROLOGIQUE (3cr.)
Étude avancée des troubles de la parole chez l'individu cérébroléssé. Principes d'évaluation et d'intervention. (préalables: ORA 5510, ORA 5512)

ORA6742 TROUBLES DE LA FLUIDITÉ (3cr.)
Étude des facteurs théoriques et méthodologiques reliés à l'évaluation et la réadaptation des troubles de la fluidité. (préalables: ORA 5510, ORA 5512)

ORA6743 TROUBLES DE LA PHONATION (3cr.)
Anatomie et physiologie détaillées du larynx. Étude des facteurs théoriques et méthodologiques reliés à l'évaluation et à la réadaptation des troubles de la voix. (préalable: ORA 5512)

ORA6751 TROUBLES DU LANGAGE D'ORIGINE NEUROLOGIQUE II (3cr.)
Étude des facteurs théoriques et méthodologiques reliés à l'intervention pour les troubles du langage chez l'adulte cérébroléssé. (préalable: ORA 6722)

ORA6752 DYSPHAGIE (3cr.)
Anatomie et physiologie détaillées des structures anatomiques nécessaires à la fonction de déglutition. Étude des facteurs théoriques et méthodologiques reliés à l'évaluation et à l'intervention pour les troubles de la déglutition (dysphagie). (préalable: ORA 5510)

**Behavioural Neuroscience (Collaborative)**

**Ottawa-Carleton Joint Program**

**General Information**

The specialization in Behavioural Neuroscience is offered jointly as a collaborative program by the School of Psychology at the University of Ottawa and the Institute of Neuroscience (Departments of Psychology and Biology) at Carleton University.

Behavioural Neuroscience is the study of the relation between behaviour and the nervous system. This specialty cuts across many disciplines and incorporates such areas as anatomy, neurobiology, pharmacology, physiology, psychiatry and psychology. While individual researchers usually specialize in a particular area, behavioural neuroscientists must also be able to appreciate significant research in the other relevant fields and therefore require an understanding of the basics of other relevant disciplines.

Training in behavioural neuroscience extends beyond the boundaries of traditional departments. In order to augment the scope of training provided, faculty members from the Department of Psychiatry (Institute of Mental Health Research (IMHR), Royal Ottawa Hospital), working in the area of neuroscience, participate in teaching, research training and student supervision. Furthermore, members from various other departments at the University of Ottawa (e.g. Department of Cellular and Molecular Medicine and Department of Biology) may also participate in teaching and research supervision.

The program operates within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Participating Units**

The primary participating units are:

1. The Institute of Neuroscience (Departments of Psychology and Biology) at Carleton University;
2. The School of Psychology at the University of Ottawa.

**Admission**

Admission to the collaborative program in behavioural neuroscience is governed by the «General Regulations» of the Ottawa-Carleton Institute and by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Candidates must indicate in their admission form that they wish to be accepted in the collaborative program.

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be admitted in one of the programs participating in the collaborative program of the Institute;
2. Provide at least one letter of recommendation from a professor who is willing and available to act as thesis supervisor;
3. Be sponsored into the collaborative program by a faculty member, normally the thesis supervisor, who must be appointed, cross-appointed or stand as an adjunct at one or more of the participating units. Prior admission to the Ph.D. program of a participating academic unit.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

**Program Requirements**

**Master's Degree Requirements**
The student is responsible for fulfilling both the participating unit requirements for the primary program and the requirements for the collaborative program.

The requirements specific to the collaborative program are as follows:

- Successful completion of PSY6201 (or the equivalent);
- Presentation and defence of a research thesis on a topic in behavioural neuroscience based on original research carried out under the supervision of a faculty member participating in the behavioural neuroscience collaborative program.

Courses

Outre les cours indiqués ci-dessous, un certain nombre d'autres cours dans le domaine des sciences neurologiques sont offerts par les unités scolaires participantes sur des sujets telles la neuroscience sensorielle, la psychopharmacologie, la neuroscience cognitive, la médecine du comportement et la scintigraphie du cerveau. Il est également possible de suivre des cours pertinents à la neuroscience offerts par la Faculté de médecine de l'Université d'Ottawa.

Les cours offerts peuvent varier d'une année à l'autre. Une liste à jour peut être obtenue auprès des coordonnateurs de la spécialisation. Les cours marqués CU sont offerts à Carleton University et ceux marqués UO le sont à l'Université d'Ottawa. Les cours équivalents sont indiqués entre crochets.

In addition to the courses listed below, a variety of neuroscience related courses are available through the participating academic units on topics including: sensory neuroscience, psychopharmacology, cognitive neuroscience, behavioural medicine and brain imaging. Students may also take relevant courses offered by the Faculty of Medicine, at the University of Ottawa. Course offerings vary slightly from year to year; a complete listing can be obtained from the specialization coordinators.

Carleton University course codes are marked (CU) and University of Ottawa courses (UO). Course equivalencies are indicated in square brackets.

PSY6201 BASICS OF NEUROSCIENCE (6cr.)
Comprehensive neuroscience course from the membrane and the cellular levels through the behavioural aspects of invertebrates and vertebrates. Lectures and tutorials on aspects of neuroscience such as neuroanatomy, neurophysiology, behavioural neuroscience and neuropharmacology.

PSY6601 FONDEMENTS DE LA NEUROSCIENCE (6cr.)
Cours de synthèse portant sur l'ensemble de la neuroscience, du niveau membranaire au niveau cellulaire incluant l'étude du comportement des invertébrés et des vertébrés. Cours magistraux et travaux dirigés sur divers aspects de la neuroscience et la neuropharmacologie du comportement.

PSY6202 ADVANCED SEMINAR IN BEHAVIOURAL NEUROSCIENCE (6cr.)
Advanced seminar course integrating behavioural analyses with aspects of neural circuits mediating and regulating these behaviours. Prerequisite: Adequacy in background knowledge as assessed by one of the coordinators prior to commencement of course.

NEUROSCIENCE TECHNIQUES (3CR.)
Completion of a research project using new research techniques, under the supervision of participating faculty member(s). [PSYC6204, BIOL6204 (CU)]

1. Completion of a research project using new research techniques, under the supervision of participating faculty member(s). [PSYC6204, BIOL6204 (CU)]

Biochemistry (MSc)

The Department of biochemistry, microbiology and immunology located in the Faculty of Medicine offers graduate programs leading to the master's (MSc) and doctoral (PhD) degrees in Biochemistry.

The objective of the program is to prepare candidates for a career in university teaching and research. Graduate students are actively involved in laboratory research, course work, and presentation of research seminars. Thus, they acquire autonomy in conducting research and in preparing publications. The program creates a stimulating and challenging environment which will allow students to achieve excellence in research. Graduates of the program must demonstrate research skills and credibility as professionals in their area of research.

Members of the Department are involved in three main research fields: general biochemistry, molecular biology, and, nutrition and metabolism. Further information is posted on the departmental website.
The Department is a participating unit in the following collaborative programs: the bioinformatics program (at the master's level) and the human and molecular genetics program (at the master's and doctoral levels).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**

Admission to the graduate program in Biochemistry is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a bachelor’s degree with a specialization or a major (or equivalent) in science, an MD (Doctor of Medicine) degree, or a DVM (Doctor of Veterinary Medicine) degree with a minimum average of 75% (B+);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The Department may require students to take additional courses depending on their backgrounds.

**Collaborative Program in Bioinformatics at the Master's Level**

The Department of Biochemistry, Microbiology and Immunology is a participating unit in the collaborative program in Bioinformatics at the master’s level. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. The thesis director must be a member of the collaborative program. For further details, see the description of the Bioinformatics program posted on the FGPS website.

**Collaborative Program in Human and Molecular Genetics at the Master's and Doctorate Levels**

The Department of Biochemistry, Microbiology and Immunology is a participating unit in the collaborative program in Human and Molecular Genetics at the master’s and doctorate levels. Students should indicate in their initial application for admission that they wish to be accepted into this program. The thesis director must be a member of the collaborative program. For further details, see the description of the Human and Molecular Genetics program posted on the FGPS website.

**Program Requirements**

**Master's Degree Requirements**

The requirements of the MSc program are as follows:

1. Successful completion of 6 credits from the courses BCH8101 to BCH8109;
2. Successful completion of the seminar courses (BCH8125S to BCH8215S);
3. Presentation and defense of a thesis (BCH7999) based on original research carried out under the direct supervision of a research faculty member in the Department.

The Department may require students to take additional courses, depending on their backgrounds. Courses taken in related disciplines must be previously approved by the Department.

**Residence**

All students must complete a minimum of three sessions of full-time registration.

**Duration of the program**
The requirements of the program are usually fulfilled within two years of full-time studies.

**Transfer from Master’s to PhD Program**

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

**Courses**

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

**BCHS101 ANALYSIS OF –OMICS DATA** (3cr.)
Theoretical and practical aspects of various methods currently used to analyze the plethora mountain of –omics data. Methods: sequence alignment and database searches; sequence analysis and bioinformatics of gene regulation; DNA microarray and sequencing technologies to identify transcription factor binding sites; analysis of proteomics data; statistical analysis of preprocessed gene expression and protein/metabolite abundance data; epidemiology applications. Critical reading of the literature and strategies for making informed choices of methods for the analysis of students’ own data. **Prerequisites:** BCH2333, BCH3170.

**BCHS366 MSc SEMINAR** (3cr.)
Attendance and participation in the annual BMI Student Symposium and BMI Poster Day, attendance at BMI seminars relevant to Biochemistry. Students must present at least one poster and one oral presentation during the course of their program. Graded S/NS

**BCHS501 ANALYSE DES DONNÉES –OMIQUES** (3cr.)

**BCH7999 RECHERCHE POUR LA THÈSE DE MAÎTRISE / MSC THESIS RESEARCH**
À l’intention des étudiants faisant de la recherche en vue de l’obtention de la maîtrise. Les étudiants doivent soumettre au Département un plan détaillé de la recherche qu’ils se proposent de faire. Chaque année une rencontre avec un comité consultatif doit avoir lieu et un rapport de progrès doit être soumis au Département. / For students doing research leading to the MSc degree. Students are responsible for ensuring that a detailed outline of the proposed research is on file with the Department and that they have an annual meeting with an advisory committee. Yearly progress reports must also be submitted to the Department.

**BCH8101 PHYSICAL AND CHEMICAL METHODS IN BIOCHEMISTRY** (3cr.)
Current applications of physical and chemical methods to the study of macromolecule structure-function relationships.

**BCH8102 SELECTED TOPICS IN PROTEIN STRUCTURE AND FUNCTION** (3cr.)
An advanced study of recent literature dealing with structure-function relationships in selected proteins.

**BCH8103 / MIC 8228 ADVANCED TOPICS IN GENE EXPRESSION AND PROTEIN SYNTHESIS** (3cr.)
An advanced study of the recent literature dealing with the chemistry, metabolism and function of nucleic acids, the biosynthesis of proteins, biochemical and genetic control mechanisms, genetic engineering and the control of gene expression. Offered every second year in alternation with MIC 8227/BCH 8105. **Prerequisite:** BFS 4101 or equivalent with the permission of the instructor.

**BCH8104 ADVANCED TOPICS IN CELL REGULATION** (3cr.)
An advanced study of recent literature dealing with signal transduction processes and the regulation of metabolism, cell proliferation and differentiation.

**BCH8105 / MIC 8227 ADVANCED TOPICS IN MOLECULAR BIOLOGY OF HUMAN DISEASES** (3cr.)
Topics will be selected and representative of current developments in the field. The course consists of a repeated series of a 3 hour lecture by an expert in the field one week, followed by student presentations, discussions and critique of assigned papers on that topic the following week. Topics on selected diseases will focus on various aspects of cancer, apoptosis, disease gene identification and gene therapy. In the past these topics have included the molecular aspects of various cancers, spinal muscular atrophy, tissue regeneration, the discovery of disease genes, infectious disease (HIV) and gene therapy. Students will write a grant proposal and participate in mock grant review panels. Depending on enrolment, the course may be limited to HMG students only. **Prerequisite:** Permission of the HMG program director.
BCH8106 ADVANCED TOPICS IN NUTRITION AND REGULATION OF METABOLISM (3cr.)
An advanced study of the recent literature dealing with metabolism, nutrition and metabolic control theory, with emphasis on both whole body and cell metabolism in metabolic and nutritional disorders such as obesity and non-insulin-dependent diabetes mellitus (NIDDM).

BCH8107 ADVANCED TOPICS IN STRUCTURE AND FUNCTION OF PLASMA LIPOPROTEINS (3cr.)
Recent advances in our knowledge of the plasma lipoproteins with a special emphasis on their role in the etiology of atherosclerosis. The subject will be introduced by an overview of the general structural properties of lipoproteins which will be followed by detailed discussion of the structure, metabolism and genetics of the apolipoproteins, the proteins and enzymes that modify lipoproteins and cell surface lipoprotein receptors. Other topics will include cholesterol homeostasis, plasma cholesterol transport and disorders of lipoprotein metabolism.

BCH8108 ADVANCED METHODS OF MACROMOLECULAR STRUCTURE DETERMINATION (3cr.)
A detailed examination of modern methods used to determine the structures of proteins, nucleic acids, and carbohydrates. May include X-ray crystallography, electron diffraction, nuclear magnetic resonance, and other spectroscopic methods.

BCH8109 / MIC 8124 ADVANCED TOPICS IN CELL DEATH (3cr.)
Molecular mechanisms of cell death. Particular attention to be paid to role of aberrant cell death in human disease. Offered in the Fall of odd numbered years.

BCH8110 ADVANCED TOPICS IN SYSTEMS BIOLOGY (3cr.)
Recent advances in genomics, proteomics, bioinformatics, and neuroinformatics including functional and chemical genomics, RNA analyses, microarrays, mass spectrometry, and neural imaging. Course requirements include student presentations and writing a mock research proposal based on Canadian Institutes of Health Research (CIHR) guidelines. Limited enrollment. Offered in alternate years with BCH 8101 Physical and Chemical Methods in Biochemistry. Prerequisite: Permission of the program director.

BCH8111 CHROMOSOME AND CHROMATIN BIOLOGY (3cr.)
Higher order chromosome structure and chromatin remodeling and their impact on regulation of gene expression, DNA replication, repair and recombination, and chromosome segregation. Histone modifications and nucleosome positioning and their influence on higher order chromosome structure. Importance of chromosome and chromatin in the context of the cell cycle, development, and disease. Critical reading of the literature on chromosome and chromatin biology.

BCH8114 ADVANCED TOPICS IN THE CELL CYCLE (3cr.)
Mechanisms of cell cycle regulation. Model systems critical to deciphering the cell cycle in eukaryotes: budding and fission yeast, Xenopus laevis egg extracts, Aspergillus nidulans, Drosophila melanogaster, sea urchin and mouse oocytes and cultured vertebrate cells. Overview of the prokaryotic cell cycle.

BCH8116 MODEL ORGANISMS AND SYSTEMS BIOLOGY (3cr.)
Utilization of model organisms in the development and advancement of the systems biology field. Particular attention will be paid to the use of organisms such as Saccharomyces cerevisiae as a model platform for cell cycle progression/cancer. Other models may also be included. The basics of the technology will be discussed along with the application of technology to complex biological questions, in particular relating to the cell cycle. Course offered in alternate years.

BCH8117 ADVANCED TOPICS RELATING TO THE CELL CYTOSKELETON AND MEMBRANES (3cr.)
Advanced study of recent literature dealing with the mammalian cellular cytoskeleton and membrane with an emphasis on the regulation of cell motility, adhesion and cell division.

BCH8165 SPECIAL TOPICS IN BIOCHEMISTRY I (2cr.)
A survey of recent advances in selected areas of biochemistry.

BCH8166 SPECIAL TOPICS IN BIOCHEMISTRY II (2cr.)
A survey of recent advances in selected areas of biochemistry.

BCH8310 CURRENT TOPICS IN RNA MOLECULAR BIOLOGY (3cr.)
Properties, mechanisms associated with regulation and the functions of RNAs and Ribonucleoprotein (RNPs) as well as RNA organisms. Current knowledge on RNA expression (synthesis, processing, transport and localization), the structure-function relationship and molecular mechanisms associated with RNAs and RNA genomes, RNA in evolution and in the origin of life, and RNA as therapeutic agents. Prerequisites: BCH/BIO 3570-3170 or equivalent with the permission of the program director. Exclusion: CMM 8310.

BCH8366 PhD SEMINAR (3cr.)
Attendance and participation in the annual BMI Student Symposium and BMI Poster Day, attendance at BMI seminars relevant to Biochemistry. Students will present a poster in their first and every alternate year, and an oral presentation the second and every alternate year until they have permission to write their thesis. Graded S/NS

BCH8511 BIOLOGIE DES CHROMOSOMES ET DE LA CHROMATINE (3cr.)
Organisation de la structure des chromosomes et le remodage de la chromatine ainsi que l’impact de ceux-ci sur la régulation de l’expression génique, la réplication, la réparation et la recombinaison de l’ADN ainsi que sur la ségrégation des chromosomes. Les modifications histoniques et le positionnement des nucléosomes ainsi que leur influence sur la structure organisée des chromosomes. Importance des chromosomes et de la chromatine dans le contexte du cycle cellulaire, du développement et des maladies. Lecture critique de la littérature portant sur la biologie des chromosomes et de la chromatine.
BCH9997 SÉMINAIRE DE RECHERCHE / RESEARCH SEMINAR
À l'intention des étudiants faisant de la recherche en vue de l'obtention du Ph.D. Un séminaire, fondé sur les résultats originaux de leur recherche, doit être présenté par les étudiants avant qu'ils ne commencent à rédiger leur thèse de Ph.D. / For students doing research leading to the doctorate. A seminar, based on the student's original results, to be presented just prior to the writing of the PhD thesis.

BCH9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAMINATION (PhD)
À l'intention des étudiants inscrits au programme de Ph.D. L'inscription à ce cours est limitée à trois sessions consécutives. / For students enrolled in the doctoral program. Enrollement in this course is limited to three consecutive academic sessions.

BCH9999 RECHERCHE POUR LA THÈSE DE DOCTORAT / DOCTORAL THESIS RESEARCH
À l'intention des étudiants faisant de la recherche en vue de l'obtention du Ph.D. Les étudiants doivent soumettre au Département un plan détaillé de la recherche qu'ils se proposent de faire. Chaque année, une rencontre avec un comité consultatif doit avoir lieu et un rapport de progrès doit être soumis au Département. / For students doing research leading to the doctoral degree. Students are responsible for ensuring that a detailed outline of the proposed research is on file with the Department and that they have an annual meeting with an advisory committee. Yearly progress reports must also be submitted to the Department.

CMM5315 CELLULAR AND MOLECULAR BASIS OF CARDIOVASCULAR FUNCTION/DYSFUNCTION (3cr.)
Mechanism of failing heart and cardiovascular system, its associated functions and associated conditions. Therapies for restoring function. Topics include: regulation of heart development, cell signaling, cellular and molecular mechanisms of atherosclerosis and heart disease, hormonal regulation, hypertension, bioenergetics, cardiovascular genomics and genetics, cell therapy, and regenerative medicine.

Bioinformatics (MSc/MCS) (Collaborative)

Ottawa–Carleton Joint Program

General Information
The Ottawa-Carleton Institute combines the research strength of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in several fields (biology, chemistry, earth science, etc.).

Bioinformatics is an emerging and increasingly important scientific discipline dedicated to the pursuit of fundamental questions about the structure, function and evolution of biological entities through the design and application of computational approaches. Fundamental research in these areas is expected to increase our understanding of human health and disease which translates into innovation in industry (i.e. drug discovery). Bioinformaticians today must be able to appreciate significant research in other fields and therefore require an understanding of the basic principles of other disciplines. To meet this challenge Carleton University and the University of Ottawa offer a collaborative program leading to a master of science degree in the primary program with specialization in Bioinformatics or, in the case of computer science, a master of computer science degree with specialization in Bioinformatics.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ojip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Participating Units
The primary participating units are:

1. The Ottawa-Carleton Institute of Biology (OCIB), the joint graduate program of the departments of Biology at the University of Ottawa and Carleton University.
2. The Ottawa-Carleton Institute of Computer Science (OCICS), the joint graduate program of the School of Information Technology at the University of Ottawa and of the Department of Computer Science at Carleton University.
3. The Ottawa-Carleton Institute of Mathematics and Statistics (OCIM), the joint graduate program of the Department of Mathematics and Statistics at the University of Ottawa and of the School of Mathematics and Statistics at Carleton University.
4. The Cellular and Molecular Medicine graduate program of the Department of Cellular and Molecular Medicine at the University of Ottawa.
5. The Biochemistry graduate program and the Microbiology & Immunology graduate program of the Department of Biochemistry, Immunology and Microbiology at the University of Ottawa.

Admission
Admission to the collaborative program in bioinformatics is governed by the «General Regulations» of the Ottawa-Carleton Institute and by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).
Candidates must indicate in their admission form that they wish to be accepted in the collaborative program.

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be admitted in one of the programs participating in the collaborative program of the Institute;
2. Provide at least one letter of recommendation from a professor who is willing and available to act as thesis supervisor;
3. Be sponsored into the collaborative program by a faculty member, normally the thesis supervisor, who must be appointed, cross-appointed or stand as an adjunct at one or more of the participating units.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

**Program Requirements**

**Degree Requirements**

The student is responsible for fulfilling both the participating unit requirements for the primary program and the requirements for the collaborative program. The requirements specific to the collaborative program are as follows:

1. 3 compulsory credits in bioinformatics (BNF5106/BIOS5106);
2. Enrollment in the seminar course in bioinformatics (BNF6100), which involves a written report, the presentation of a seminar, and regular attendance at departmental seminars;
3. Presentation and defence of a research thesis on a topic in bioinformatics based on original research carried out under the supervision of a faculty member participating in the bioinformatics collaborative program.

The primary program may require students to take additional courses, depending on their backgrounds.

**Note:**
- Biochemistry, biology, computer science, and mathematics & statistics allow the Bioinformatics course to count towards degree requirements; the Bioinformatics Seminar is to be taken in addition to the regular seminar course of the primary program.
- Cellular and molecular medicine allows the bioinformatics course and the bioinformatics seminar to count towards degree requirements.
- Microbiology and immunology requires that students take the bioinformatics course and the bioinformatics seminar in addition to the primary program requirements.

**Minimum standards**

The passing grade in all courses is B. Students who fail 6 credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

**Courses**

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d’Ottawa correspond à un cours de 0,5 crédit à la Carleton University.
Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

BCH8102 SELECTED TOPICS IN PROTEIN STRUCTURE AND FUNCTION (3cr.)
An advanced study of recent literature dealing with structure-function relationships in selected proteins.

BCH8108 ADVANCED METHODS OF MACROMOLECULAR STRUCTURE DETERMINATION (3cr.)
A detailed examination of modern methods used to determine the structures of proteins, nucleic acids, and carbohydrates. May include X-ray crystallography, electron diffraction, nuclear magnetic resonance, and other spectroscopic methods.

BIO5207 (Biol. 5500) SELECTED TOPICS (6cr.)
Courses in selected aspects of specialized biological subjects, not covered by other graduate courses; course details will be available at registration.

BIO5302 (Biol. 5105) METHODS IN MOLECULAR GENETICS (3cr.)
Review of the fundamental theory and techniques in genetic manipulation of prokaryotes and eukaryotes and examination of some of the innovative new strategies which are being applied to a variety of problems in molecular biology. Prerequisites: Graduate standing and permission of the department.

BIO5306 (Biol. 5409) MATHEMATICAL MODELLING FOR BIOLOGISTS (3cr.)
This course is designed to develop mathematical tools for the modelling of biological processes. The student is taught the necessary mathematics, a computer language, and guidance is given in the choice of simulation of a biological process.

BIO8100 (Biol. 5501) SELECTED TOPICS IN BIOLOGY I (3cr.)
Lectures and/or seminars dealing with current advances in a selected area or branch of biology, not covered by other graduate courses.

BIO8102 (Biol. 5502) SELECTED TOPICS IN BIOLOGY II (3cr.)
Lectures and/or seminars dealing with current advances in a selected area or branch of biology, not covered by other graduate courses.

BIO8301 (Biol. 5201) EVOLUTIONARY GENETICS AND COMPUTER ANALYSES (3cr.)
Students will learn the basic concepts in molecular evolution and gain hands-on experience with the computer analysis of DNA sequences. Topics covered will include molecular sequence databases, multiple alignments, amino acid and codon usage, molecular clocks, and phylogenetic trees. Prerequisites: Graduate standing plus basic courses in genetics and evolution; permission of the department.

BNF5106 BIOINFORMATICS (3cr.)
Major concepts and methods of bioinformatics. Topics may include, but are not limited to: genetics, statistics & probability theory, alignments, phylogenetics, genomics, data mining, protein structure, cell simulation and computing.

BNF5506 BIOINFORMATIQUE (3cr.)
Concepts et méthodes en bioinformatique. Les sujets abordés peuvent inclure, entre autres, la génétique, les statistiques et les théories des probabilités, les alignements, la phylogénétique, la génomique et la structure de protéines.

BNF6100 MSc SEMINAR (3cr.)
Current topics in bioinformatics presented by program professors and invited speakers. Oral presentation and written report required. Graded S/NS.

BNF6500 SÉMINAIRE DE MAÎTRISE (3cr.)
Sujets courants en bioinformatique présentés par des professeurs membres du programme et des conférenciers invités. Présentation orale et rapport écrit requis. Noté S/NS.

CMM5111 COMPUTATIONAL CELL BIOLOGY (3cr.)
Emphasis is on providing students with the background knowledge and the tools needed to develop and analyze models of cellular processes. Topics include modelling enzyme kinetics, signal transduction pathways, and gene regulatory networks, using differential equations, nonlinear dynamics, and stochastic processes. Prerequisite: permission of program director and course coordinator.

CMM5304 INTRODUCTION TO DEVELOPMENTAL BIOLOGY (3cr.)
Concepts in development and signalling pathways during development including formation of the germ layers; establishment of the body axis and principles of
segmentation; patterning and homeobox genes; neurogenesis; axonal and neuronal guidance; stem cell concepts; germ cells; animal models in developmental biology.

**CMM8310 CURRENT TOPICS IN RNA MOLECULAR BIOLOGY** (3cr.)
Properties, mechanisms associated with regulation and the function of RNAs and Ribonucleoprotein (RNP)s as well as RNA organisms. Current knowledge on RNA expression (synthesis, processing and transport and localization), the structure-function relationship and molecular mechanisms associated with RNAs and RNA genomes, RNA in evolution and in the origin of life, and RNA as therapeutic agents. **Prerequisites:** BCH/BIO 3570-3170 or equivalent with the permission of the program director. Exclusion: BHI 8310.

**CSI5100 (COMP 5306) DATA INTEGRATION** (3cr.)
Materialized and virtual approaches to integration of heterogeneous and independent data sources. Emphasis on data models, architectures, logic-based techniques for query processing, metadata and consistency management, the role of XML and ontologies in data integration; connections to schema mapping, data exchange, and P2P systems. **Prerequisite:** COMP 5005 or equivalent.

**CSI5101 (COMP 5307) KNOWLEDGE REPRESENTATION** (3cr.)
KR is concerned with representing knowledge and using it in computers. Emphasis on logic-based languages for KR, and automated reasoning techniques and systems; important applications of this traditional area of AI to ontologies and semantic web. **Prerequisites:** COMP 1805 and COMP 3005, or equivalents.

**CSI5126 (COMP 5108) ALGORITHMS IN BIOINFORMATICS** (3cr.)
Fundamental mathematical and algorithmic concepts underlying computational molecular biology; physical and genetic mapping, sequence analysis (including alignment and probabilistic models), genomic rearrangement, phylogenetic inference, computational proteomics and systems modelling of the whole cell. **Prerequisites:** CSI 3105, COMP 3804 or equivalent.

**CSI5131 (COMP 5704) PARALLEL ALGORITHMS AND THEIR IMPLEMENTATION** (3cr.)
Introduction: models of computation, levels of parallelism; performance measures for parallel algorithms; need for parallel algorithms. Parallel algorithms: techniques in matrix multiplication, solution of linear equations, transforms and differential equations; systolic arrays for the implementation of parallel algorithms in the areas of matrix arithmetic, transforms and relational database operations. VLSI implementations; VLSI and parallel computing structures; mapping of high-level computations into VLSI structures.

**CSI5132 (COMP 5105) PARALLEL PROCESSING SYSTEMS** (3cr.)
Introduction to issues involved in designing and using parallel processing systems. Topics include: taxonomy and applications of parallel systems; SIMD systems; multiprocessor systems; multicomputer systems; computation versus communication issues in parallel processing; scheduling parallel systems; spinning versus blocking; interconnection networks; hot-spot contention. **Prerequisite:** permission of the School.

**CSI5163 (COMP 5703) ALGORITHM ANALYSIS AND DESIGN** (3cr.)
Topics of current interest in the design and analysis of computer algorithms for graph-theoretical applications; e.g. shortest paths, chromatic number, etc. Lower bounds, upper bounds, and average performance of algorithms. Complexity theory.

**CSI5165 (COMP 5709) COMBINATORIAL ALGORITHMS** (3cr.)
Design of algorithms for solving problems that are combinatorial in nature, using both sequential and parallel models of computation. Parallel algorithms for enumerating basic combinatorial objects (permutations, combinations, set partitions) and for solving optimization problems (knapsack, minimal cover, branch-and-bound). Polyminoes, polygonal systems, enumeration and classification and benzenoid and coronoid hydrocarbons in chemistry. Combinatorial geometry (Voronoi diagrams, polytopes arrangements). Algorithmic problems in many-valued logics (base enumeration, tautology checking, minimization, finding the spectra).

**CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING** (3cr.)

**CSI5526 (COMP 5180) ALGORITHMES EN BIOINFORMATIQUE** (3cr.)
Assemblage de l'ADN, recherche de gènes, comparaison de chaînes, alignement de séquences, structures grammaticales, structures secondaires et tertiaires. Les récents développements, tels que les pacers d'ADN et de protéines. Travail additionnel requis dans le cas des étudiants inscrits sous la cote CSI 5526. Préalable: CSI 3305 ou (dans le cas des étudiants diplômés) permission du responsable de programme.

**CSI5565 (COMP 5709) ALGORITHMES COMBINATOIRES** (3cr.)
Conception d'algorithmes de problèmes de nature combinatoire, à l'aide de modèles séquentiels et parallèles. Algorithmes parallèles pour l'enumération d'objets combinatoires de base (permutations, combinaisons, partitions), et pour résoudre des problèmes d'optimisation (knapsack, recouvrement minimal, méthode branch-and-bound); systèmes polygonaux, applications en chimie; géométrie combinatoire (diagrammes de Voronoï, polytopes, arrangements); problèmes en logique à valeur multiple, énumération de base, vérification de tautologie, minimisation, recherche du spectre.

**MATS170 (STAT 5708) PROBABILITY THEORY I** (3cr.)
Probability spaces, random variables, expected values as integrals, joint distributions, independence and product measures, cumulative distribution functions and
extensions of probability measures, Borel-Cantelli lemmas, convergence concepts, independent identically distributed sequences of random variables.

**Prerequisites:** Permission of Program Director.

**MAT5171 (MATH 5709) PROBABILITY THEORY II** (3cr.)
Laws of large numbers, characteristic functions, central limit theorem, conditional probabilities and expectation, basic properties and convergence theorems for martingales, introduction to Brownian motion. **Prerequisite:** MAT 5170 (STAT 5708).

**MAT5181 (STAT 5703) DATA MINING I** (3cr.)
Visualization and knowledge discovery in massive datasets; unsupervised learning; clustering algorithms; dimension reduction; supervised learning: pattern recognition, smoothing techniques, classification. Computer software will be used. **Prerequisite:** Permission of the Instructor.

**MAT5182 (STAT 5702) MODERN APPLIED / COMPUTATIONAL STATISTICS** (3cr.)
Resampling and computer intensive methods: bootstrap, jackknife with applications to bias estimation, variance estimation, confidence intervals, and regression analysis. Smoothing methods in curve estimation; Statistical classification and pattern recognition: error counting methods, optimal classifiers, bootstrap estimates of the bias of the misclassification error.

**MAT5190 (STAT 5600) MATHEMATICAL STATISTICS I** (3cr.)
Statistical decision theory; likelihood functions; sufficiency; factorization theorem; exponential families; UMVU estimators; Fisher's information; Cramer-Rao lower bound; maximum likelihood and moment estimation; invariant and robust point estimation; asymptotic properties; Bayesian point estimation. **Prerequisites:** MAT 3172 and MAT 3375.

**MAT5191 (STAT 5501) MATHEMATICAL STATISTICS II** (3cr.)
Confidence intervals and pivots; Bayesian intervals; optimal tests and Neyman-Pearson theory; likelihood ratio and score tests; significance tests; goodness-of-fit tests; large sample theory and applications to maximum likelihood and robust estimation. **Prerequisite:** MAT 5190.

**MAT5198 (MATH 5701) STOCHASTIC MODELS** (3cr.)
Markov systems, stochastic networks, queueing networks, spatial processes, approximation methods in stochastic processes and queueing theory. Applications to the modelling and analysis of computer-communications systems and other distributed networks.

**MAT5314 (MATH 6508) TOPICS IN PROBABILITY AND STATISTICS** (3cr.)

**MAT5319 (MATH 6507) TOPICS IN PROBABILITY AND STATISTICS** (3cr.)

**MAT5570 (STAT 5708) THÉORIE DES PROBABILITÉS I** (3cr.)
Espaces probabilisés, variables aléatoires, l'espérance mathématique définie comme une intégrale, lois conjointes, indépendance et mesure produit, répartitions et extensions de mesures de probabilité, lemmes de Borel-Cantelli, notions de convergence, suites de variables aléatoires indépendantes et équidistribuées. **Préalables :** MAT 3525 et MAT 3572 (MATH 3001, MATH 3002 et MATH 3500).

**MAT5571 (STAT 5709) THÉORIE DES PROBABILITÉS II** (3cr.)
Lois des grands nombres, fonctions caractéristiques, théorème-limite central, probabilité et espérance conditionnelles, propriétés élémentaires et théorèmes de convergence des martingales, introduction au mouvement brownien. **Préalable :** MAT 5570 (STAT 5708).

**MAT5591 (STAT 5501) INFÉRENCE STATISTIQUE** (3cr.)

**MAT5598 (MATH 5701) MODÈLES STOCHASTIQUES** (3cr.)

**SYS5120 APPLIED PROBABILITY** (3cr.)
An introduction to stochastic processes, with emphasis on regenerative phenomena. Review of limit theorems and conditioning. The Poisson process. Renewal theory and limit theorems for regenerative processes; Discrete-time and continuous-time Markov processes with countable state space. Applications to queueing.

**ELG6114 (SYSC 5104) METHODOLOGIES FOR DISCRETE-EVENT MODELLING AND SIMULATION** (3cr.)

**Biology (MSc)**

**Ottawa-Carleton Joint Program**

**General Information**
Established in 1984, the Ottawa-Carleton Institute of Biology (OCIB) combines the research strengths of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Biology.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in three main research fields: cell and molecular biology; ecology, behaviour and systematics; and, physiology and biochemistry. Additional information is posted in the departmental website.

The Institute is a participating unit in the following collaborative programs: the Bioinformatics program (at the master’s level) and the Chemical and Environmental Toxicology program (at the master’s and doctoral levels).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ojip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

**Admission**

Admission to the graduate program in biology is governed by the General Regulations of the Ottawa-Carleton Institute of Biology (OCIB) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a bachelor’s degree with a specialization, or a major in Biology (or equivalent) with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

**Collaborative Programs**

The Department of Biology is a participating unit in the collaborative programs in Bioinformatics and in Chemical and Environmental Toxicology. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, see the description of the program posted on the FGPS website.

**Program Requirements**

**Master's Degree Requirements**

The following requirements must be met:

1. Six credits of graduate courses at the 5000 level or above in biology or in related disciplines approved by the Department of Biology;
2. Enrollment in the seminar course, BIO5900, which involves the presentation of a seminar and regular attendance at the departmental seminars;
3. Presentation and defense of a thesis (BIO7999) based on original research carried out under the direct supervision of a research faculty member in the Department.

The Department may require students to take additional courses, depending on their backgrounds.

**Residence**

All students must complete a minimum of three sessions of full-time registration.
Minimum Standards
The passing grade in all courses is 70% (B). Students who fail six credits, or the thesis proposal, or the comprehensive exam, or whose research progress report is deemed unsatisfactory are required to withdraw from the program.

Duration of the program
The requirements of the program are usually fulfilled within two years. The maximum time permitted is four years from the date of initial registration.

Transfer from Master’s to PhD Program
Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

Thesis Advisory Committee (TAC)
During the first session of the program, a thesis advisory committee (TAC) is formed for the candidate. The Committee’s membership will be determined by the specific interests of the candidate. It will consist of a minimum of three members, including the thesis supervisor, two of whom must be full-time, adjunct, or cross-appointed professors in the OCIB.
One of the members of the committee, in addition to the thesis supervisor, must have expertise in the field of the student's thesis research. To provide outside perspective, one of the members should be from a different research group. The members of the committee should be chosen by the supervisor in consultation with the student and approved by the director of the Graduate Studies Program.
The TAC is responsible for guiding the student throughout the program, including course selection, the comprehensive examination, thesis proposal, and thesis defense.
Meetings between the student and thesis committee members will take place regularly until the project is completed. The thesis examining board may include members who are not part of the TAC.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d’Ottawa correspond à un cours de 0,5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

BIO5101 (BIOL 5001) TOPICS IN BIOTECHNOLOGY (3cr.)
A course concerned with the utilization of biological substances and activities of cells, genes and enzymes in manufacturing, agricultural and service industries. A different topic will be selected each year. Prerequisite: A course in cell physiology or biochemistry, or permission of instructor.

BIO5102 (BIOL 5605) FIELD COURSE (3cr.)
Credit for this half-course is based on a total of three weeks of field-course modules, involving one or two weeks of intensive and continuous field work with attendant assignments.

BIO5103 (BIOL 5003) COMPARATIVE BIOCHEMISTRY (3cr.)
Advanced topics emphasizing biochemical structures, functions and methodologies in the context of animal (invertebrates and vertebrates) adaptations to environmental stress.

BIO5105 (BIOL 5801) ADVANCED ANIMAL BEHAVIOUR (3cr.)
A course in animal behaviour from an ecological and evolutionary point of view with additional independent assignments. Prerequisites: BIOL 3305 and BIOL 3601 or equivalents and registration in a graduate program, or written permission of the department.

BIO5106 (BIOL 5506) BIOINFORMATICS (3cr.)
Major concepts and methods of bioinformatics. Topics may include, but are not limited to genetics, statistics and probability theory, alignments, phylogenetics, genomics, data mining, protein structure, cell simulation and computing.

BIO5207 (BIOL 5500) SELECTED TOPICS (6cr.)
Courses in selected aspects of specialized biological subjects, not covered by other graduate courses; course details will be available at registration.

**BIO5213 (BIOL 5506) ADVANCED INSECT / ANIMAL SYSTEMATICS** (6cr.)
A lecture and seminar course concerning methods, roles and advances in systematics of insects and other animals. One research project required. **Prerequisite:** A 400-level course in identification or classification of insects or other animals.

**BIO5301 (BIOL 5100) PLANT DEVELOPMENT** (3cr.)
An advanced course dealing with selected topics in the experimental study of plant development.

**BIO5302 (BIOL 5105) METHODS IN MOLECULAR GENETICS** (3cr.)
Review of the fundamental theory and techniques in genetic manipulation of prokaryotes and eukaryotes and examination of some of the innovative new strategies which are being applied to a variety of problems in molecular biology. **Prerequisites:** Graduate standing and permission of the department.

**BIO5305 (BIOL 5407) QUANTITATIVE ECOLOGY** (3cr.)
A course on analysis of the distribution and abundance of plants and animals, and of related environmental phenomena. Computer assignments and a major data analysis project will be required. **Prerequisites:** Graduate standing, courses in elementary ecology and statistics and permission of the department.

**BIO5306 (BIOL 5409) MATHEMATICAL MODELLING FOR BIOLOGISTS** (3cr.)
This course is designed to develop mathematical tools for the modelling of biological processes. The student is taught the necessary mathematics, a computer language, and guidance is given in the choice of simulation of a biological process.

**BIO5308 (BIOL 5106) LABORATORY TECHNIQUES IN MOLECULAR GENETICS** (3cr.)
Laboratory course complementary to BIO 5202 (61.717 F1), designed to give students practical experience in many of the important techniques in molecular genetics. Six hours of laboratory work per week. **Prerequisites:** Graduate standing and permission of the department.

**BIO5900 SÉMINAIRE DE MAÎTRISE / Msc SEMINAR** (1cr.)
Obligatoire à la maîtrise. L'obtention des crédits est fondée sur la présentation d'un séminaire jugé satisfaisant par le personnel et sur la participation à l'ensemble du cours. / Compulsory for all MSc students. For credit, each student must present one seminar judged to be satisfactory by the staff and must participate in the course as a whole.

**BIO5901 (BIOL 5503) DÉVELOPPEMENTS RÉCENTS EN BIOLOGIE / RECENT ADVANCES IN BIOLOGY** (3cr.)
Ce cours a pour but de présenter les dernières réalisations dans les principales disciplines de la biologie. Il consiste en une série de présentations par des professeurs et des biologistes invités, ainsi qu'en lectures dirigées. / A course intended for all first year graduate students to bring them up to date in the various major areas of biology. The course will consist of selected readings, lectures and invited speakers.

**BIO8100 (BIOL 5501) SELECTED TOPICS IN BIOLOGY I** (3cr.)
Lectures and/or seminars dealing with current advances in a selected area or branch of biology, not covered by other graduate courses.

**BIO8102 (BIOL 5502) SELECTED TOPICS IN BIOLOGY II** (3cr.)
Lectures and/or seminars dealing with current advances in a selected area or branch of biology, not covered by other graduate courses.

**BIO8104 SELECTED TOPICS IN BIOLOGY III** (3cr.)
Lectures and/or seminars dealing with current advances in a selected area or branch of biology, not covered by other graduate courses.

**BIO8108 (BIOL 6505) ADVANCED TOPICS IN DEVELOPMENT** (3cr.)
Recent advances in developmental biology. Topics may include embryonic induction, regulation of morphogenesis and differentiation, mechanisms of regional specification and pattern formation, and developmental genetics. (Offered in alternate years).

**BIO8109 (BIOL 6001) ADVANCED MOLECULAR BIOLOGY I** (3cr.)
Recent advances in molecular biology. Topics for discussion may include the following: DNA structure and function, the organization of the genome; DNA, RNA and protein synthesis; the regulation of gene expression in eukaryotes and prokaryotes. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 8116/BIO 6002 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

**BIO8116 (BIOL 6002) ADVANCED MOLECULAR BIOLOGY II** (3cr.)
Recent advances in molecular biology. Topics for discussion may include the following: mutagenesis and DNA repair mechanisms; molecular aspects of gene transfer recombination and gene rearrangement; gene transfer mechanisms, the molecular biology of yeasts and fungi, especially with regard to industrial applications; the modern techniques of genetic engineering as applied to industrial and medical problems. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 6001 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

**BIO8117 (BIOL 6201) ADVANCED CELL BIOLOGY I** (3cr.)
Recent advances in cell biology. Topics for discussion may include the following: the composition, biosynthesis and three-dimensional organization of the cytoskeleton, factors regulating its deployment and the role of cytoskeletal elements in mitosis, cell-substrate attachment, cell motility, transport of organelles.
and axoplasmic transport, cell surface and extracellular matrix. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of University of Ottawa and Carleton University. BIO 8118/BIOI 6202 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

BIO8118 (BIOI 6202) ADVANCED CELL BIOLOGY II (3cr.)
Topics for discussion may include the following: the structure, composition and three-dimensional organization of the nucleus, mechanisms and regulation of genome replication, structural organization of transcription. Role of the nucleus in virus replication and hormone response, structural and functional reorganization of nuclear components during gamete development, fertilization and the mitotic cell cycle. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 8117/BIOI 6201 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

BIO8122 (BIOI 5307) ADVANCED INSECT PHYSIOLOGY (3cr.)
A lecture and seminar course concerning physiological characteristics of insects. In addition to the course material, students will write two term papers (alternate years.)

BIO8123 (BIOI 5601) ADVANCED TOPICS IN INSECT EVOLUTION (3cr.)
Major concepts and questions in insect evolution in the areas of systematics, morphology, the fossil record, biology and behaviour. Two hours of lectures or discussions per week as well as laboratory work.

BIO8124 (BIOI 5009) ONTARIO VEGETATION: PATTERNS, PROCESSES AND PROTECTION (3cr.)
Patterns of vegetation and plant species distributions in Ontario will be investigated with respect to their origin and maintaining processes. Review of current methods of protection of significant and representative vegetation using zonal concepts.

BIO8162 (BIOI 5402) TOPICS IN COMPARATIVE ENDOCRINOLOGY (3cr.)
A lecture and reading course concerned with classical as well as current topics in the field of comparative endocrinology. Special emphasis will be placed on the vertebrates. Prerequisite: An undergraduate Endocrinology course (BIO 4127 or equivalent).

BIO8204 ECOLOGY SEMINAR (3cr.)

BIO8301 (BIOI 5201) EVOLUTIONARY GENETICS AND COMPUTER ANALYSES (3cr.)
Students will learn the basic concepts in molecular evolution and gain hands-on experience with the computer analysis of DNA sequences. Topics covered will include molecular sequence databases, multiple alignments, amino acid and codon usage, molecular clocks, and phylogenetic trees. Prerequisites: Graduate standing plus basic courses in genetics and evolution; permission of the department.

BIO8302 (BIOI 5202) TOPICS IN EVOLUTIONARY GENETICS (3cr.)
A lecture/seminar course on genetic mechanisms and forces responsible for variation and evolutionary change in natural populations. Topics to include protein and genome evolution, molecular phylogenies, DNA sequences in population biology, and the evolution of multigene families. Prerequisites: Graduate standing plus basic courses in genetics and evolution; permission of the department (alternate years).

BIO8303 (BIOI 5203) TECHNIQUES OF LIGHT MICROSCOPY (3cr.)
An advanced laboratory and lecture course on the principles and techniques of light microscopy. Prerequisite: Open to 4th year and graduate students with consent of the instructor.

BIO8304 (BIOI 5204) TECHNIQUES OF ELECTRON MICROSCOPY (3cr.)
An advanced laboratory and lecture course on the principles and techniques of electron microscopy. Prerequisite: Open to 4th year and graduate students with consent of the instructor.

BIO8306 (BIOI 5508) ADVANCED TOPICS IN ECOLOGY I (3cr.)
Lectures, seminars and discussions on current literature on experimental approaches, concepts and findings in population and community ecology, ecosystem and landscape ecology and biostatistics. Course content to complement that of BIO 8307 / BIOI 5509; not necessary to take the two in a particular order.

BIO8307 (BIOI 5509) ADVANCED TOPICS IN ECOLOGY II (3cr.)
Lectures, seminars and discussions on current literature on experimental approaches, concepts and findings in population and community ecology, ecosystem and landscape ecology and biostatistics. Course content to complement that of BIO 8306/BIOI 5508; not necessary to take the two in a particular order.

BIO8319 (BIOI 6205) ADVANCED PLANT PHYSIOLOGY (3cr.)
A lecture and seminar course dealing with selected topics in advanced plant physiology, available only to graduate students. Prerequisite: BIOI 4209 or equivalent or permission of the department.

BIO8320 (BIOI 6300) ADVANCED PLANT BIOCHEMISTRY (3cr.)
A lecture and seminar course, available only to graduate students, and dealing with selected topics in advanced plant biochemistry. Prerequisites: BIOI 4205 and BIOI 4206/4207, or permission of the department.

BIO8361 (BIOI 6304) ADVANCED TOPICS IN ANIMAL PHYSIOLOGY (3cr.)
In-depth study of selected areas in animal physiology of current research interest.

**BIO8365 (BIOL 5802) ADVANCED BEHAVIOURAL ECOLOGY (3cr.)**
Recent ideas and research on advanced topics dealing with the evolution of foraging, temporal, spatial, and reproductive strategies will be discussed and critically examined. Offered in alternate years.

**BIO8900 SÉMINAIRE DE DOCTORAT / PhD SEMINAR (2cr.)**
Obligatoire au doctorat. L'obtention de crédit est fondée sur la présentation de deux séminaires jugés satisfaisants par le personnel et sur la participation à l'ensemble du cours. / Compulsory for all PhD students. For credit, each student must present two seminars judged to be satisfactory by the staff and must participate in the course as a whole.

**BIO8935 (BIOL 6401) DÉVELOPPEMENTS RÉCENTS EN BIOLOGIE VÉGÉTALE / RECENT ADVANCES IN PLANT BIOLOGY (3cr.)**
Sujets d'étude et de recherche de pointe. / Special topics of current interest.

**BIO8938 (BIOL 6404) INTERACTIONS ENTRE PLANTES ET ANIMAUX / PLANT ANIMAL INTERACTIONS (3cr.)**
Les substances métaboliques secondaires des plantes et leur rôle en tant que phagorépresseurs ou phytoalexines pour les animaux et en tant qu'agents antifongiques ou allélopathiques. On discutera de la coévolution des plantes et des organismes phytophages (insectes et mammifères) et des dimensions physiologique et écologique de cette relation / Secondary metabolites of plants and their role as attractants or antifeedants to animals and as allelopathic or antifungal agents. Emphasis will be placed on co-evolution of plants and phytophagous organisms such as seeds and mollusks, and the ecological and physiological dimensions of this relationship (alternate years.)

**BIO9104 (BIOL 6403) ECOTOXICOLOGY (3cr.)**
Selected topics and advances in ecotoxicology with emphasis on the biological effects of contaminants. The potential of biotic perturbation resulting from chronic and acute exposure of ecosystems to selected toxicants will be covered along with the methods of pesticide, herbicide and pollutant residue analysis and the concept of bound residues.

**BIO9105 (BIOL 6405) SEMINAR IN TOXICOLOGY (3cr.)**
A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topic. Student, faculty and invited seminar speakers.

**BIO9202 (BIOL 5405) PROJECT IN APPLIED ECOLOGY (Reading and applied field work, limited enrolment) (6cr.)**
A course, in the of a special research project, in which the student identifies an environmental problem and the corporate or governmental body that has the power to rectify the problem. Work includes: 1) a literature review, with a report on this review; 2) a second report, in the form of an article in a newspaper or magazine, to convey the relevant results to non-scientists; 3) an approach to the relevant private or governmental agency, with an attempt to have the solution implemented, and a detailed report on this experience.

**BIO9301 (BIOL 5306) PHOTOBIOLOGY**
The interaction of light and living organisms. Topics include an introduction to photochemistry and the detailed study of such topics as photosynthesis, vision, photosensitivity and photoperiodism.

**BIO9701 PHOTOBIOLOGIE (3cr.)**
Interaction de la lumière et des organismes vivants. Étude des sujets suivants : introduction à la photochimie et étude détaillée de la photosynthèse, de la vision, de la photosensibilité et du photoperiodisme.

**BIO7999 (BIOL 5909) THÈSE DE MAÎTRISE / MSc THESIS**

**BIO9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAMINATION (PhD)**

**BIO9999 (BIOL 6909) THÈSE DE DOCTORAT / PhD THESIS**

### Biomedical Engineering (MASc)

#### Ottawa-Carleton Joint Program

Established in 2006, the Ottawa-Carleton Institute of Biomedical Engineering (OCIBME) combines the teaching and research strengths of many academic units across the University of Ottawa and Carleton University. The Institute offers a graduate program leading to the Master of Applied Science (MASE) degree in Biomedical Engineering.

The Master of Applied Science program in Biomedical Engineering is a joint multidisciplinary program that combines research input of seven primary participating academic units at:
- University of Ottawa:

- Department of Mechanical Engineering (MCG)
- School of Information Technology and Engineering (SITE)
- Department of Chemical Engineering (CHG)

- Carleton University:

- Department of Systems and Computer Engineering
- Department of Mechanical and Aerospace Engineering
- School of Computer Science
- Department of Physics

The Institute benefits from the expertise of a number of prominent medical researchers and well-established University of Ottawa medical research units including: the University of Ottawa Heart Institute and the University of Ottawa Eye Institute. In addition to the participating academic units listed above, a number of others are involved in the program through the research activities of some of their faculty members, or through graduate courses that may be taken as electives by students in the program.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in four main research fields: medical instrumentation; biomedical image processing; biomechanics and biomaterials; medical informatics and telemedicine.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “Regulations and Procedures for Joint Graduate Programs (www.ocjpp.ca)” and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate program in biomedical engineering is governed by the General Regulations of the Ottawa-Carleton Institute of Biomedical Engineering (OCIBME) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a bachelor’s degree with a specialization or a major (or equivalent) in engineering, science, computer science, or a related discipline, with a minimum average of 75% (B+);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with their work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Program Requirements

The requirements for the program are as follows:
1. Completion of the compulsory course: BMG5112 (BIOM 5XXX);
2. Completion of two biomedical engineering (BMG/BIOM) courses to be selected from the list of biomedical engineering courses in the graduate calendar.
3. Completion of two courses at the graduate level with the approval of the thesis supervisor and the director of the program.
4. Completion of the Biomedical Engineering Seminar course BMG6996 (BIOM 5800) [no credit].
5. Completion and successful oral defence of a research thesis BMG7999 (BIOM 5909).

The Department may require students to take additional courses, depending on their backgrounds. Courses taken in related disciplines must be previously approved by the Department.

**Residence**
All students must complete a minimum of three sessions of full-time registration.

**Minimum Standards**
The passing grade in all courses is 70% (B). Students who fail six credits, or the thesis proposal, or whose research progress report is deemed unsatisfactory are required to withdraw from the program.

**Duration of the program**
The requirements of the program are usually fulfilled within two years of full-time studies. The maximum time permitted is four years.

**Courses**

Les cotes de cours créées pour ce programme débutent par les lettres BIOM pour la Carleton University et par BMG pour l’Université d’Ottawa. Celles des cours dans d'autres disciplines sont CHG, CSI, ELG, EPI, MAT, MCG et PHY (à l’Université d’Ottawa), et COMP, EAJC, MAAJ, MECH, PHYS, SYSC et STAT (à la Carleton University).

Tous les cours, à l’exception des séminaires et de la thèse, valent 3 crédits à l’Université d’Ottawa et 0,5 à la Carleton University.

Courses specific to this program are designated BMG at the University of Ottawa and BIOM at Carleton University. The codes for courses from other disciplines are CHG, CSI, ELG, EPI, MAT, MCG, and PHY (all at the University of Ottawa) and COMP, EAJC, MAAJ, MECH, PHYS, SYSC, and STAT (all at Carleton University).

All courses, with the exception of the seminar and the thesis, are worth 3 credits at the University of Ottawa and 0.5 credits at Carleton University.

**BMG5103 (BIOM 5100) BIOMEDICAL INSTRUMENTATION** (3cr.)
Instrumentation designed to measure physiological variables related to the function of the heart, lungs, kidney, nervous and musculo-skeletal systems; emergency, critical care, surgery and anesthesia equipment. Precludes additional credit for ELG 6320/SYSC 5302. *Prerequisite: permission of the program director.*

**BMG5104 (BIOM 5101) BIOLOGICAL SIGNALS** (3cr.)
Modeling of neuromuscular biological signals, including subthreshold phenomena, active behaviour of cell membranes, and innervation processes. Measurement of biological signals, including electrode effects. Time domain, frequency domain, and adaptive filtering techniques for noise reduction. Precludes additional credit for ELG 6131X/SYSC 5301X.

**BMG5105 (BIOM 5200) BIOMEDICAL IMAGE PROCESSING** (3cr.)
Mathematical models of image formation based on the image modality and tissue properties. Linear models of image degradation and reconstruction. Inverse problems and regularization for image reconstruction. Image formation in radiology, computed tomography, magnetic resonance imaging, nuclear medicine, ultrasound, positron emission tomography, electrical impedance tomography. Precludes additional credit for ELG 5376/SYSC 5602. *Prerequisite: permission of the program director.*

**BMG5106 (BIOM 5201) INTRODUCTION TO MEDICAL IMAGING PRINCIPLES AND TECHNOLOGY** (3cr.)
Basic principles and technological implementation of x-ray, nuclear medicine, magnetic resonance imaging (MRI), and other imaging modalities used in medicine; contrast, resolution, storage requirements for digital images; applications outside medicine, future trends. *Prerequisite: permission of the Department of Physics (Carleton).*

**BMG5107 (BIOM 5202) WAVELET APPLICATIONS IN BIOMEDICAL IMAGE PROCESSING** (3cr.)
Introduction to the methods of wavelet analysis and processing techniques for the quantification of biomedical images and signals. Topics include: frames and over-complete representations, multiresolution algorithms for denoising and image restoration, multiscale texture segmentation and classification methods for computer aided diagnosis and compression for transmission and storage. Applications of such techniques to various biomedical imaging modalities, such as computed tomography, nuclear medicine, magnetic resonance imaging and ultrasound. *Prerequisites: ELG 5376/SYSC 5602 and BMG 5105/BIOM 5200 or...*
permission of the program director.

BMG5108 (BIOM 5203) ADVANCED TOPICS IN BIOMEDICAL IMAGE PROCESSING (3cr.)
Recent and advanced topics in the field of biomedical image processing and its related areas. **Prerequisite:** permission of the program director.

BMG5109 (BIOM5106) ADVANCED TOPICS IN MEDICAL INSTRUMENTATION (3cr.)
Recent and advanced topics in the field of medical instrumentation and its related areas. **Prerequisite:** permission of the program director.

BMG5110 (BIOM5304) ADVANCED TOPICS IN BIOMECHANICS AND BIOMATERIALS (3cr.)
Recent and advanced topics in the field of biomechanics and biomaterials and its related areas. **Prerequisite:** permission of the program director.

BMG5111 (BIOM5403) ADVANCED TOPICS IN MEDICAL INFORMATICS AND TELEMEDICINE (3cr.)
Recent and advanced topics in the field of medical informatics and telemedicine and its related areas. **Prerequisite:** permission of the program director.

BMG5112 (BIOM 5010) FUNDAMENTALS OF BIOMEDICAL ENGINEERING (3cr.)
Research ethics and methods. Engineering systems approach to analysis and modelling of human anatomy and physiology. Topics will include biomechanics, electrophysiology, computational biology, biomedical technologies, impact of technology on society.

BMG5300 (BIOM 5300) BIOLOGICAL AND ENGINEERING MATERIALS (3cr.)

BMG5301 (BIOM 5301) BIOMECHANICS OF SKELETAL SYSTEM, MOTION AND TISSUE (3cr.)

BMG5302 (BIOM 5302) BIOFLUID MECHANICS (3cr.)

BMG5303 (BIOM 5303) ERGONOMICS & DESIGN (3cr.)
Review of ergonomic issues encountered in engineering design, including biomechanical, physical and physiological issues. Course will present strategies for human interaction with complex systems, such as aircraft cockpits, equipment control consoles, human-robotic interactions, and tele-operated equipment.

BMG5306 (BIOM 5306) SPECIAL TOPICS IN MECHANICAL & AEROSPACE ENGINEERING: BIOMECHANICS (3cr.)
Overview of human anatomy and physiology with emphasis on artificial organ and prosthetic device design requirements. Application of engineering principles to cells and tissues, biofluid mechanics, human body energetics, measurement techniques, mechanics of human body systems, with emphasis on the artificial heart.

BMG5311 (BIOM 5311) DESIGN OF MEDICAL DEVICES AND IMPLANTS (3cr.)
Solutions to clinical problems through the use of implants and medical devices. Pathology of organ failure and bioengineering and clinical aspects of artificial organs. Examples: blood substitutes, pacemakers, ventricular assist devices, artificial hearts and heart valves.

BMG5312 (BIOM 5312) DESIGN OF ORTHOPAEDIC IMPLANTS AND PROSTHESES (3cr.)

BMG5314 (BIOM 5314) BIOCONTROLS (3cr.)
Application of traditional control system principles to the human body. Functionality of sample actuators and sensors. Characterization of human body control loops with emphasis on system stability, robustness, and effect of adverse external disturbance. Course project. **Prerequisite:** knowledge of basic control system analyses and design concepts using root locus and frequency response methods.

BMG5315 (BIOM 5315) BIOROBOTICS (3cr.)
Interpretation of physical laws as applied to human motion; kinematics and dynamics of humanoid robots, modeling of biological sensors and actuators, artificial muscles, tele-manipulation, dual arm robots, robot-assisted surgery, and multi-fingered end-effectors. Approaches to design of mechatronic devices to support and enhance human movement including rehabilitators, extenders, haptic devices, and minimally invasive surgery systems. **Prerequisites:** knowledge of basic control system concepts, Newton's Laws of Motion, kinematics of multi-body systems.

BMG5316 (BIOM 5316) BIOTRANSPORT PROCESSES (3cr.)
Application of chemical engineering principles to medicine and biology. Principles of mass transfer and fluid dynamics in topics such as hemodialysis, artificial kidney, diffusion in blood, mass transfer in the eye, drug distribution in the body, and advanced life support system. **Prerequisite:** Knowledge of integral and differential forms of mass, momentum, energy laws and fluid properties.

BMG5317 (BIOM 5400) MEDICAL COMPUTING (3cr.)

CHG8188 POLYMER PROPERTIES AND CHARACTERIZATION (3cr.)
Polymer properties are described and discussed in the context of their nature, source and means of measurement. Chemical and microstructural properties; physical states and transitions; thermal properties; mechanical properties and viscoelasticity models; degradation and stability; surface, electrical and optical properties, polymer additives; structure-property relationships.

CHG8195 (ENV/J5505) ADVANCED NUMERICAL METHODS IN TRANSPORT PHENOMENA (3cr.)
Survey course of numerical methods for solving linear and non-linear ordinary and partial differential equations. Techniques reviewed include Runge-Kutta and predictor-corrector methods, shooting techniques, control volume discretization methods and finite elements. Example problems from the field of transport phenomena.

CHG8196 (ENV/J5507) INTERFACIAL PHENOMENA IN ENGINEERING (3cr.)
Interfacial tension and interfacial free energy; contact angles; spreading of liquids; wetting of surfaces; experimental techniques. Interfacial tension of mixtures; Gibbs equation; absorbed and insoluble monolayers; properties of monolayers and films. Electrical phenomena at interfaces; the electrical double layer; zeta-potential; electrokinetic phenomena (electrophoresis, electro-osmosis, streaming potential); surface conductance. Dispersed systems; formation and practical uses of emulsions; spontaneous emulsification; flocculation.

CS15102 (COMP 5308) TOPICS IN MEDICAL COMPUTING (3cr.)

CS15116 (COMP 5407) AUTHENTICATION AND SOFTWARE SECURITY (3cr.)
Specialized topics in security including advanced authentication techniques, user interface aspects, electronic and digital signatures, security infrastructures and protocols, software vulnerabilities affecting security, non-secure software and hosts, protecting software and digital content. Prerequisites: Basic course in Statistics or permission of the program director.

CS15131 (COMP 5704) PARALLEL ALGORITHMS AND THEIR IMPLEMENTATION (3cr.)
Introduction: models of computation, levels of parallelism; performance measures for parallel algorithms; need for parallel algorithms. Parallel algorithms: techniques in matrix multiplication, solution of linear equations, transforms and differential equations; systolic arrays for the implementation of parallel algorithms in the areas of matrix arithmetic, transforms and relational database operations. VLSI implementations: VLSI and parallel computing structures; mapping of high-level computations into VLSI structures.

CS15164 (COMP 5008) COMPUTATIONAL GEOMETRY (3cr.)

CS15311 (COMP 5101) DISTRIBUTED DATABASES AND TRANSACTION PROCESSING SYSTEMS (3cr.)
Principles involved in the design and implementation of distributed databases and distributed transaction processing systems. Topics include: distributed and multi-database system architectures and models, atomicity, synchronization and distributed concurrency control algorithms, data replication, recovery techniques, and reliability in distributed databases.

ELG5104 (EACJ 5401) ELECTROMAGNETIC WAVES: THEORY AND APPLICATIONS (3cr.)

ELG5108 (EACJ 5305) ELECTROMAGNETIC COMPATIBILITY AND INTERFERENCE (3cr.)

ELG5161 (EACJ 5207) ROBOTICS: CONTROL, SENSING AND INTELLIGENCE (3cr.)

ELG5162 (EAJC 5005) KNOWLEDGE-BASED SYSTEMS: PRINCIPLES AND DESIGN (3cr.)

ELG5163 (EAJC 5105) MACHINE VISION (3cr.)

ELG5196 (EAJC 5709) AUTOMATA AND NEURAL NETWORKS (3cr.)
ELG5376 (EACJ 5507) DIGITAL SIGNAL PROCESSING (3cr.)

ELG5378 (EACJ 5509) IMAGE PROCESSING AND IMAGE COMMUNICATIONS (3cr.)

ELG6106 (SYS 5006) DESIGN OF REAL-TIME AND DISTRIBUTED SYSTEMS (3cr.)
Characteristics of real-time and distributed systems. Modern middleware systems, such as CORBA, DCE, RMI for building distributed applications: advantages and disadvantages. Analyzing designs for robustness, modularity, extensibility, portability and performance. Implementation issues. Major course project. Prerequisites: Engineering SYS 3303 and SYS 5708 or similar experience.

ELG6115 (SYS 5105) SOFTWARE QUALITY ENGINEERING AND MANAGEMENT (3cr.)
All aspects of software quality engineering. Software testing, at all stages of the software development and maintenance life cycle. Software reviews and inspections. Use of software measurement and quantitative modeling for the purpose of software quality control and improvement.

ELG6127 (SYS 5207) DISTRIBUTED SYSTEMS ENGINEERING (3cr.)

ELG6136 (SYS 5306) MOBILE COMPUTING SYSTEMS (3cr.)
Systems to build mobile applications. Covers data link layer to application layer. Emphasis on existing wireless infrastructure and IETF protocols. Focuses on view of mobile application developer; communication systems, middleware and application frameworks, de facto standards proposed/developed by industry consortia.

ELG6142 (SYS 5402) ADVANCED DYNAMICS WITH APPLICATIONS TO ROBOTICS (3cr.)

ELG6152 (SYS 5502) ADVANCED LINEAR SYSTEMS (3cr.)

ELG6160 (SYS 5600) ADAPTIVE SIGNAL PROCESSING (3cr.)
Theory and techniques of adaptive filtering, including Wiener filters, gradient and LMS methods; adaptive transversal and lattice filters; recursive and fast recursive least squares; convergence and tracking performance; implementation. Applications, such as adaptive prediction; channel equalization; echo cancellation; source coding; antenna beamforming, spectral estimation. Prerequisites: SYS 5503 or ELG 5119, or equivalent; SYS 5602 or ELG 5376 or equivalent.

ELG6163 (SYS 5603) DIGITAL SIGNAL PROCESSING: MICROPROCESSORS, SOFTWARE AND APPLICATIONS (3cr.)
Characteristics of DSP algorithms and architectural features of current DSP chips: TMS320, DSP-56xxx, AD-21xx and SHARC. DSP multiprocessors and fault tolerant systems. Algorithm/software/hardware architecture interaction, program activity analysis, development cycle, and design tools. Case studies: LPC, codec, FFT, echo cancellation. Viterbi decoding. Prerequisite: SYS 5602 or ELG 5376 or the equivalent.

ELG6164 (SYS 5604) ADVANCED TOPICS IN DIGITAL SIGNAL PROCESSING: SPEECH COMMUNICATIONS AND APPLICATIONS (3cr.)
Prerequisites: SYS 5602 or ELG 5376, or the equivalent, and permission of the Department.

ELG6168 (SYS 5609) WIRELESS COMMUNICATIONS SYSTEMS ENGINEERING (3cr.)
Multituser cellular and personal radio communication systems; frequency reuse, traffic engineering, system capacity, mobility and channel resource allocation. Multiple access principles, cellular radio systems, signalling and interworking. Security and authentication. Wireless ATM, satellite systems, mobile location, wireless LANs, wireless local loops, broadband wireless etc. Corequisites: SYS 5503 or ELG 5119, and SYS 5504 or ELG 5375, or their equivalents.

ELG6171 (SYS 5701) OPERATING SYSTEM METHODS FOR REAL-TIME APPLICATIONS (3cr.)
Principles and methods for operating system design with application to real-time, embedded systems. Concurrent programming: mechanisms and languages; design approaches and issues; run-time support (kernel). Methods for hard real-time applications. Methods for distributed systems; I/O handling.

Prerequisites: Engineering SYSC 3303 or SYSC 5704 or equivalent and/or experience. Programming experience in high level and assembly languages.

ELG6180 (SYSC 5800) NETWORK COMPUTING (3cr.)
Design and Java implementation of distributed applications that use telecommunication networks as their computing platform. Basics of networking; Java networking facilities. Introduction to open distributed processing; CORBA, JavaIDL, JavaRMI, CGENHTTP, DCOM, Componentware; Enterprise JavaBeans, ActiveX. Agents: Java code mobility facilities. Security issues; Java security model.

ELG6377 (ELEC 5707) MICROELECTRONICS SENSORS (3cr.)
Physical design of microelectromechanical systems (MEMS) and microfabricated sensors and actuators. An overview of thin and thick film processes and micromachining techniques will provide fabrication background. Design of a variety of devices including piezoresistive, piezoelectric, electromagnetic, thermal, optical, and chemical sensors and actuators.

ELG7171 (EACJ 5600) TOPICS IN SIGNAL PROCESSING I (3cr.)
ELG7173 (EACJ 5601) TOPICS IN SIGNAL PROCESSING II (3cr.)

MAT5190 (STAT 5600) MATHEMATICAL STATISTICS I (3cr.)
Statistical decision theory; likelihood functions; sufficiency; factorization theorem; exponential families; UMVU estimators; Fisher's information; Cramer-Rao lower bound; maximum likelihood and moment estimation; invariant and robust point estimation; asymptotic properties; Bayesian point estimation. Prerequisites: MAT 3172 and MAT 3375.

MAT5191 (STAT 5501) MATHEMATICAL STATISTICS II (3cr.)
Confidence intervals and pivots; Bayesian intervals; optimal tests and Neyman-Pearson theory; likelihood ratio and score tests; significance tests; goodness-of-fit tests; large sample theory and applications to maximum likelihood and robust estimation. Prerequisite: MAT 5190.

MAT5198 (MATH 5701) STOCHASTIC MODELS (3cr.)
Markov systems, stochastic networks, queuing networks, spatial processes, approximation methods in stochastic processes and queuing theory. Applications to the modelling and analysis of computer-communications systems and other distributed networks.

MAT5317 (STAT 5602) ANALYSIS OF CATEGORICAL DATA (3cr.)
Analysis of one-way and two-way tables of nominal data; multi-dimensional contingency tables, log-linear models; tests of symmetry, marginal homogeneity in square tables; incomplete tables; tables with ordered categories; fixed margins, logistic models with binary response; measures of association and agreement; applications biological.

MAT5992 (STAT 5902) SEMINAR IN BIOSTATISTICS (3cr.)
Students work in teams on the analysis of experimental data or experimental plans. The participation of experimenters in these teams is encouraged. Student teams present their results in the seminar, and prepare a brief written report on their work.

MCG5117 (MAAJ 5107) INTRODUCTION TO COMPOSITE MATERIALS (3cr.)
Review of strengthening mechanism in metals and polymers. Fiber-reinforced composite materials: strengthening mechanism, prediction of strengths and moduli, specific properties, fracture mechanisms, toughness, fatigue, creep, effect of environment; fabrication methods and engineering applications. Laminates; mechanical properties and engineering applications.

MCG5152 (MAAJ 5502) THEORY OF TURBULENCE (3cr.)

MCG5173 (MAAJ 5703) SYSTEMS ENGINEERING AND INTEGRATION (3cr.)
Introduction to modelling methods employed for the planning and design of sub-systems and complex systems. Discrete and continuous time, lumped and distributed parameters models. State estimation. Parameters identification. Discretization and stochastic effects. Technological systems modelling and simulation examples.

MCG5177 (MAAJ 5707) ROBOT MECHANICS (3cr.)
Robotics overview. Transformations. Basics of robot kinematics, statics and dynamics. Introduction to practical robots, control and programming. Project in analysis, design or application of manipulators. Not accessible to students who have taken MCG-4132.

MCG5317 (MECH 5107) EXPERIMENTAL STRESS ANALYSIS (3cr.)

MCG5332 (MECH 5302) INSTRUMENTATION TECHNIQUES (3cr.)
An introduction for the non-specialists to the concepts of digital and analog electronics with emphasis on data acquisition, processing and analysis. Topics covered include operational amplifiers, signal processing, digital logic systems, computer interfacing, noise in electronic systems. Hands-on sessions illustrate theory and practice.

**PHYS112 (PHYS 5204) PHYSICS OF MEDICAL IMAGING (3cr.)**
Physical foundation of, and recent developments in, transmission x-ray imaging, computerized tomography, nuclear medicine, magnetic resonance imaging, and ultrasound, for the imaging physics specialist. Imaging system performance: contrast, resolution, modulation transfer function, signal-to-noise ratio, detective quantum efficiency. Essentials of image display and processing.

**Biostatistics (MSc) (Collaborative)**

**Ottawa-Carleton Joint Program**

**General Information**

The Ottawa-Carleton Institute combines the research strengths of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master's (MSc) and doctoral (PhD) degrees in several fields (biology, chemistry, earth science, etc.).

Biostatistics is an interdisciplinary area of research linking statistics, biology, medicine, and health sciences. This growing area demands knowledge of the theory behind statistical procedures, an ability to put that theory into practice, and an understanding of the area of application. The applications range from clinical trials to population epidemiology and the development of new procedures. The specialization is intended to prepare a student for a career as a biostatistician in a health-related industry, or for a career in research.

The program operates within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the general regulations of the graduate faculty at the two universities. The "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

**Participating Units**

The primary participating units are:

1. The Ottawa-Carleton Institute of Mathematics and Statistics (OCIM), the joint graduate program of the Department of Mathematics and Statistics at the University of Ottawa and of the School of Mathematics and Statistics at Carleton University.
2. The Epidemiology and Community Medicine graduate program of the Department of Epidemiology and Community Medicine at the University of Ottawa.

**Admission**

Admission to the collaborative program in biostatistics is governed by the «General Regulations» of the Ottawa-Carleton Institute and by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Candidates must indicate in their admission form that they wish to be accepted in the collaborative program.

All applicants must be able to understand speak and write proficiently in either English or French. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be admitted in one of the programs participating in the collaborative program of the Institute;
2. Be the holder of a bachelor's degree with a major or a specialization in biostatistics (or equivalent) with a minimum average of 75% (B+);
3. Provide at least one letter of recommendation from a professor who is willing and available to act as thesis supervisor;
4. Be sponsored into the collaborative program by a faculty member, normally the thesis supervisor, who must be appointed, cross-appointed or stand as an adjunct at one or more of the participating units.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

**Program Requirements**
Master's Degree Requirements

Master's Degree with Thesis

Master's in mathematics

The following requirements must be met:

1. 21 credits including EPI5240, EPI5241, EPI6178, EPI6278, MAT5190, MAT5191 and 3 credits of graduate course in mathematics and statistics;
2. Enrollment in the seminar course in biostatistics (STAT5902), which involves the presentation of a seminar, and the regular attendance to the seminars presented by the Department;
3. Presentation and defense of a thesis in biostatistics based on an original research carried out under the supervision of a faculty member participating in the biostatistics collaborative program.

Master's in epidemiology

The following requirements must be met:

1. 21 credits including EPI5240, EPI5241, EPI5330, EPI6178, EPI6278 and two graduate courses of 3 credits each in mathematics and statistics;
2. Enrollment in the seminar course in biostatistics (STAT5902), which involves the presentation of a seminar, and the regular attendance to the seminars presented by the Department;
3. Presentation and defense of a thesis in biostatistics based on an original research carried out under the supervision of a faculty member participating in the biostatistics collaborative program.

Master's by coursework (only available for the mathematics program)

The following requirements must be met:

1. 27 credits including EPI5240, EPI5241, EPI6178, EPI6278, MAT5190, MAT5191 and three graduate courses of 3 credits each in mathematics and statistics;
2. Enrollment in the seminar course in biostatistics (STAT5902), which involves the presentation of a seminar, and the regular attendance to the seminars presented by the Department.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d’Ottawa correspond à un cours de 0,5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

MAT5190 (STAT 5600) MATHEMATICAL STATISTICS I (3cr.)
Statistical decision theory; likelihood functions; sufficiency; factorization theorem; exponential families; UMVU estimators; Fisher's information; Cramer-Rao lower bound; maximum likelihood and moment estimation; invariant and robust point estimation; asymptotic properties; Bayesian point estimation.
**Business Administration (MBA)**

**Introduction**

The Telfer School of Management offers the following graduate programs: Master of Business Administration (MBA), Master of Health Administration (MHA), Master of Science (MSc) in Management, Master of Science (MSc) in Health Systems as well as three combined programs: MBA-Juris Doctor; MBA-LL.L; MBA-LL.M. (droit notarial). In addition, it is a partner in a number of interdisciplinary graduate programs, such as, Engineering Management, Systems Science; E-Business Technologies. Each of these programs has its own section in the graduate calendar.

The MBA is a tightly integrated intensive program that prepares candidates in the early stages of their professional career for the managerial and leadership responsibilities of a rapidly changing technology-intensive global business environment. The program allows for full-time or part-time study in English or French. The program is cohort-based, meaning that students within a cohort will take the same core courses according to a pre-determined structured sequence allowing them to progressively acquire knowledge by building on sound common foundations. This structured approach to program delivery also allows for greater integration across courses.

The program may be completed on a full-time basis over twelve (12) consecutive months. If the degree requirements are completed on a part-time basis, program duration is then normally thirty-six (36) months. However, part-time students may choose to complete the intensive International Summer Exchange Program which would allow them to complete their MBA in as little as twenty-eight (28) months.
The program provides a strong foundation in all management disciplines, develops management and people skills, and refines the students' ability to view and analyze issues, opportunities and situations from a strategic perspective, allowing them to become responsible agents of change. Emphasis is placed on the applications of relevant, contemporary management concepts, models and philosophies with an integrated approach to problem solving and an appreciation of all aspects of the organization.

The pedagogical approach stresses teamwork and managerial skills development. It allows the student to grapple with real-world challenges facing organizations through industry-based integrating projects that draw upon multiple disciplines.

The student population is drawn from around the world and brings to the program a variety of educational backgrounds as well as professional expertise from the private and public sectors.

The program combines academic excellence with a strong concern for the practical challenges facing modern managers. To this end, it makes significant use of practitioner-oriented teaching materials and business simulations, and allows students to become actively involved with organizations.

Throughout this text, the terms "course" refers both to three-credit courses and to 1.5 credit modules.

Program Delivery

Cohorts and Work Groups

The MBA Program is designed to build on the academic and cultural diversity of its student body. A cohort environment allows students to work and learn together, benefitting from each other’s strengths, capabilities and experience. The program carefully creates work groups composed of students with different academic, cultural and professional profiles. Progressing through the program in these work groups provides students with an enriching learning experience and a unique opportunity to develop their ability to function within a culturally diverse environment.

The integrated MBA curriculum prepares students to become leaders in a technology-intensive global economy and as such is delivered around five majors themes:

- Understanding Management Foundations and the Global Business Environment
- Developing a Strategic Perspective
- Integrating Business Functions
- Managing in a Technology-Intensive Global Economy
- Providing Value to the Business Community

Courses

Many of the program requirements consist of 3-credit courses, normally offered on the basis of three hours per week over twelve weeks during a university session. Each session has been divided into two blocks, allowing the program to also offer 1.5-credit courses, also known as modules. The 18-hour modules, normally offered over a six-week period, provide more variety in course offerings and allow flexibility in course delivery, as some modules may be offered in an intensive format such as over a 3-day weekend. Any given course is normally offered only once a year in a specific academic session or block. Multiple sections (day and evening) of each course may be scheduled in the same session or block, given the program structure and based on enrollment figures; some courses are offered only in the evenings. The Telfer School of Management may choose not to offer a course for which the demand is too low.

The Telfer School of Management offers graduate courses under four different course codes. The course codes identify to which student population the course is open, as summarized below. All students must have the appropriate prerequisites.

- **MBA 5XXX, MBA 6XXX**: Courses specifically designed for the MBA program. Access to these courses is normally limited to MBA students, to graduate exchange students coming to the Telfer School of Management, to graduate students on letter of permission, and to alumni of the MBA, MHA or Executive MBA programs. Some sections of some MBA courses are also open to students in the Master's of Engineering Management (EMP) program. All MBA 5000-level courses are compulsory for all MBA students.

- **HAH 6XXX**: Courses specifically designed for the MHA program. These courses are open to all MHA students, as well as to other University of Ottawa graduate students. Exchange graduate students, graduate students on letter of permission, as well as alumni of the MBA, MHA or Executive MBA programs may also register.

- **ADM 5YYY, ADM 6YYY**: Courses specifically designed for the multi-disciplinary programs in which the Telfer School of Management is involved. These courses are open to all students registered in a University of Ottawa graduate program, and in particular the Master's in Engineering Management Program (EMP), and the Graduate Certificate Programs offered by the Faculty of Graduate and Postdoctoral Studies. Exchange graduate students, graduate students on letter of permission, as well as alumni of the MBA, MHA or Executive MBA programs may also register.

- **ADX ZZZZ**: Courses that are exclusively offered to the Telfer School of Management Executive MBA (EMBA) students and alumni. See the EMBA web page for more details (www.emba.uottawa.ca).

Computer Facilities

The Telfer School of Management offers students well-equipped computer facilities. Hardware and software common in business are available.
Computers are also used as a main teaching tool in the many multimedia classrooms available on campus.

The MBA program fosters the development of its students' computer skills by providing them with continuous access to the most current suite software, to financial databases, to specialized business software, as well as to the Internet and electronic mail. It also makes available computer and multimedia equipment for the preparation of assignments and class presentations required by the program. Twelve study rooms have been set aside for the exclusive use of MBA students: each room is equipped with two PCs, one white board, one work table and six chairs and are ideal for group work and discussions.

In addition to those tools and services provided by the Telfer School of Management, students can access computer, communication and multimedia services provided to all University students. Some of these services are available by dial-in access outside the campus.

**Career Services**

The Telfer School of Management has an internal career service that supplements the services offered by the Career and Employment Centre on campus. Our Career Centre offers a large variety of free services to the Telfer School of Management students and alumni. Our mission is to provide a service that builds, develops and maintains successful partnerships between students and employers by: creating employment opportunities, enhancing student value and facilitating the employers' recruitment process.

Students can take advantage of our MBA Career Development program. This four stage program consists of a series of workshops covering multiple topics ranging from resume building to career planning. Some of our other services include: career testing, several networking events, employer panels, the MBA student trip, our Career Navigator, and our resource centre.

All of our services are designed to complement the students' academic knowledge with self-understanding and career development tools that will lead them to establish a meaningful and successful career.

[www.telfer.uOttawa.ca/careercentre](http://www.telfer.uOttawa.ca/careercentre)

carrieres@telfer.uottawa.ca

**Admission**

**Admission Process**

Entry into the MBA program takes place in the fall (full-time and part-time students). Classes normally start at the beginning of the last week of August. The deadline for the receipt of completed admission applications is April 1 of the year of potential entry.

Due to immigration requirements, all applications other than those from Canada, the United States and Europe must be received no later than February 1. Late applications may be considered but only at the discretion of the Telfer School of Management.

In the application to the MBA program, students must elect to study in English or in French and are placed, once admitted, in a cohort/study group accordingly.

When applying to the program, candidates must provide the following:

- a duly completed application form
- a non-refundable application fee
- original transcripts from all postsecondary institutions attended, as well as any additional evidence of academic excellence, such as grade point average, class rank, awards, publications and professional designations
- a current curriculum vitae that details managerial or professional experience
- two confidential letters of recommendation that comment on the applicant's suitability for graduate study
- a 500-word narrative statement that indicates the applicant's personal motivation for entering the MBA program, and how the applicant will contribute to the learning environment
- official GMAT score for candidates that apply to the English program
- proof of language proficiency for candidates whose mother tongue is not English (if they apply to the English program) or French (if they apply to the French program)

In some cases, applicants may be required to attend a personal interview with a representative of the MBA program.

In its evaluation of applicants, the admission committee will identify those who lack mathematical background and will strongly recommend that they complete four Quantitative Analysis for Business Modules (namely "Basic Mathematics", "Spreadsheet for Statistics", "Mathematics for Finance", and "Calculus for Microeconomics") offered in a hybrid delivery mode (on-line with some one-on-one tutorials with a professor; the modules can be done completely on-line for students who cannot attend live tutorials). Furthermore, all students admitted will be invited to complete these four modules to refresh their quantitative analysis skills.

All applications, supporting documents and inquiries from candidates for the MBA program should be sent to the Telfer School of Management
at the address provided at the beginning of this document.

NB: The selection committee will not consider applications without all the required documents.

**Admission Criteria**

Admission to the program is competitive and the number of candidates admitted is limited. Admission will be granted only to those who clearly demonstrate a high promise of success in the MBA program.

Admission to the master of business administration program is open to candidates:

- holding a Canadian baccalaureate degree or its equivalent with minimum standing of B, or a 70 per cent overall average. The Faculty of Graduate and Postdoctoral Studies will determine the equivalency of qualifications for applicants from non-Canadian institutions. In addition, a limited number of candidates may be considered for admission on the basis of substantial managerial or professional training and experience (at least 10 years), provided there is strong evidence of management responsibilities and career progression, even if they do not hold a university degree or do not meet the minimum academic requirements.

- having acquired a minimum of two years full-time work experience. In general, preference is given to those applicants who have greater work experience, particularly when there is evidence of management responsibilities and career progression. Co-op placements and work internships completed to meet the requirements of a postsecondary academic program will be viewed favorably at the time of admission, but do not constitute a replacement for the full-time work experience requirement.

- having achieved at least a 50th percentile score on the Graduate Management Admission Test (GMAT), with strong standing for each individual test component, including at least a 4.5 score on analytical essay writing. Applications for the GMAT can be obtained from Educational Testing Service, Box 966-R, Princeton, New Jersey, USA, 08540; consult [www.mba.com](http://www.mba.com) for more details.

Candidates whose mother tongue is neither English nor French are required to provide evidence of proficiency in one of these languages. Candidates applying to the English MBA must submit one of the following to the Faculty of Graduate and Postdoctoral Studies to confirm their English proficiency (the test scores cannot be more than two years old as of September 1 of the year of potential entry into the MBA program):

1. A score of at least 250 on the Test of English as a Foreign Language (TOEFL), with a score of at least 5 on the Test of Written English (TWE) and a score of at least 50 on the Test of Spoken English (TSE). The TOEFL is administered by Educational Testing Service, Box 899, Princeton, New Jersey, USA, 08540; see also [www.toefl.org](http://www.toefl.org).

2. A score of at least 7 in at least three of the four International English Language Testing System (IELTS) tests (Reading, Listening, Writing, Speaking) and at least 6 in the fourth. The IELTS is administered by the British Council: [www.ielts.org](http://www.ielts.org).

3. A score of at least 14 on the CANTEST, administered by the University of Ottawa, with no individual test score below 4.0, along with a score of 4.5 on the oral component of the test.

4. Proof of completion within the last five years, of a previous degree program in an English language university.

5. Proof of recent prolonged residence and exercise of a profession in an English speaking country (normally at least four years over the last six years).

Candidates applying to the French MBA must submit one of the following to confirm their French proficiency:

- a score of at least 14 on the TESTCAN, administered by the University of Ottawa, with no individual test score below 4.0, along with a score of 4.5 on the oral component of the test.

- Proof of completion within the last five years, of a previous degree program in a French language university.

- Proof of recent prolonged residence and exercise of a profession in a French-speaking country (normally at least four years over the last six years).

It is recommended to students opting for the French cohort to have passive knowledge of English (ability to read and understand spoken English).

**Recognition of Courses**

**Exemptions, Retained Credits and Advanced Standing**

At the time of admission, students may be granted exemptions, retained credits or advanced standing for graduate courses in management previously completed as a regular student in a Canadian MBA program or similar program accredited by the AACSB International or equivalent.

Exemptions, retained credits and advanced standing may also be granted for graduate courses previously completed in a University of Ottawa interdisciplinary program in which the Telfer School of Management is involved.

The maximum number of credits that can be granted as exemption, retained credits or advanced standing is 24, and all students must complete a minimum of 30 credits of MBA or ADM courses following admission to be granted the degree. No exemption or advanced standing will be granted for courses completed more than five years previously or for which the grade was lower than B (70 per cent). Retained credits and advanced standing are granted only for 5000-level MBA courses.

**Computer Skills**
Students must be proficient in the use of computers and basic applications related to management, such as word processing, spreadsheets, presentation software, Internet browsers and e-mail.

Program Requirements

Degree Requirements
MBA Full-Time Studies

To obtain the MBA degree, students must successfully complete fifty-four (54) graduate level credits consisting of:

• 39 credits of 5000-level MBA courses
• 9 credits of elective 6000-level MBA, ADM or MHA courses
• 6 credits for the Management Consulting Project (MCP), namely MBA 6269 Management Consulting (1.5 cr.) and MBA 6499 MBA Consulting Project (4.5 cr.)

As described below, part-time students who complete 12 credits in international exchange are exempted from the six-credit MCP requirement.

The courses for the full-time MBA students are offered in a specific sequence over twelve (12) months. Full-time sections of courses are normally offered between 8:30 am and 5:30 pm on weekdays. However, in the case of low enrollment, the full-time and part-time cohorts may be combined for some courses offered in the evening (between 4:00 pm and 10:00 pm). The schedule of courses for full-time students appears on the Full-Time Studies Master Schedule on the MBA program website.

Summary of Course Requirements

Understanding Management Foundations and the Global Business Environment (15 cr.)

This set of courses introduces the tool and skill sets needed by senior managers and provides a good understanding of the context in which businesses operate. The MBA program begins with a period dedicated to management skills development (MBA 5235): this is normally scheduled during the last two weeks of August for full-time students.

MBA5210 BUSINESS / GOVERNMENT RELATIONS (1.5cr.)
MBA5235 MANAGEMENT SKILLS 1 (1.5cr.)
MBA5236 LEADERSHIP AND MANAGEMENT (1.5cr.)
MBA5241 MANAGERIAL ACCOUNTING INFORMATION AND DECISIONS (1.5cr.)
MBA5300 DATA ANALYSIS (3cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)
MBA5355 ECONOMICS FOR THE GLOBAL MANAGER (3cr.)

Developing a Strategic Perspective (7.5 cr.)

This set of courses focuses on strategic thinking. Scheduled during the last week of August, the module "The World of the General Manager and of Strategic Management" sets the stage for the continuous integration of the strategic perspective throughout the curriculum. This perspective also permeates the coverage of the business functions. Students must apply models of performance and value in strategic management on the basis of their underlying understanding of all management disciplines and functions, and their relative strategic role and importance.

MBA5211 CORPORATE GOVERNANCE AND ETHICS (1.5cr.)
MBA5237 CHANGE MANAGEMENT (1.5cr.)
MBA5260 THE WORLD OF THE GENERAL MANAGER AND OF STRATEGIC MANAGEMENT (1.5cr.)
MBA5360 STRATEGY FORMULATION AND IMPLEMENTATION (3cr.)

Understanding and Integrating Business Functions (12 cr.)

This set of courses presents the strategic importance of the major functions of the firm. Models of integration of the business functions through information technology and the tools of the new economy are explored.

MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MBA5350 CORPORATE FINANCIAL MANAGEMENT (3cr.)
MBA5380 OPERATIONS MANAGEMENT (3cr.)

Managing in a Technology-Intensive Global Economy (13.5 cr.)

The common core includes courses which present the methods and processes, with regard to the management of technology, used by organizations in establishing and using performance management systems to achieve strategic success. Moreover, the program offers a variety of elective courses that address technological issues faced daily by managers in today's fast-paced highly competitive economy, such as technology strategies, information management,
management of innovation and R&D activities and growth management. As the globalization of markets and technology and the growth of the Internet and of e-business push firms of all sizes to develop and pursue growth strategies beyond national boundaries, it is important for students to develop a strategic vision as well as the tools needed to become the next leaders in a technology-intensive global economy.

MBA5270 INFORMATION AND COMMUNICATION TECHNOLOGIES FOR MANAGERS (1.5 cr.)
MBA5265 PERFORMANCE MANAGEMENT (1.5 cr.)
MBA5266 PERFORMANCE MANAGEMENT: BUSINESS PROCESS MODELLING (1.5 cr.)

9 credits of 6000 level courses (MBA, ADM, HAH) - see titles and description in the course description section of the calendar

Providing Value to the Business Community (6 cr.)
In partnership with the Canadian Association of Management Consultants (C AMC), the MBA program allows students to learn about and apply best practices in management consulting. Under the joint supervision of a faculty member, an executive from the client organization, and of a practicing and experienced Certified Management Consultant, students address an issue or a problem of importance being faced by a private or public organization. Client organizations gain access to motivated, experienced and talented MBA candidates for addressing real-time organizational needs and challenges. Students get to apply newly acquired knowledge and skills as well as recognized consulting practices and gain relevant practical experience through exposure to concrete managerial challenges.

MBA6269 MANAGEMENT CONSULTING (1.5 cr.)
MBA6499 MBA CONSULTING PROJECT (4.5 cr.)

MBA Part-Time Studies
Part-time students may choose to complete the entire program on campus, or to participate in one of the School's intensive International Exchange Programs (see the International Summer Intensive Programs section for more details). In both cases, students must complete all 5000-level courses, (for a total of 39 credits) as well as 15 credits of 6000-level courses. The compulsory MBA orientation and management skills development (MBA 5235) period for part-time students normally takes place in the last weekend of August.

Part-time students completing the entire program on campus can meet the degree requirements within thirty-six (36) months. Part-time students participating in an Exchange program may complete the degree requirements within twenty-eight (28) months. All part-time students must follow the same cohort sequence over the first two years in the program for 5000-level courses, as outlined on the Part-Time Studies Master Schedules (see the MBA program web site). Exceptions are permitted only for valid reasons, such as illness. Students must apply to the graduate programs secretariat in writing for permission to deviate from the set sequence.

Once the 5000-level courses have been completed, students may meet the remaining degree requirements at their own pace: however, all degree requirements must be completed within five (5) years. Courses for part-time MBA students are normally offered from 7 to 10 pm on weekdays. Some courses are offered in an intensive format over a week or a three-day weekend. The Part-Time Studies (Campus) Master Schedule illustrates how to complete the degree requirements within thirty-six (36) months while the Part-Time Studies (Exchange) Master Schedule illustrates how to complete the degree requirements within twenty-eight (28) months (see MBA program web site for details).

International Summer Intensive Exchange Program
Part-time students have an opportunity to complete up to twelve (12) credits of the program requirements through the intensive International Summer Exchange Program. The program is offered in English at the École Supérieure de Commerce de Reims (France). Students may complete two courses (6 credits) over two weeks, or four courses (12 credits) over four weeks, normally in June or July. In both cases they must complete a research project on a topic set by the MBA program, to be submitted prior to their departure. Selection is competitive. Interested students should contact the International Exchange Office early in the program for more details regarding the exchange.

In order to be able to complete the MBA degree requirements in twenty-eight (28) months, students must complete the four-week Exchange Program, and must register to three week-long intensive courses offered in Ottawa in the Spring/Summer session (the list of courses offered in an intensive format may vary from year to year).

Students who choose to register to the four-week Exchange program must complete the following 6000-level courses:

MBA 6165/6166/6167/6168: International Exchange Course 1/2/3/4 (3 credits each)

In addition to completing these four courses, students will be required to submit a 20 to 25 page report on an International Business issue to be determined by the program. A grade of (S) satisfactory or (NS) not satisfactory will be granted for this paper. However, students must obtain the (S) satisfactory grade on the paper to be granted the 12 credits.

At least three credits from the list of electives: Any MBA, HAH or ADM 6000-level course.

Students participating in the four-week exchange program are exempted from the Management Consulting course and project (MBA 6269 and MBA 6499 respectively).

Students who choose to register in only two weeks of the Exchange Program must complete the following 6000-level courses:

MBA 6165/6166: International Exchange Course 1/2 (3 credits each)
In addition to completing these two courses, students will be required to submit a 15 to 20 page report on an International Business issue to be determined by
the program. A grade of (S) satisfactory or (NS) not satisfactory will be granted for this paper. However, students must obtain the (S) satisfactory grade on the
paper to be granted the 6 credits.

Students participating in the two-week exchange program must complete the Management Consulting course and project (MBA 6269 and MBA 6499
respectively) (6 cr.)

At least 3 credits from:
Any MBA, HAH or ADM 6000-level course.

In addition to the Reims exchange program, part-time students may also take part in the two-week exchange program (6 credits) in collaboration with the École
de Management de Nantes (Audencia). The first week session, offered in French, will take place in Nantes and Brussels (between blocks 1 and 2) while the
second week, offered in English, will take place in Ottawa during the Spring session (beginning of block 5). This program will be followed with the Executive
MBA students from Audencia. For additional details pertaining to this unique opportunity, consult the Graduate Secretariat.

Language of Instruction

In their application to the MBA program, students must choose between English and French as their language of instruction. Students opting for the French
cohort must have at least a passive knowledge of English (ability to read and understand spoken English). All 5000-level courses will be taught in the chosen
language of instruction. At the 6000-level, priority will be given to students from the English cohorts for courses offered in English, and to students in the French
cohorts for courses offered in French. Students wishing to take a 6000-level course given in a language other than that of their cohort will have to show evidence
of proficiency.

Change of Classification

Students wishing to change their registration classification from full-time status to part-time status, and vice versa, must consult an academic advisor, who will
assist in planning their course schedule. A full analysis of the courses completed at the time of the change of classification request will determine the exact
remaining program requirements and expected time to completion. All requests for change in registration status are subject to the approval of the Faculty of
Graduate and Postdoctoral Studies.

Duration

The MBA program may be completed on a full-time basis. The curriculum and full-time course sequencing have been designed to support the high level of
coordination and integration across courses that make it possible to deliver the program over twelve (12) consecutive months. This in turn allows students to
return quickly to the work force upon completion of their MBA studies.

The MBA program is also offered on a part-time basis for students who wish to complete MBA studies while maintaining full-time employment. It can be
completed within thirty-six (36) consecutive months but students must fulfill the degree requirements in a maximum of five (5) years. Moreover, students may
choose to accelerate their studies by participating in the intensive International Summer Exchange Program in Europe.

Evaluation and Promotion

The term "courses" refers both to 3-credit courses and to 1.5-credit modules.

Grades are awarded according to the following scale:

<table>
<thead>
<tr>
<th>Grade Code</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90 - 100%</td>
</tr>
<tr>
<td>A</td>
<td>85 - 89%</td>
</tr>
<tr>
<td>A-</td>
<td>80 - 84%</td>
</tr>
<tr>
<td>B+</td>
<td>75 - 79%</td>
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<tr>
<td>B</td>
<td>70 - 74%</td>
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<tr>
<td>C+</td>
<td>65 - 69%</td>
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<tr>
<td>C</td>
<td>60 - 64%</td>
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<tr>
<td>D+</td>
<td>55 - 59%</td>
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<tr>
<td>D</td>
<td>50 - 54%</td>
</tr>
<tr>
<td>D-</td>
<td>45 - 49%</td>
</tr>
<tr>
<td>E</td>
<td>40 - 44%</td>
</tr>
<tr>
<td>F</td>
<td>0 - 39%</td>
</tr>
</tbody>
</table>

ABS-EIN*

* ABS - (absent, no work submitted) Awarded to a student who has not attended the course and has not informed the academic unit and the Faculty of
Graduate and Postdoctoral Studies in writing, within two weeks of the start of the course. This symbol is equivalent to a failing grade (F).

* EIN - (incomplete) Awarded when at least one of the compulsory elements of evaluation have not been provided. This symbol is equivalent to a failing grade (F).

Dropping Courses

Given the integrative nature of the program delivery, full-time and part-time students are not allowed to drop 5000-level courses: however, they may drop
6000-level courses, but only during the first two weeks of classes.
Minimum Standards and Failures

Students must meet the following requirements throughout their program:

1. Minimum Cumulative Grade Point Average and Probation Period

Students must maintain a cumulative grade point average (CGPA) of 6.0 throughout the program and their overall CGPA upon completion of all requirements must be 6.0 in order to qualify for graduation. Those who fail to maintain an average of 6.0 at the time of the periodic review are placed on probation. All courses, passed and failed, are included in the calculation of the CGPA.

The CGPA of full-time students will be reviewed at the end of each academic session. Part-time students' performance will be reviewed at the end of Block 6 for the first year of the program. Thereafter, their performance will be evaluated upon completion of each additional 12 credits. Students who fail to qualify for removal from probation at the next review must withdraw from the program.

2. Failures

2.1. General Policy:

a) Students who received failing grades (below C+ (or 65 per cent) on the previous scale) in more than 3 credits must withdraw from the program.

b) Students who fail a repeated course or module must withdraw from the program.

2.2. 5000-level Courses:

a) Grades below 50%: Students receiving a grade below 50 percent (E or F on the previous scale) in any 5000-level course must repeat the failed course. Moreover, registration in any course for which the failed one is a prerequisite is prohibited until such time as the failed course has been passed.

b) Grades between 50% and 64%: Students receiving a grade between 50 and 64 percent (D, D+ or C on the previous scale) in a 1.5-credit 5000-level module must replace the credits by successfully completing a module of their choice (the same 5000-level module or any 6000-level one). Any 3-credit 5000-level course in which a student received a grade between 50 and 64 percent must be repeated. In both cases, registration is permitted in any other 5000-level course for which the failed one is a prerequisite. This is to ensure that students take their 5000-level courses with their entry cohort. Registration is, however, prohibited in any 6000-level course for which the failed one is prerequisite, until the failed 5000-level course has been passed.

2.3 6000-level Courses:

a) A failed 6000-level module must be replaced by the same or another 6000-level module, and the student may not register in any module for which the failed module is a prerequisite.

Students who fail to meet these requirements must withdraw from the program.

Transfer of Credits

Under certain circumstances, students registered in the program may take courses in another faculty or at another university and have the credits transferred towards the requirements of the degree. Arrangements for registration in such courses must be approved in advance by the Telfer School of Management and completed by the closing date for registration in the MBA program in the session concerned.

Students who intend to take courses at Ontario universities must complete in advance the form entitled Ontario Visiting Graduate Student Application, available at the secretariat of the School or at the FGPS. Students who intend to take courses at a university outside of Ontario must obtain in advance a Letter of Permission from the School or from the Faculty of Graduate and Postdoctoral Studies.

The combined maximum number of credits allowed in retained credits, advanced standing or in transferred credits is 24. The regular rules of evaluation and promotion apply to all courses taken for transfer.

Change of Grade on the Record

Revision

Students wishing to request a review of any marked assignments returned while the course is in progress must do so within one week of receipt of the marked assignment from the professor. Students wishing to request a review of final examinations and term work returned after the end of a course must do so within one week following the posting of grades by the graduate programs secretariat.

The request must be made in writing to the graduate programs secretariat using the special form available for this purpose. A copy of the student's request will be forwarded to the professor, who will submit his decision to the director of the MBA program, using the Change of Grade Report. The graduate programs secretariat will inform the student of the decision: if applicable, the revised grade will be forwarded to the Faculty of Graduate and Postdoctoral Studies.

Appeal process

A student who is not satisfied with the professor's decision, and who wishes to proceed with a formal review, must submit a written request to the graduate
programs secretariat within one week of communication of the professor's decision. The Director of the MBA program will proceed with a reevaluation according to the procedure approved by the Senate of the University, a copy of which can be found at the graduate programs secretariat or at the Faculty of Graduate and Postdoctoral Studies (FGPS). One or two professors qualified in the discipline and appointed by the director of the MBA program will re-assess the assignment, test or examination in question and will submit their decision to the Director of the MBA program, who will communicate the decision to the student.

A student who disagrees with this decision may, within a week of communication of the Telfer School of Management decision, submit a written appeal to the dean of the FGPS, who will refer the appeal to the Executive Committee of the FGPS.

Graduate Diploma in Business Administration

The Graduate Diploma is awarded only to students already registered in the MBA or MHA programs who are not continuing in these programs.

In order to receive the Graduate Diploma, candidates must:
- be admitted and registered in either the MBA or the MHA program;
- have completed at least 27 credits of MBA or MHA or ADM courses with satisfactory performance (normally with a 6.0 cumulative grade point average), including at least 12 credits of MBA 5000-level courses from the following list:

MBA5210 BUSINESS / GOVERNMENT RELATIONS (1.5cr.)
MBA5211 CORPORATE GOVERNANCE AND ETHICS (1.5cr.)
MBA5235 MANAGEMENT SKILLS 1 (1.5cr.)
MBA5236 LEADERSHIP AND MANAGEMENT (1.5cr.)
MBA5237 CHANGE MANAGEMENT (1.5cr.)
MBA5241 MANAGEMENT INFORMATION AND DECISIONS (1.5cr.)
MBA5260 THE WORLD OF THE GENERAL MANAGER AND OF STRATEGIC MANAGEMENT (1.5cr.)
MBA5265 PERFORMANCE MANAGEMENT (1.5cr.)
MBA5266 PERFORMANCE MANAGEMENT: BUSINESS PROCESS MODELLING (1.5cr.)
MBA5270 INFORMATION AND COMMUNICATION TECHNOLOGIES FOR MANAGERS (1.5cr.)
MBA5300 DATA ANALYSIS (3cr.)
MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)
MBA5350 CORPORATE FINANCIAL MANAGEMENT (3cr.)
MBA5355 ECONOMICS FOR THE GLOBAL MANAGER (3cr.)
MBA5360 STRATEGY FORMULATION AND IMPLEMENTATION (3cr.)
MBA5380 OPERATIONS MANAGEMENT (3cr.)

Combined Programs

Three different combined programs – MBA-JD, MBA-LLL, and MBA-LLL M. (droit notarial) – offer students the possibility of completing the MBA degree in conjunction with a degree in law. The total time required is shorter than if the degrees are completed separately. These programs are described under A and B below.

A. Combined MBA-Juris Doctor / MBA-LLL Program

Jay Hennick MBA-Juris Doctor / MBA-LLL

The Telfer School of Management and the Faculty of Law jointly offer a combined MBA-Law program. This program allows the student a choice between the two areas of study in Canadian law. The student may obtain a combination of the MBA and JD (Juris Doctor) degrees or the MBA and LLL (licentiate in law) degrees within 40 months on a full-time basis.

This program is intended for individuals who wish to acquire the skills and knowledge of the two major disciplines, management and law, which are becoming increasingly valuable in modern business, in government and in the practice of law.

Objectives

The primary objective of this program is to enable students to acquire a set of skills and knowledge which is extremely important in today's market. Another objective of this program is to foster interdisciplinary studies, which will enrich both faculties, and to encourage inter-faculty co-operation in teaching and research.

Admission

Only students registered in the first year of either program may apply. Candidates must hold a baccalaureate degree and satisfy the admission requirements of both programs. Those interested should consult the MBA calendar and the appropriate section of the Faculty of Law calendar (common law or droit civil). Students starting with the MBA program must apply for admission to the Common Law Section prior to November 1 or to the Section de droit civil by March 1. Candidates requesting admission to the MBA program must apply by April 1.

Promotion
In order to be admitted to the combined program, the student must successfully complete one year of the first chosen program (Program 1) and place in the top 25% of the class. The student will generally spend the second year in the other faculty to complete one year of Program 2. Promotion in the following years will be subject to the regulations of each faculty (see calendars).

Additional Requirements

In its evaluation of applicants, the admission committee will identify those who lack mathematical background and will strongly recommend that they complete four Quantitative Analysis for Business Modules (namely “Basic Mathematics”, “Spreadsheet for Statistics”, “Mathematics for Finance”, and “Calculus for Microeconomics”) offered in an hybrid delivery mode (on-line with some one-on-one tutorials with a professor: the modules can be done completely on-line for students who cannot attend live tutorials).

Furthermore, all students admitted will be invited to complete these four modules to refresh their quantitative analysis skills.

For students in the combined program, the MBA requirements are 48 credits as follows:
- All thirty nine (39) credits of 5000-level MBA courses
- Three (3) credits of elective 6000-level MBA, ADM or MHA courses
- Six (6) credits for the Management Consulting Project (MCP), namely MBA 6269 Management Consulting (1.5-cr.) and MBA 6499 MBA Consulting Project (4.5-cr.)

Candidates are asked to consult the MBA guidelines on recognition of courses taken outside the program.

MBA-Juris Doctor / MBA-LLL Curriculum

Students who wish to follow the combined program may choose to begin either with the first year of the Juris doctor or LLL program or with the MBA program. However, students are strongly encouraged to begin with the Law program. The program requires students to complete 48 credits within the MBA program, and 82 credits within the Law program.

First year -- All requirements of the first year of the Law program.

Second year -- All requirements of the MBA program, for a total of 48 credits. This can be achieved over twelve (12) consecutive months on a full-time basis.

Third and fourth years -- In the third and fourth years of the combined program, students must take all remaining courses to meet the Law degree requirements (including all remaining courses required for the Law program, and the required number of electives).

B. Programme combiné Maîtrise en droit avec concentration en droit notarial / MBA

Introduction

The combined LL.M (droit notarial) - MBA program is offered in French. It is managed by the Faculty of Law in collaboration with the Telfer School of Management.

Admission

Students must meet the admission requirements of both the MBA and the LL.M. These requirements are listed in the sections dealing with those programs. Applications are evaluated by an Admissions Committee with representation from both the MBA and the LL.M program.

MBA-LL.M (droit notarial) Curriculum

The combined program is structured in such a way as to allow students to qualify for both degrees in five consecutive sessions of full-time registration (commencing in May and completing in December of the following year, for a total of 20 months). Students alternate their registration between the two programs. The usual sequence is for the student to register in the LL.M in the spring of year 1 and the fall of year 2, and in the MBA in the fall of year 1, and the winter and spring of year 2. The total number of credits required is 75 (30 in the LL.M, and 45 in the MBA).

Requirements of the combined program (75 credits)

Spring Session 1 (12 credits)
DCL5521 INITIATION À LA RÉDACTION D'ACTES ET À LA PROFESSION NOTARIALE (3cr.)
DCL5522 STAGE DE DROIT NOTARIAL (3cr.)
DCL5523 PUBLICITÉ DES DROITS ET PROPRIÉTÉ (3cr.)
DCL5524 RELATIONS FAMILIALES (3cr.)

Full Session 1 (18 credits)
MBA5610 RELATIONS ENTRE LES ENTREPRISES ET LE GOUVERNEMENT (1.5cr.)
MBA5635 HABILETÉS DE GESTION 1 (1.5cr.)
MBA5641 COMPTABILITÉ ET STRATÉGIE (1.5cr.)
MBA5660 L'UNIVERS DU DIRECTEUR GÉNÉRAL ET LE MANAGEMENT STRATÉGIQUE (1.5cr.)
MBA5665 GESTION DE LA PERFORMANCE (1.5cr.)
CMM8350 ION CHANNELS: CELLULAR AND MOLECULAR ASPECTS OF MEMBRANE FUNCTIONS

Emphasis is on providing students with the background knowledge and the tools needed to develop and analyze models of cellular processes. Topics include

Admission to the graduate program in cellular and molecular medicine is governed by the «General Regulations» of the Faculty of Graduate and
governments and private sector. Current issues.

Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit

5203 or equivalent knowledge as determined by the Dean.

Séminaire sur la Curie romaine comprenant des échanges sur les lieux avec le personnel de plusieurs organismes: congrégations, tribunaux, conseils pontificaux.

DCA6763 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE III

The format and drafting of singular and general decrees, precepts, and rescripts for routine and exceptional matters.

Selected Praenotanda of liturgical books and post-Code legislation on the Liturgy.

Étude comparative de l'élaboration du droit canonique particulier au niveau des conférences des évêques.

DCA6397 SELECTED TOPICS IN CANON LAW II

How is canon law related to the ecclesiology of Vatican II and how does it apply that ecclesiology? The hypothesis of “the two ecclesiologies” of Vatican II in

Obligations and rights of all faithful; obligations and rights of the lay members of Christ's faithful; clerics. Ministry of the Word: preaching, catechetical formation.

feast days and days of penance.

DCA5121 HISTORY OF CANON LAW

All candidates must understand and speak fluently the language of instruction, either English or French. A basic knowledge of Latin is

Candidates must pass an examination on each of the subjects of the program. The passing grade is 66 per cent (C+) for courses and seminars.

canon law (MA (CL)) and a doctor of philosophy in canon law (PhD(CL)). These are civil degrees, conferred jointly by the Senates of the

veuillez consulter les annuaires des programmes pertinents disponibles au secrétariat des programmes de 2e cycle.

Introduction to supply chain management; overview of its role in the organization as an operational, a strategic, and a competitive tool; role of information

Définition du problème, diagnostic, analyse et recommandations pro­actives dans le contexte d'une entreprise ou d'un organisme. Complété en groupe de quatre

MBA6499 MBA CONSULTING PROJECT


Commerce électronique au Canada. Technologies de l'Internet. Modèles de commerce électronique. Sécurité de l'Internet, enjeux légaux et éthiques. Internet

surrounding the movement of dual career couples and repatriating international employees in a manner that maximizes the internationally-acquired competencies

migration strategies.

et à leur mise en oeuvre. Il vise aussi à décrire le fonctionnement de la chaîne de valeur de l'entreprise en vue d'y identifier les sources potentielles de création

MBA5755 PRINCIPES D'ÉCONOMIE POUR LES GESTIONNAIRES D'ENTREPRISES INTERNATIONALES (3cr.)

DCA5669 CONSULTATION EN GESTION (1.5cr.)

DCL5528 EXAMEN DES TITRES IMMOBILIERS (3cr.)

DCL5529 DROIT DES SOCIÉTÉS (3cr.)

Spring Session 2 (15 credits)

MBA6899 PROJET MBA DE CONSULTATION (4.5cr.)

MBA5611 GOUVERNANCE D'ENTREPRISE ET ÉTHIQUE (1.5cr.)

MBA5637 GESTION DU CHANGEMENT (1.5cr.)

MBA5760 FORMULATION ET DÉPLOIEMENT DE LA STRATÉGIE (3cr.)

MBA5780 GESTION DES OPÉRATIONS (3cr.)

- Elective 6000-level MBA

Fall Session 2 (12 credits)

DCL5526 ENGAGEMENTS FINANCIERS (3cr.)

DCL5527 DÉCÈS ET TRANSMISSION DES BIENS (3cr.)

DCL5525 NÉGOCIATION ET TRANSFERTS DE PROPRIÉTÉ (3cr.)

DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)

Résidence

Le programme combiné se complète en cinq sessions consécutives (début en mai, fin en décembre de l’année suivante, soit 20 mois), pour une moyenne de 15 crédits (l’équivalent de 5 cours) par session. L’étudiant sera inscrit à la maîtrise en droit avec concentration en droit notarial aux sessions Été 1 et Automne 2 et inscrit au MBA aux sessions Automne 1, Hiver et Été 2.

Time Limit

Full-time : 5 sessions

Status

Full-time only

Graduation

Upon successful completion of the requirements for the combined program, the Faculty of Law and the Telfer School of Management will each grant its own degree in recognition of its requirements being met.

Students who have chosen to withdraw from the combined program at any time, or who do not meet the promotion requirements for the combined program, may complete the law or MBA degrees separately, according to the regular degree requirements.

Courses

Explication des cotes de cours

MBA: cours spécialement conçus pour le programme de MBA, et ouverts de manière sélective aux étudiants hors programme.

ADM: cours spécialement conçus pour les programmes interdisciplinaires auxquels l'École de gestion Telfer participe.

MHA: cours spécialement conçus pour le programme de Maîtrise en gestion des services de santé (M.G.S.S.)

1er chiffre :

Niveau 5000 : cours obligatoires pour tous les étudiants au MBA;
Niveau 6000 : cours avancés

2e chiffre :

1 : programme d'échange international
2 : cours de 1.5-cr. en anglais
3 : cours de 3-cr. en anglais
4 : cours de 4.5-cr. en anglais
5 : programme d'échange international
6 : cours de 1.5-cr. en français
7 : cours de 3-cr. en français
8 : cours de 4.5-cr. en français
9 : cours bilingue

3e chiffre :

0: Analyse des données, statistiques
1: Gouvernance, gouvernance d'entreprise
2: Marketing
3: Comportement organisationnel, ressources humaines
4: Comptabilité
5: Finance, économie
6: Politique des affaires, gestion internationale, haute technologie
7: Systèmes d'information
8: Modèles décisionnels en gestion, gestion des opérations
9: Lectures dirigées, séminaires, projets

Explanation of Course Codes

MBA: courses specifically designed for the MBA program opened selectively to non-MBA students

ADM: courses specifically designed for Interdisciplinary programs in which the Telfer School of Management is involved

MHA: courses specifically designed for the MHA program

1st digit:

5000 level: required courses (for all MBA students)

6000 level: advanced courses

2nd digit:

1: Exchange program courses
2: 1.5-cr. courses in English
3: 3-cr. courses in English
4: 4.5-cr. courses in English
5: Exchange program courses
6: 1.5-cr. courses in French
7: 3-cr. courses in French
8: 4.5-cr. courses in French
9: Bilingual courses

3rd digit:

0: Data Analysis, Statistics
1: Gouvernance, Corporate governance
2: Marketing
3: Organizational Behaviour, Human Resources
4: Accounting
5: Finance, Economics
6: Business Policy, International Management, High Technology
7: Information Systems
8: Management Decision Models, Operation Management
9: Directed Readings, Seminars, Projects

COURS MBA DE NIVEAU 5000 / 5000-LEVEL MBA COURSES

MBA5211 CORPORATE GOVERNANCE AND ETHICS (1.5cr.)
Introduction to Corporate Governance, Accountability and Ethics; Shareholder Interests - Accountability and Governance Alignment; Technology & Ethics - Security and Privacy in an Online World; Managing When Agendas Collide - Making Ethical Business Decisions; Governance & Growth - Balancing Uncertainty, Scrutiny & Transparency.

MBA5611 GOUVERNANCE D'ENTREPRISE ET ÉTHIQUE (1.5cr.)
Introduction à la gouvernance d'entreprise; Responsabilisation et éthique; Intérêts des actionnaires-Responsabilisation et harmonisation des pratiques de gouvernance; Technologie et éthique-Sécurité et protection des renseignements confidentiels dans un monde en ligne; Gestion de priorités concurrentes Prise de décisions éthiques; Gouvernance et croissance-Equilibre entre incertitude, enquête minutieuse et transparence.

MBA5235 MANAGEMENT SKILLS 1 (1.5cr.)
Development of increased skills and understanding of participant preferences for the management of interpersonal and team-based issues and processes in a work environment. Special focus on diversity and ethics in a team environment. Effective business communications, including skills for delivery of high quality business presentations; exposure to common business software for inclusion in the student's professional toolbox.

MBA5635 HABILITÉS DE GESTION 1 (1.5cr.)
Développer une connaissance de soi ainsi que les habiletés interpersonnelles nécessaires à la gestion des relations interpersonnelles et au sein d'équipes en milieu de travail. Accent porté sur la diversité et l'éthique dans le travail d'équipe. Formation en communication et présentations efficaces dans les affaires. Aperçu de logiciels informatiques pour professionnels en milieu d'affaires.

MBA5236 LEADERSHIP AND MANAGEMENT (1.5cr.)
Leadership versus management; participatory leadership; transactional leadership; transformational leadership; reciprocity and mutual influence between leaders and followers; leading up (followership); situational determinants of effective leadership; cross-cultural leadership; virtual leadership. Course delivery involves class discussions, experiential exercises, guest speakers and case studies. Prerequisite: MBA 5330.

MBA5636 LEADERSHIP ET GESTION (1.5cr.)
Le leadership versus la gestion; leadership participatif; leadership transactionnel; leadership transformationnel; réciprocité et influence mutuelle entre leader et suiveur; influence vers le haut (sousveillance); circonstances influençant l’efficacité du leadership; différences culturelles et leadership; leadership virtuel. Cours comportant des discussions de groupe, des exercices, des conférenciers invités et des études de cas. Préalable : MBA 5730.

MBA5237 CHANGE MANAGEMENT (1.5cr.)
Development of skills in the effective conceptualization, planning, implementation and evaluation of change interventions in human systems. Behavioral science frameworks explaining and guiding the practice of change in an organizational context. Systemic nature of change and intervention practice, including the generation and management of resistance to change. Organizational change processes at the levels of individual, team, and overall organizational design including the necessary system conditions that underlie effective human system intervention efforts. Cross-cultural change, knowledge based organizations, socio-technical change processes, system vs. cultural change.

MBA5637 GESTION DU CHANGEMENT (1.5cr.)
Gérer le changement organisationnel planifié et non planifié. Développer chez les gestionnaires des compétences clés en gestion du changement. Permettre aux gestionnaires d’initier, de gérer et d’évaluer le changement dans leur organisation. Adresser les thématiques de base suivantes : la nature du changement; le rôle de l’agent de changement; l’importance des attitudes et comportements; la résistance aux changements; le diagnostic organisationnel; la collecte et l’analyse des données de diagnostics; les stratégies et processus d’intervention applicables aux individus, groupes et systèmes.

MBA5238 MANAGEMENT SKILLS 2 (1.5cr.)
Understanding and development of the management skills required to manage people and processes in an organizational setting. Conflict resolution, negotiation, problem-solving, team development and applied emotional intelligence. Prerequisite: MBA 5235 or ADX 5235

MBA5638 HABILITÉS DE GESTIONS 2 (1.5cr.)
Compréhension et développement des habiletés nécessaires à la gestion des individus et des processus en contexte organisationnel. Résolution des conflits et des problèmes, négociation, développement des équipes, et application de l’intelligence émotionnelle. Préalable : MBA 5635 ou ADX 5635

MBA5241 MANAGERIAL ACCOUNTING INFORMATION AND DECISIONS (1.5cr.)
This course focuses on the role of the accounting function internal to the organization. It takes a broad view of managerial accounting, introducing students to various costing systems, cost behaviour patterns and cost structures. It introduces students to the use of accounting for the evaluation of product, managerial and divisional performance. The orientation will help students to understand what accounting can do for decision makers and how accounting choices affect decisions. The course emphasizes the strategic importance of aligning accounting systems with firm technologies and goals. Current issues in management...
MBA5600 COMPTABILITÉ ET STRATÉGIE (1.5cr.)
Le cours permet aux étudiants de comprendre le rôle de la comptabilité dans les processus de création de richesse au sein de l'entreprise. Il met l'accent sur la gestion des activités et des processus dans la détermination et l'implantation de la stratégie de l'entreprise.

MBA5260 THE WORLD OF THE GENERAL MANAGER AND OF STRATEGIC MANAGEMENT (1.5cr.)
Understanding the role of the general manager in setting direction, creating competitive advantage, allocating resources, integrating operations and projects, framing the organizational infrastructure and context and managing change. Introduction to the concept of strategy and alternative models of strategic making.

MBA6630 L'UNIVERS DU DIRECTEUR GÉNÉRAL ET LE MANAGEMENT STRATÉGIQUE (1.5cr.)
Le but du cours est d'introduire les étudiants au monde de la haute direction. Il vise l'identification des défis auxquels fait face le directeur général, ainsi que la présentation des modèles et grilles d'analyse de base, quand vient le moment de choisir une orientation stratégique, de rechercher des avantages concurrentiels, d'allouer les ressources, d'intégrer les opérations et les projets, de se donner les moyens pour la mise en œuvre des stratégies arrêtées et de gérer le changement.

MBA5265 PERFORMANCE MANAGEMENT (1.5cr.)
The focus will be on learning about business intelligence and performance management approaches at operational levels in the organization. Frameworks such as the Balanced Score Card and Quality Management will be covered, as well as the use of business intelligence to explore performance problems. Prerequisite: MBA 5270 or equivalent.

MBA5665 GESTION DE LA PERFORMANCE (1.5cr.)
Il sera question de l’apprentissage de la veille économique et de la gestion de la performance au niveau opérationnel en entreprise. On verra les concepts tels que le tableau de bord équilibré et la gestion de la qualité, ainsi que l’emploi de la veille économique pour explorer des défaillances de la performance. Préalable : MBA 5670 ou l’équivalent.

MBA5266 PERFORMANCE MANAGEMENT: BUSINESS PROCESS MODELLING (1.5cr.)
This course will build on the functional knowledge students have gained in the program thus far to explore the use of business intelligence at strategic levels in the organization. Core concepts will include strategy mapping, business modelling, firm-level analytics and decision models as well as the contribution of key business processes to organizational performance across a variety of different industries. Prerequisite: MBA 5265

MBA5666 GESTION DE LA PERFORMANCE : MODÉLISATION DES PROCESSUS DE GESTION (1.5cr.)
Ce cours approfondira les connaissances fonctionnelles acquises dans le programme dans le but d’explorer l’emploi de la veille économique aux niveaux stratégiques en entreprise. Parmi les concepts clés citons la cartographie des stratégies, l’établissement de modèles, l’analytique et le modèle décisionnel à l’échelle de l’entreprise, ainsi que la contribution de procédés opérationnels clés à la performance du rendement organisationnel dans une variété d’entreprises. Préalable : MBA 5665

MBA5270 INFORMATION AND COMMUNICATION TECHNOLOGIES FOR MANAGERS (1.5cr.)
Business processes, organization and ICTs. Information and communication technologies foundations. System development (focus on analysis and design). Databases systems. Enterprise resource planning, customer relationship management, decision support systems IT management, social issues, learning and knowledge management, IT and globalization.

MBA5670 TECHNOLOGIES DE L’INFORMATION ET DES COMMUNICATIONS POUR GESTIONNAIRES (1.5cr.)

MBA5300 DATA ANALYSIS (3cr.)
Introduction to statistical data analysis. Basic concepts important to management: problem-solving and decision-making using data. Application of univariate and bivariate methods to various datasets. Use of software and the interpretation of statistical output. Models and tools to assist students in collecting, organizing, understanding, analyzing, presenting and communicating data.

MBA5700 ANALYSE DE DONNÉES EN GESTION (3cr.)
L’analyse des données comme support dans le processus de prise de décisions, dans l’évaluation de l’information véhiculée quotidiennement à travers les rapports d'organismes, les articles de presse, etc., et pour faire face aux changements. Interprétation des concepts et techniques de base utilisés en analyse des données. Développement de la compréhension de ce que l'on peut tirer d'une analyse statistique, ainsi que des limitations de cette même analyse. Interprétation correcte des résultats en particulier en contexte de globalisation ou de gestion des entreprises de haute technologie. Initiation au rôle de la statistique dans la conduite des affaires. Résumé et présentation des données complexes. Traitement d'ensembles de données réalisés à l'aide de l'ordinateur et de maîtrise d'un logiciel statistique d'usage courant. Interprétation des concepts et techniques de base utilisés dans l'analyse des données. Tirer des conclusions à partir d'échantillons et reconnaître et exploiter les relations entre deux variables.

MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
Overview of the Marketing process: key concepts, tools and procedures, in the context of a technology-intensive global economy. Definition of Marketing, the Marketing Concept and Marketing Management, and the significance of operating in a technology-intensive global economy. Analyzing market opportunities,
setting performance goals, formulating marketing and implementation plans to meet those goals. Introduction to e-marketing management and some of the e-marketing tools available.

**MBA5720 GESTION STRATÉGIQUE DE MARKETING (3cr.)**

**MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)**
The strategic advantage of understanding and integrating organizational behaviour (OB) frameworks in designing and implementing effective human resource (HR) activities (namely attraction, development, maintenance and retention of employees), in measuring performance and in achieving high-performance outcomes in various global organizational contexts. OB topics covered include motivation, rewards, leadership, group dynamics, organizational politics, job and organization design, and culture. Prerequisite: MBA 5235 for MBA students only.

**MBA5730 COMPORTEMENTS ORGANISATIONNELS ET GESTION DES RESSOURCES HUMAINES (3cr.)**

**MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)**
This course focuses on the role of the accounting function external to the organization. It takes a broad view of financial accounting, encompassing a wide range of external financial and economic information, both national and international. The orientation will help students to understand what accounting can do for decision makers and how accounting and ethical choices affect decisions. Current issues in financial accounting and reporting are discussed.

**MBA5740 INFORMATION COMPTABLE ET DÉCISION (3cr.)**
Le rôle de ce cours est de traiter de la comptabilité comme source d'information aux décideurs de l'entreprise. Le cours adopte une vision élargie de la comptabilité qui couvre une grande variété d'informations de nature financière et économique, nationale et internationale. Cette orientation permettra aux étudiants de comprendre le rôle que peut jouer la comptabilité auprès des décideurs internes et externes.

**MBA5350 CORPORATE FINANCE (3cr.)**

**MBA5750 GESTION FINANCIÈRE (3cr.)**

**MBA5355 ECONOMICS FOR THE GLOBAL MANAGER (3cr.)**

**MBA5755 PRINCIPES D'ÉCONOMIE POUR LES GESTIONNAIRES D'ENTREPRISES INTERNATIONALES (3cr.)**

**MBA5360 STRATEGY FORMULATION AND IMPLEMENTATION (3cr.)**
Understanding how to assess the performance of a business, what determines performance, how to conduct a strategic audit and to develop a specific course of action to deal with strategic issues. Enhancing value by aligning strategy and organizational infrastructure. Implementing change in order to enhance competitiveness. Developing general management abilities that integrate prior knowledge and skills acquired in other courses. Co-requisite: all 5000-level MBA courses.

**MBA5760 FORMULATION ET DÉPLOIEMENT DE LA STRATÉGIE (3cr.)**
Le but du cours est de développer chez les étudiants des aptitudes et des compétences pour piloter un processus d'analyse menant à la formulation de stratégies et à leur mise en œuvre. Il vise aussi à décrire le fonctionnement de la chaîne de valeur de l'entreprise en vue d'y identifier les sources potentielles de création d'avantages concurrentiels. Ce cours sera également l'occasion pour intégrer dans la perspective globale du management stratégique les diverses connaissances fonctionnelles. Co-requis : tous les cours MBA de niveau 5000.
MBA5380 OPERATIONS MANAGEMENT (3cr.)
Strategic issues and long term planning in manufacturing and service operations. Productivity, competitiveness, and strategy; product and service design; reliability; process selection and planning; facilities layout and line balancing; design of work systems; work force management and learning curves; quality control and total quality management; inventory management; JIT and supply-chain management. Specific concepts, decisions, and quantitative techniques commonly encountered in the management of operations. Emphasis on international issues as they relate to operations management as well as the challenges associated with managing new technologies in operations.  Prerequisite: MBA 5300.

MBA5780 GESTION DES OPÉRATIONS (3cr.)
Enjeux stratégiques et planification à long terme des opérations dans les secteurs manufacturiers et des services. Productivité, compétitivité et stratégie opérationnelle; conception du produit et du service; choix, analyse et amélioration des procédés; planification de la capacité. Mise en oeuvre de la stratégie opérationnelle. Planification intégrée; gestion de la chaîne d'approvisionnement; gestion des inventaires et planification des besoins en matières; souplesse et agilité des opérations incluant les systèmes juste-à-temps; gestion et contrôle de la qualité. Méthodes appliquées de résolution de problèmes visant à soutenir la prise de décisions opérationnelles et le contrôle des systèmes de production. Enjeux internationaux et intégration des nouvelles technologies dans la gestion des opérations. Préalable : MBA 5700.

COURS MBA DE NIVEAU 6000- & 7000 / 6000- & 7000-LEVEL MBA COURSES

MBA 6165 / 6166 / 6167 / 6168 INTERNATIONAL EXCHANGE COURSES 1 / 2 / 3 / 4 (3cr. each)
Courses offered through the intensive Summer International Exchange Program in Reims, France. Focus on issues in international management. The specific topic of each of these courses changes from year to year. Students must complete a research project defined by the program prior to departure to obtain the credits: see section "6000-Level Course Requirements for Part-Time Students in the Exchange Program" for details.

MBA 6565 / 6566 / 6567 / 6568 COURS DU PROGRAMME D'ÉCHANGE INTERNATIONAL 1 / 2 / 3 / 4 (3cr. chacun)
Cours offerts dans le cadre du programme intensif d'échange international d'été à Reims, en France. L'accent est mis sur les questions de gestion internationale. Les sujets particuliers de chacun de ces cours changent d'une année à l'autre. Les étudiants doivent terminer un projet de recherche dont le sujet est déterminé par le programme avant leur départ pour obtenir les crédits.

Les étudiants peuvent consulter la section « Exigences relatives aux cours optionnels (niveau 6000) pour les étudiants à temps partiel qui participent au programme d'échange » pour obtenir davantage de renseignements.

MBA6210 / ADX6210 BUSINESS GOVERNMENT RELATIONS (1.5cr.)

MBA6610 RELATIONS ENTRE LES ENTREPRISES ET LE GOUVERNEMENT (1.5cr.)

MBA6220 MANAGING CUSTOMER RELATIONS (1.5cr.)
Introduction to management of customer relations, special issues in a technology-driven global context. Building long-term relationships from pre-sales to repeat business. Gathering and analyzing information about the customer. Converting information to value-added product and service. Measuring the effect on corporate sales and profits. Demonstration and workshop with a software decision support tool.

MBA6620 GESTION DE LA RELATION CLIENT (1.5cr.)

MBA6225 HIGH TECHNOLOGY MARKETING (1.5cr.)
High-tech business buying behaviour, competitive and environmental analysis. Implications for marketing inside the tornado: target segments, performance objectives, positioning, product, place, price and promotion. Implementation and profitability analysis. Case studies drawn from several high-tech sectors. Prerequisite: MBA 5320 or ADM 6420 (for students in Electronic Business Technologies).

MBA6226 NEW PRODUCT DEVELOPMENT (1.5cr.)
How to develop new products for high-tech applications in an environment of global competition and shrinking cycle times. Topics include creating the climate, generating ideas, screening ideas, product portfolio selection, team building, managing the formal gating process, testing, killing. New product launch. Product migration strategies. Prerequisite: MBA 6225.
MBA6232 INTERNATIONAL HUMAN RESOURCE MANAGEMENT (1.5cr.)
Introduction to international HR strategy: examining strategic business objectives to identify human resource staffing needs. Global staffing: identifying qualified candidates for international assignments. Cross-cultural training: preparing those candidates for the overseas experience. Appraisal of international employees: appraising the performance of international employees at a distance. Development of the careers of international employees: managing relocation issues surrounding the movement of dual career couples and repatriating international employees in a manner that maximizes the internationally-acquired competencies and minimizes post-return turnover. Procedural justice and other international labour relations issues for the international workforce (includes compensating the international assignee and managing pay-equity issues among an international workforce, as well as attending to other ethical issues such as child labour).

MBA6250 INTERNATIONAL CORPORATE FINANCIAL POLICY (1.5cr.)
Managing foreign exchange risk by corporate treasurers. Financial management of multinational firms. Determination of a corporation's transaction and operating exposures. Use of foreign exchange derivatives, such as currency futures, options, and swaps to hedge foreign exchange risk. International portfolio and direct investments. International capital structure and cost of capital of multinational firms. Capital budgeting techniques used for foreign operations. Prerequisite: MBA 5350.

MBA6650 POLITIQUE DE GESTION FINANCIÈRE INTERNATIONALE (1.5cr.)

MBA6626 HIGH-TECH ENTREPRENEURSHIP (1.5cr.)
Creating, growing, and sustaining or exiting a new firm in a technology-intensive industry. Issues important to the technology (the scope and nature of technological knowledge and intellectual property protection), financing (seed capital, venture capital, and initial public offerings), and inter-firm relationships (spin-offs, alliances and equity alliances, and acquisitions). The course is practically oriented and will draw upon local expertise to enhance its pertinence and appeal.

MBA6662 ENTREPRENEURSHIP ET HAUTE TECHNOLOGIE (1.5cr.)
Création, croissance, maintien et sortie d'une nouvelle entreprise dans un secteur industriel intensivement technologique. Questions importantes en matière de technologie (la portée et la nature des connaissances technologiques et de la protection de la propriété intellectuelle), de financement (capitaux d'amorçage, capital de risque et placement initial de titres) et de relations interentreprises (entreprises dérivées, alliances et alliances avec participation en capitaux et acquisitions). Le cours est axé sur la pratique et mise sur l'expertise locale pour accroître sa pertinence et son attrait.

MBA6263 TECHNOLOGY-BASED LARGE FIRMS (1.5cr.)
Managing for growth through innovation in large established firms operating in technology-intensive industries. Issues important to the technology (the scope and nature of technological knowledge and its relation to product design), organization design (product-development team, development and adoption processes, and inter-project linkages), and inter-firm relationships (technology and capability complementarities, dominant designs).

MBA6663 GESTION DES GRANDES ENTREPRISES DU SECTEUR DE LA HAUTE TECHNOLOGIE (1.5cr.)
Gestion de la croissance de grandes sociétés traditionnelles oeuvrant dans des secteurs industriels intensivement technologiques au moyen de solutions innovatrices. Questions importantes en matière de technologie (la portée et la nature des connaissances technologiques et leur relation avec la conception de produits), d'aménagement organisationnel (équipe d'élaboration de produits, processus d'élaboration et d'adoption et liens entre les projets) et relations interentreprises (technologie et complémentarités des capacités, modèles dominants).

MBA6266 PRINCIPLES OF NEGOTIATION FOR THE GLOBAL MANAGER (1.5cr.)

MBA6666 PRINCIPES DE NÉGOcIATION POUR LES GESTIONNAIRES D'ENTREPRISES INTERNATIONALES (1.5cr.)

MBA6267 MULTINATIONAL CORPORATIONS AND STRATEGIES (1.5cr.)
Study of the different types of strategies being used by multinational corporations, including global, transnational, etc. Organizational and management leadership and coordination issues that arise from instituting these various strategies. Implementation is a constant focus throughout this module.

MBA6269 MANAGEMENT CONSULTING (1.5cr.)
Introduction to management consulting: the five phase consulting process, and the various business models associated with managing a consulting practice. Principles of project management. Case study format: students work in teams on a comprehensive case receiving feedback on their presentations from the course instructor and from practicing consultants invited as external presenters. The course draws heavily on analytical skills learned in other MBA courses, and prepares students to undertake the MBA Consulting Project.

MBA6669 CONSULTATION EN GESTION (1.5cr.)
Introduction à la consultation en gestion : le processus de consultation en cinq phases et les différents modèles d'entreprises associés à la gestion d'un volet de consultation. Principes de gestion de projets. Format d'études de cas : les étudiants travaillent en équipe sur un cas global et reçoivent des commentaires sur leurs présentations de la part de l'instructeur du cours et de consultants en exercice invités en tant que présentateurs externes. Le cours mise beaucoup sur les aptitudes d'analyse acquises dans d'autres cours du programme de M.B.A. et prépare les étudiants à entreprendre des projets de consultation dans le cadre du programme de MBA.

MBA6270 ELECTRONIC COMMERCE AND WEB SERVICES (1.5cr.)

MBA6670 COMMERCE ÉLECTRONIQUE ET SERVICES WEB (1.5cr.)

MBA6271 ENTERPRISE MODELING FOR E-BUSINESS (1.5cr.)
Information requirements - ERP, CRM, SCM. Integration issues: IT platforms, inter-organizational, Enterprise Application Integration. e-Project Management: Processes to be introduced to enable transformation to e-business. Process design with UML (Unified Modelling Language). e-Business Strategic implications and e-Blueprint formulation. Organization entities and models.

MBA6671 MODÈLES D'ENTREPRISES EN AFFAIRES ÉLECTRONIQUES (1.5cr.)

MBA 6291 / 6292 / 6293 / 6294 DIRECTED READINGS IN MANAGEMENT 1 / 2 / 3 / 4 (1.5 cr. each)
Advanced study in an area of management. Students may propose topics and, if approved, investigate the area under the guidance of a professor. A major paper is expected from the student. Enrolment is subject to approval by the administration of the MBA program. Normally, students must show evidence of superior performance - minimum CGPA of 7.0/B+ or equivalent - in their previous studies. Students on probation are ineligible.

MBA 6691 / 6692 / 6693 / 6694 LECTURES DIRIGÉES EN GESTION 1 / 2 / 3 / 4 (1.5 cr. chacun)
Étude approfondie dans un domaine des sciences administratives. Les étudiants proposent leur sujet d'études et, après acceptation de leur proposition, l'approfondissent sous la direction d'un professeur. Ils fourniront à la fin de ces modules un rapport écrit substantial (l'inscription à ce module est sujette à l'approbation du programme du MBA. Normalement, il faut avoir un rendement supérieur - MPC de 7.0 / B+ ou l'équivalent dans les études antérieures.

Les étudiants en probation ne sont pas admissibles aux lectures dirigées.

MBA 6295 / 6296 / 6297 / 6298 SEMINAR IN MANAGEMENT 1 / 2 / 3 / 4 (1.5-cr. each)
The seminars focus on current issues and topics in management. The focus of these seminars may change from year to year.

MBA 6695 / 6696 / 6697 / 6698 SÉMINAIRE EN GESTION 1 / 2 / 3 / 4 (1.5-cr. chacun)
Ces séminaires mettront l'accent sur des sujets d'actualité en gestion; les sujets traités dans ces séminaires peuvent changer d'une année à l'autre.

MBA6365 HIGH PERFORMANCE ORGANIZATIONS OPERATING IN EUROPE (3cr.)
History of European integration, European institutions, innovation and European competitiveness, corporate strategy and European integration, corporate governance and performance management – a European perspective. Prerequisite: MBA 5265

MBA6765 ENTREPRISES À PERFORMANCE ÉLEVÉE OPÉRANT EN EUROPE (3cr.)
Histoire de l'intégration européenne, institutions européennes, innovation et compétitivité européennes, stratégie globale et intégration européenne, gouvernance d'entreprise et gestion de la performance – perspective européenne. Préalable : MBA 5665

MBA6499 MBA CONSULTING PROJECT (4.5cr.)
Problem definition, diagnosis, analysis and recommendations for solution/action within a selected business organization. Normally to be completed in groups of four or five students. Supervision by MBA program faculty and MBA Project Mentor from the Canadian Association of Management Consultants. Regular progress reports submitted by e-mail or Internet, or in person. Evaluation by MBA program faculty taking into account feedback received from host organization and MBA Project Mentor. Prerequisite: successful completion of 30 credits within the MBA program, and acceptance of a project proposal by a review committee composed of the supervisor, the MBA program director and a representative of the business organization. Students must register to MBA 6269 Management Consulting in order to register to the MBA Consulting Project. A maximum of two consecutive University sessions is allowed to complete the project.

MBA6899 PROJET MBA DE CONSULTATION (4.5cr.)
Définition du problème, diagnostic, analyse et recommandations pro-actives dans le contexte d'une entreprise ou d'un organisme. Complété en groupe de quatre ou cinq étudiants, le projet est supervisé conjointement par un professeur du programme de MBA. Mentor de projet membre de l'Association Canadienne des Conseillers en Management. Des rapports de progression seront faits régulièrement par courrier électronique ou Internet, ou en personne. L'évaluation sera faite par le professeur qui tiendra compte des commentaires reçus de l'organisation d'accueil et du Mentor de projet. Préalable : réussite de 30 crédits au
programme de MBA et acceptation de la proposition de projet par le superviseur, le directeur du programme de MBA, et par un représentant de l'entreprise ou de l'organisme. Les étudiants doivent s'inscrire au cours MBA 6669 Consultation de gestion afin de pouvoir s'inscrire au projet MBA de consultation. Le projet doit être réalisé à l'intérieur d'un plus deux sessions universitaires consécutives.

ADM6209 GOVERNANCE (1.5cr.)
A general introduction to the concept of governance in the private, public and social sector. A critical examination of the evolution of governance systems based on competition and cooperation. A general discussion of the drift in the governance systems generated by competition, and coevolution among the three sectors. Conjectures about the future of governance systems.

ADM6210 MODELS OF PUBLIC, PRIVATE AND CIVIC GOVERNANCE (1.5cr.)
A thorough review of the different models and of the particular mechanisms of decision-making, of accountability and of governance in the public and the social sectors in comparison with those arrangements in the private sector. Prerequisite: ADM 6209 or MBA 5211.

ADM6211 CONSULTATION AND MULTI-STAKEHOLDER NEGOTIATION (1.5cr.)
An examination of processes of multi-stakeholder consultation and decision-making is undertaken, along with a consideration of the major tools and techniques deployed by government, industry and civic organizations. Collaboration and negotiation are central themes of this seminar. Prerequisite: ADM 6209 or MBA 5211.

ADM6212 GOVERNANCE AND THE DIGITAL IMPERATIVE (1.5cr.)
E-Governance and its impacts on organizational management and service delivery in both industry and government are examined. Partnerships and relations between industry and government in a digital world, and the challenges of adapting to on-line activity on all sectors will be considered from the perspective of all major stakeholders. Prerequisite: ADM 6209 or MBA 5211.

ADM6260 PROJECT MANAGEMENT I (1.5cr.)

ADM6261 PROJECT MANAGEMENT II (1.5cr.)

ADM6271 BUSINESS TELECOMMUNICATIONS SYSTEMS (1.5cr.)
Concepts of voice, data, image and video communications and their integration into local and long distance networks. Business communication systems examples.

ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)

ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)

ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)

ADM6279 SOCIO-TECHNICAL CHANGE (1.5cr.)
This course explores the structural, cultural and process based organizational change management challenges facing business strategists during new technology implementation initiatives. Toward this, the course draws upon management frameworks, support tools and best practices for the joint optimization of technology and social subsystems within organizations. Adopting a complex adaptive system viewpoint of the organization, the course will highlight issues of technological and social embeddedness, and illustrate the use of configuration modeling and analysis tools for enterprise engineering and strategy models to facilitate change sustainability and continuity.

ADM6281 SUPPLY CHAIN MANAGEMENT (1.5cr.)
Introduction to supply chain management; overview of its role in the organization as an operational, a strategic, and a competitive tool; role of information systems and technology in supply chain management; managing the flow of materials, and inventory management across the supply chain; developing and maintaining supply chain relationships; future challenges including sharing risks in inter-organizational relationships, managing the global supply chain and design for supply chain management. Prerequisite: MBA 5380 or equivalent for MBA students or EMP 5101 for EMP students.
ADM 6395: CASE COMPETITION (3 CR.) (FALL - SEPT. TO DECEMBER)
Every year the University of Ottawa competes in several national and international MBA Case Competitions. This course prepares students for participation in these competitions. Entry into this course is limited and students will compete for placements. Only students who participate in the mini-case competitions schedule early September and are selected by the judges will be able to register to the course.

The mini-case competition is the only entry point to the course! Consult the MBA office for further information.

ADM 6420 ELECTRONIC MARKETING (1.5cr.)

COURS OPTIONNELS OFFERTS À L'EXTÉRIEUR DE L'ÉCOLE DE GESTION TELFER : Les étudiants peuvent suivre des cours ou des modules optionnels à l'extérieur de l'École de gestion Telfer. Pour ce faire, ils doivent obtenir la permission de l'École. Normalement, les étudiants doivent fournir une description du cours proposé ainsi qu'une justification de la pertinence de ce cours dans leur programme d'études.

L'École se réserve le droit de refuser une telle demande, particulièrement lorsqu'un étudiant est en période de probation. Les étudiants peuvent suivre des cours de 2e cycle dans toute discipline reconnue par la Faculté des études supérieures et postdoctorales. Pour obtenir de plus amples renseignements sur ces cours, veuillez consulter les annuaires des programmes pertinents disponibles au secrétariat des programmes de 2e cycle.

ELECTIVES OUTSIDE THE TELFER SCHOOL OF MANAGEMENT: Students may take courses or modules outside the Telfer School of Management as electives. To do so, they must receive permission of the School. Normally this would involve providing a description of the proposed course along with a rationale as to why this course is relevant to the student's program of study.

The School reserves the right to refuse such requests, particularly when a student is on academic probation. Students may take graduate level courses in any discipline recognized by the Faculty of Graduate and Postdoctoral Studies. For more information on these courses, please consult the relevant program calendars that are available at the graduate programs secretariat.

**Canon Law (MCL / MA)**

The Faculty of Canon Law of Saint Paul University offers graduate programs leading to the master in canon law (MCL), a master of arts in canon law (MA (CL)) and a doctor of philosophy in canon law (PhD(CL)). These are civil degrees, conferred jointly by the Senates of the University of Ottawa and Saint Paul University.

In addition to the general requirements of the Faculty of Graduate and Postdoctoral Studies, the Faculty of Canon Law outlines a certain number of requirements in its calendar.

**Admission**

Students holding a baccalaureate degree may be admitted provided they have the theological knowledge necessary to study in canon law.

**Evaluation**

Candidates must pass an examination on each of the subjects of the program. The passing grade is 66 per cent (C+) for courses and seminars.

A student who fails a compulsory course must retake it. A student who fails an elective course may replace it with another course approved by the Dean.

There is normally no right to a supplemental exam. However, in exceptional cases, a student who fails part of a course unit of three or six credits may, with the approval of the Executive Committee of the Faculty of Canon Law, and in consultation with the professor concerned, be authorized to take a supplemental exam for that part of the course.

A student who fails the equivalent of six credits must withdraw from the program.

**Comprehensive Examination**

Candidates for the MCL and the master of arts degree in canon law must undergo a comprehensive examination.

At the discretion of the candidate, the examination may be oral or written. Students must make their choice and notify the faculty at least one month before the date set for the examination.
If the candidate fails the examination, it must be taken again according to the general norms of the faculty concerning regular examinations in the various courses of the program. The passing mark is 66 per cent (C+).

a) Written examination
The written examination consists of a personal paper on a topic chosen from among the doctrinal, historical or exegetical courses in canon law. The topic, chosen by the student, must be approved by the dean who consults the professor of the related subject. The student undergoes an oral examination on his paper according to the norms of the faculty. The paper must be 30 to 40 pages long. It is corrected by three professors who then examine the student on his work for a period of 60 minutes. Only one mark is given for both the paper and the oral defence.

b) Oral examination
At least one month before the examination, the student chooses and has approved by the dean (who consult the appropriate professors) a list of 15 topics covering the subject matter seen in the doctrinal and exegetical courses in canon law. The student is questioned orally for 60 minutes on these topics before four professors, who base their questions on the list approved for each student.

Language Requirements

All candidates must understand and speak fluently the language of instruction, either English or French. A basic knowledge of Latin is recommended.

Program Requirements

Degree Requirements

A. FOR THE MCL DEGREE

1. Two years of residence (four sessions) as a full-time student.
2. The student must obtain 54 course credits. These are comprised of required courses (21 credits), a research seminar (3 credits), courses with limited options (at least 18 credits), and elective courses (up to 12 credits).

Required core courses (21 credits):
All students are required to take the following:

- DCA5102 GENERAL NORMS I (3cr.)
- DCA5112 FOUNDATIONS OF CANON LAW (3cr.)
- DCA5121 HISTORY OF CANON LAW (3cr.)
- DCA5125 MATRIMONIAL LAW I: MATRIMONIAL CONSENT (3cr.)
- DCA5126 MATRIMONIAL LAW II: SPECIAL ISSUES AND CASES (3cr.)
- DCA5306 GENERAL NORMS II (3cr.)
- DCA6395 RESEARCH SEMINAR (3cr.)

Courses with limited options:
Students must take at least 18 credits from the following:

- DCA5103 UNIVERSAL AND SUPRA DIOCESAN CHURCH STRUCTURES (3cr.)
- DCA5123 THE INTERNAL ORDERING OF PARTICULAR CHURCHES I: FOUNDERAL QUESTIONS (3cr.)
- DCA5124 THE INTERNAL ORDERING OF PARTICULAR CHURCHES II: ADMINISTRATIVE ISSUES (3cr.)
- DCA5203 INSTITUTE OF CONSECRATED LIFE AND SOCIETIES OF APOSTOLIC LIFE (3cr.)
- DCA5204 SACRAMENTAL AND LITURGICAL LAW (6cr.)
- DCA5207 SPECIAL SECTORS OF LAW (6cr.)
- DCA5208 THE FAITHFUL, THE MAGISTERIUM, THE CHURCH AND CIVIL SOCIETY (6cr.)

Elective courses:
Students may take up to 12 credits from the following:

- DCA5133 PROCEDURES I (3cr.)
- DCA5302 CANON LAW AND THE ECCLESIOLOGY OF VATICAN II (3cr.)
- DCA5303 THE PROCESS OF REVISION OF CANON LAW IN THE 20TH CENTURY (3cr.)
- DCA5304 COMPARATIVE PARTICULAR LAW (3cr.)
- DCA5396 DIRECTED STUDIES I (3cr.)
- DCA5397 DIRECTED STUDIES II (3cr.)
- DCA5398 DIRECTED STUDIES III (3cr.)
- DCA6112 ADMINISTRATIVE PROCEDURES (3cr.)
DCA6113 TEMPORAL GOODS (3cr.)
DCA6114 PROCEDURES II (3cr.)
DCA6115 PENAL LAW (3cr.)
DCA6301 SPECIAL PROBLEMS IN CANON LAW I (3cr.)
DCA6302 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
DCA6321 SEMINAR ON TRIBUNAL PRACTICE (3cr.)
DCA6322 SEMINAR ON CHANCERY PRACTICE (3cr.)
DCA6363 SPECIAL PROBLEMS IN CANON LAW III (1.5cr.)
DCA6364 SPECIAL PROBLEMS IN CANON LAW IV (1.5cr.)
DCA6315 LITURGICAL LAW OUTSIDE THE CODE (3cr.)
DCA6316 THE LAITY AND THE POWER OF GOVERNANCE IN THE CHURCH (3cr.)
DCA6396 SELECTED TOPICS IN CANON LAW I (3cr.)
DCA6397 SELECTED TOPICS IN CANON LAW II (3cr.)
DCA6398 SELECTED TOPICS IN CANON LAW III (3cr.)
DCA6921 LATIN CANONIQUE / CANONICAL LATIN (3cr.)
DCA6962 QUESTIONS SPÉCIALES RELATIVES À LA VIE CONSACRÉE / SPECIAL ISSUES IN CONSECRATED LIFE (1.5cr.)
DCA6922 STAGE EN MILIEU DE TRAVAIL / FIELD PRACTICUM (3cr.)
DCA6961 VOYAGE DE FORMATION À LA CURIE ROMAINE / STUDY VISIT TO THE ROMAN CURIA (1.5cr.)

B. FOR THE MA (CL) DEGREE

The student must obtain 75 credits (obligatory courses - 54 credits, optional courses - six credits, master's thesis - 15 credits) and pass the comprehensive examination.

The thesis topic must be approved by the Dean. The candidate submits the thesis topic in writing to the dean using the forms available at the secretariat. The Dean also appoints the moderator of the thesis once the topic is approved.

At least four copies of the thesis must be submitted to the secretariat. Candidates must use a cover recommended by the secretariat. The faculty requires a minimum of two months, excluding summer holidays, to evaluate the thesis.

The thesis is read by and subsequently defended before a board of at least two professors appointed by the Dean.

For additional information on research and theses, please consult Research and Thesis, accessible through our homepage and also the General Regulations of the Faculty of Graduate and Postdoctoral Studies.

A candidate must complete all degree requirements within four years of registration to the master's program.

The final mark for the MA degree is calculated according to the following ratio:

Thesis: 20 per cent
Defence: 10 per cent
Comprehensive examination: 20 per cent
Course examinations and practical work: 50 per cent

Courses

DCA5102 GENERAL NORMS I (3cr.)
Canonical concepts and terminology; laws, customs, physical and juridical persons, juridical acts, power of governance.

DCA5103 UNIVERSAL AND SUPRA DIOCESAN CHURCH STRUCTURES (3cr.)
Supreme authority of the Church: Roman Pontiff, College of Bishops and Ecumenical Council. Synod of Bishops, College of Cardinals, Roman Curia, legates. Groupings of particular Churches: ecclesiastical provinces and regions, metropolitans, particular councils (plenary and provincial), conferences of bishops.

DCA5112 FOUNDATIONS OF CANON LAW (3cr.)
Canonical methodology, philosophy of law, theology of canon law.

DCA5121 HISTORY OF CANON LAW (3cr.)
History of canonical sources: biblical sources; councils and synods, patristic canons, papal decretals; chronological and systematic collections; Gratian’s Decree; collections of Decretals; the Corpus Juris Canonici; 20th century codification of the Latin law; Eastern law codification. History of canonical institutions: diachronic analysis of some institutions of the Catholic Church and its law: e.g., episcopacy, the office of the Roman Pontiff, marriage, judicial and administrative procedures…

DCA5123 THE INTERNAL ORDERING OF PARTICULAR CHURCHES I: FOUNDATIONAL QUESTIONS (3cr.)
Particular Churches. Bishops: bishops in general, diocesan bishops, coadjutor and auxiliary bishops. Impeded or vacant see. Personal prelates.

DCA5124 THE INTERNAL ORDERING OF PARTICULAR CHURCHES II: ADMINISTRATIVE ISSUES (3cr.)
Diocesan synod, diocesan curia: vicars general, episcopal vicars, chancellor, finance committee, financial administrator; presbyteral council; college of consultors; chapter of canons; pastoral council; parishes, parish priests, assistant priests; vicars forane; rectors of churches, chaplains. Associations of Christ’s faithful (public, private, and lay).

DCA5125 MATRIMONIAL LAW I: MATRIMONIAL CONSENT (3cr.)
Marriage: General Introduction; Matrimonial Consent.

DCA5126 MATRIMONIAL LAW II: SPECIAL ISSUES AND CASES (3cr.)
Preparation for marriage; matrimonial impediments; separations of spouses; validation special procedures: cases of separation of spouses, of dispensation from a ratified and non-consummated marriage, of presumed death of a spouse.

DCA5133 JUDICIAL PROCEDURES (3cr.)
Theoretical part: competent forum, different grades and kinds of tribunals, rules of practice, parties in the case, actions and exceptions.

DCA5203 INSTITUTES OF CONSECRATED LIFE AND SOCIETIES OF APOSTOLIC LIFE (3cr.)
Norms common to all institutes of consecrated life and societies of apostolic life. Religious institutes; religious houses, governance of institutes, admission of candidates and formation of members, obligations and rights of the institutes and of their members, apostolate of institutes, separation of members from the institute, religious who are bishops, conferences of major superiors. Secular institutes. Societies of apostolic life.

DCA5204 SACRAMENTAL AND LITURGICAL LAW (6cr.)
Sacraments: baptism; confirmation; Eucharist; penance; anointing of the sick; order. Other acts of divine worship: sacramentals; liturgy of the hours; Church funerals; cult of saints, of sacred images, and of relics; vows and oaths. Sacred places and times: churches, oratories, private chapels, shrines, altars, cemeteries; feast days and days of penance.

DCA5207 SPECIAL SECTORS OF LAW (6cr.)
Elements of Roman Law, Civil Law and Common Law in reference to Canon Law. Introduction to the law of the Eastern Catholic Churches.

DCA5208 THE FAITHFUL, THE MAGISTERIUM, THE CHURCH AND CIVIL SOCIETY (6cr.)

DCA5301 WORKSHOP ON CANONICAL DRAFTING
Practical workshops on the drafting of legislative and administrative documents in the context of the administration of dioceses and of institutes of consecrated life; drafting of briefs by advocates, defenders of the bond, promoters of justice, and of judgments by ecclesiastical judges.

DCA5302 CANON LAW AND THE ECCLESIOLOGY OF VATICAN II (3cr.)
How is canon law related to the ecclesiology of Vatican II and how does it apply that ecclesiology? The hypothesis of “the two ecclesiologies” of Vatican II in relation to canon law. Study of the Vatican II documents in relation to canon law. Ecumenism and canon law.

DCA5303 THE PROCESS OF REVISION OF CANON LAW IN THE 20TH CENTURY (3cr.)
The process of revision which gave rise to the 1917 and 1983 Codes of Canon Law and to the 1990 Code of Canons of the Eastern Churches.

DCA5304 COMPARATIVE PARTICULAR LAW (3cr.)
Comparative study of the development of particular canon law at the level of conferences of bishops.

DCA5306 GENERAL NORMS II (3cr.)
General decrees and instructions; singular administrative acts; statutes and ordinances; ecclesiastical offices; prescription; computation of time in canon law.

DCA5396 DIRECTED STUDIES I (3cr.)
DCA5397 DIRECTED STUDIES II (3cr.)
DCA5398 DIRECTED STUDIES III (3cr.)

DCA5502 NORMES GÉNÉRALES I (3cr.)
Concepts and terminology of the droit canonique; lois and coutumes; personnes physiques et juridiques; actes juridiques; pouvoir de gouvernance.

DCA5503 STRUCTURES DE L’ÉGLISE UNIVERSELLE ET SUPRADIÎCÉSAINES (3cr.)
évêques.

DCA5512 FONDATIONS DU DROIT CANONIQUE (3cr.)
Méthodologie canonique, philosophie du droit, théologie du droit canonique.

DCA5521 HISTOIRE DU DROIT CANONIQUE (3cr.)
Histoire des sources canoniques : sources bibliques, conciles et synodes, canons patristiques, décrétales des papes; collections chronologiques et systématiques; le Décret de Gratien et les collections de Décrétales; le Corpus iuris canonici; codification du droit latin au XXe siècle; codification du droit oriental. Histoire des institutions canoniques : analyse diacronique de quelques institutions de l'Église catholique et de son droit, par ex. : l'épiscopat, le ministère du pontificat romain, le mariage, procédures judiciaires et administratives…

DCA5522 ORGANISATION INTERNE DES ÉGLISES PARTICULIÈRES I: QUESTIONS FONDAMENTALES (3cr.)

DCA5524 ORGANISATION INTERNE DES ÉGLISES PARTICULIÈRES II: QUESTIONS ADMINISTRATIVES (3cr.)
Synode diocésain; curie diocésaine : vicaires généraux et épiscopaux, chancelier, conseil pour affaires économiques, économie; conseil presbytéral; collège des consultateurs; chapitre des chanoines; conseil pastoral; paroisses, curés, vicaires paroissiaux; vicaires forains; recteurs d'églises, chapellains. Associations de fidèles (publiques, privées, de laïcs).

DCA5525 DROIT MATRIMONIAL I: CONSENTEMENT (3cr.)
Mariage : Introduction générale: le consentement matrimonial.

DCA5526 DROIT MATRIMONIAL II: QUESTIONS ET CAUSES SPÉCIALES (3cr.)
Mariage, séparation des époux, convalidation. Procédures spéciales : causes de séparation des époux, de dispense d'un mariage conclu et non consommé, de présomption de la mort d'un conjoint.

DCA5533 PROCÉDURES JUDICIAIRES (3cr.)
Les règlements en général: for compétent, divers degrés et genres de tribunaux, règles de pratique, parties dans la cause, actions et exceptions.

DCA55603 INSTITUTS DE VIE CONSACRÉE ET SOCIÉTÉS DE VIE APOSTOLIQUE (3cr.)

DCA55604 DROIT SACRAMENTEL ET LITURGIQUE (6cr.)
Sacrements: baptême; confirmation; Eucharistie; pénitence; onction des malades; ordre. Autres actes du culte divin: sacramentaux; liturgie des heures; funérailles ecclésiastiques; culte des saints, des saintes images et des reliques; v u et serment. Lieux et temps sacrés: églises, oratoires, chapelles privées, sanctuaires, autels, cimetières; jours de fête et de pénitence.

DCA55607 SECTEURS SPÉCIAUX DU DROIT (6cr.)

DCA55608 FIDÈLES, MAGISTÈRE, ÉGLISE ET SOCIÉTÉ CIVILE (6cr.)

DCA5701 ATELIER DE RÉDACTION CANONIQUE
Ateliers pratiques de rédaction de documents législatifs et administratifs dans le contexte des administrations des diocèses et des instituts de vie consacrée; rédaction de plaidoyers d'avocats, de remarques de défenseurs du lien et de promoteurs de la justice ainsi que de jugements de juges ecclésiastiques.

DCA5702 LE DROIT CANONIQUE ET L’ECCLÉSIOSLOGIE DE VATICAN II (3cr.)

DCA5703 LE PROCESSUS DE RÉVISION DU DROIT CANONIQUE AU XXE SIÈCLE (3cr.)
Le processus de révision qui a donné naissance aux Codes de droit canonique de 1917 et de 1983 ainsi qu'au Code des canons des Églises orientales de 1990.

DCA5704 LE DROIT PARTICULIER COMPARÉ (3cr.)
Étude comparative de l'élaboration du droit canonique particulier au niveau des conférences des évêques.

DCA5706 NORMES GÉNÉRALES II (3cr.)
Décrets généraux et instructions; actes administratifs particuliers; statuts et règlements; offices ecclésiastiques; prescription; le calcul du temps en droit.
2. Enrollment in the seminar course in toxicology (BIO9105), which involves the presentation of a seminar, and the regular attendance to the seminars presented.

CMM8350 ION CHANNELS: CELLULAR AND MOLECULAR ASPECTS OF MEMBRANE FUNCTIONS

regulation of heart development, cell signaling, cellular and molecular mechanisms of atherosclerosis and heart disease, hormonal regulation, hypertension, hypothalamus-hypophysis axis; role of pancreas, adipose tissue and skeletal muscle in carbohydrate and lipid metabolism; cellular and molecular aspects of

Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

Offenses and punishments: penal law and penal precept; penalties and other punishments; application and cessation of penalties. Penalties for particular offences: offences against religion and the unity of the Church, against Church authorities and the freedom of the Church; usurpation of ecclesiastical offices and offences committed in their exercise; the false accusation; offences against special obligations, against human life and liberty. Penal processes. Recent laws and regulations of the Holy See in disciplinary and penal matters; special norms.

DCA6301 SPECIAL PROBLEMS IN CANON LAW I (3cr.)

Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA6302 SPECIAL PROBLEMS IN CANON LAW II (3cr.)

Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA6315 LITURGICAL LAW OUTSIDE THE CODE (3cr.)

Selected Praenotanda of liturgical books and post- Code legislation on the Liturgy.

DCA6316 THE LAITY AND THE CHURCH'S OFFICE OF GOVERNANCE (3cr.)

Collaboration of the lay faithful in the exercise of the power of governance: law, theory, and practice.

DCA6321 SEMINAR ON TRIBUNAL PRACTICE (3cr.)

Preparation of advocate's and defender's observations; judicial decrees and sentences. Prerequisites: Courses on Marriage consent and judicial procedures, or equivalent knowledge and experience as determined by the Executive Committee of the Faculty.

DCA6322 SEMINAR ON CHANCERY PRACTICE (3cr.)

The format and drafting of singular and general decrees, precepts, and rescripts for routine and exceptional matters. Prerequisite: DCA 5306.

DCA6363 SPECIAL PROBLEMS IN CANON LAW III (1.5cr.)

Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law. Each academic year the details of the course will be made available in advance to the students.

DCA6364 SPECIAL PROBLEMS IN CANON LAW IV (1.5cr.)

Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law. Each academic year the details of the course will be made available in advance to the students.

DCA6395 MASTER'S SEMINAR (3cr.)

Study of a particular subject which is concluded by a presentation to the seminar group and director, followed by the submission of a text.

DCA6396 SELECTED TOPICS IN CANON LAW I (3cr.)

DCA6397 SELECTED TOPICS IN CANON LAW II (3cr.)

DCA6398 SELECTED TOPICS IN CANON LAW III (3cr.)

DCA6512 QUESTIONS D'ADMINISTRATION ECCLESIASTIQUE (3cr.)

Perte de l’état clérical, laïcisation; archives; procédés dans les cours civiles; statuts des organismes diocésains; union et suppression des paroisses; transactions,
compromis, arbitrage, médiation.

DCA6513 QUESTIONS D'ADMINISTRATION ECCLÉSIASTIQUE II (3cr.)
Acquisition et administration des biens temporels; contrats et aliénations; pieuses volontés et fondations pieuses. Biens temporels et leur administration dans les instituts religieux. Recours contre les décrets administratifs : normes et jurisprudence. Révocation et transfert des curés.

DCA6514 PROCÉDURES DES TRIBUNAUX ECCLÉSIASTIQUES (3cr.)
Déroulement du procès contentieux ordinaire et du procès contentieux oral; causes en déclaration de nullité de mariage; causes en déclaration de nullité de l'ordination. Moyens d'éviter les procès. Jurisprudence dans les causes en déclaration de nullité de mariage ainsi que dans les recours administratifs.

DCA6515 DROIT PÉNAL (3cr.)
Les délits et les peines en général; loi pénale et précepte pénal; les peines et les autres punitions; l'application et la cessation des peines. Les peines pour des délits particuliers : délits contre la religion et l'unité de l'église, contre les autorités ecclésiastiques et la liberté de l'église; usurpation des charges ecclésiastiques et délits dans l'exercice de ces charges; le crime de faux; délits contre les obligations spéciales, contre la vie et la liberté humaines. Le procès pénal. Législation et réglementation récentes du Saint-Siège en matière disciplinaire et pénale; normes particulières.

DCA6701 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE I (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA6702 PROBLÈMES SPÉCIAUX DU DROIT CANONIQUE II (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA6715 DROIT LITURGIQUE EN DEHORS DU CODE (3cr.)
Règles préliminaires des livres liturgiques; autres textes législatifs et réglementaires sur la liturgie, postérieurs au code de droit canonique.

DCA6716 LAÏCAT ET POUVOIR DE GOUVERNEMENT DANS L'ÉGLISE (3cr.)
Participation des fidèles laïcs à l’exercice du pouvoir de gouvernement : droit, théorie et pratique.

DCA6721 SÉMINAIRE DE PRATIQUE DES TRIBUNAUX (3cr.)
Préparation des mémoires d'avocat, des observations du défenseur du lien etc., des décrets et sentences. Préalables : cours sur le consentement matrimonial et les procédures judiciaires, ou connaissances et expérience équivalentes par décision du Comité exécutif de la Faculté.

DCA6722 SÉMINAIRE DE PRATIQUE DES CHANCELLERIES (3cr.)

DCA6763 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE III (1.5cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique. Le programme précis sera communiqué à l’avance aux étudiants pour chaque année académique.

DCA6764 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE IV (1.5cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique. Le programme précis sera communiqué à l’avance aux étudiants pour chaque année académique.

DCA6795 SÉMINAIRE DE MAÎTRISE (3cr.)
Étude d'un sujet particulier qui s'achève par sa présentation devant les pairs et le directeur du séminaire, suivie de la remise d'un texte.

DCA6796 THÈMES CHOISIS EN DROIT CANONIQUE I (3cr.)

DCA6797 THÈMES CHOISIS EN DROIT CANONIQUE II (3cr.)

DCA6798 THÈMES CHOISIS EN DROIT CANONIQUE III (3cr.)

DCA6921 LATIN CANONIQUE / CANONICAL LATIN (3cr.)
Compréhension du Codex Juris Canonici, du Codex Canonom Ecclesiarum Orientalium et d'autres documents canoniques rédigés en latin. Préalables : DCA 3109 ou connaissances équivalentes déterminées par un examen. / Understanding the Codex Juris Canonici, the Codex Canonom Ecclesiarum Orientalium, and other canonical documents in Latin. Prerequisite: DCA 3109 or equivalent knowledge as determined by examination.

DCA6922 STAGE EN MILIEU DE TRAVAIL / FIELD PRACTICUM (3cr.)
Stage supervisé de pratique canonique : six semaines (minimum 18 h/semaine) dans un milieu de travail approuvé. Noté selon les résultats du rapport écrit et l'évaluation du superviseur de stage. / A six-week (minimum 18 hours per week) of supervised internship in canonical practice at an approved site. Assessment based on a written report as well as the evaluation of the internship supervisor.
DCA6961 VOYAGE DE FORMATION À LA CURIE ROMAINE / STUDY VISIT TO THE ROMAN CURIA (1.5cr.)
Séminaire sur la Curie romaine comprenant des échanges sur les lieux avec le personnel de plusieurs organismes : congrégations, tribunaux, conseils pontificaux. Préalables : DCA 5502 ou DCA 5503 ou connaissances équivalentes au jugement du doyen. / Seminar on the Roman Curia involving on-site interchange with personnel from a variety of Roman congregations, tribunals, and pontifical councils. Prerequisite: DCA 5102 or DCA 5103 or equivalent knowledge as determined by the Dean.

DCA6962 QUESTIONS SPÉCIALES RELATIVES À LA VIE CONSCRÉE / SPECIAL ISSUES IN CONSECRATED LIFE (1.5cr.)
Séminaire sur des questions légales et canoniqnes concernant la vie consacrée, surtout dans le contexte du Canada. Préalables : DCA 5603, ou connaissances équivalentes au jugement du doyen. / Seminar on legal and canonical issues concerning consecrated life, especially in the context of Canada. Prerequisite: DCA 5203 or equivalent knowledge as determined by the Dean.

DCA6999 THÈSE DE M.A. / MA THESIS

DCA7998 EXAMEN DE SYNTHÈSE DE MAÎTRISE / MASTER’S COMPREHENSIVE EXAMINATION

DCA8101 SPECIAL PROBLEMS IN CANON LAW I (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA8102 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA8175 POWER OF GOVERNANCE (3cr.)
Certain particular or specialized questions related to the concept or to the exercise of power of governance in the Church.

DCA8176 JURISPRUDENCE (3cr.)
Matrimonial or administrative jurisprudence in specialized areas of interest.

DCA8501 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE I (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA8502 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE II (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA8575 LE POUVOIR DE GOUVERNEMENT (3cr.)
Certaines questions particulières ou spécialisées reliées au concept ou à l’exercice du pouvoir de gouvernement dans l’Église.

DCA8576 JURISPRUDENCE (3cr.)
Jurisprudence matrimoniale ou administrative dans des domaines d’intérêt spécialisés.

DCA8981 LECTURE DE SOURCES CANONIQUES (LATINITAS CANONICAL) / READINGS IN CANONICAL SOURCES (LATINITAS CANONICAL) (3cr.)
Interprétation de sources canoniques dans leur texte original latin. Préalables : DCA 6921 ou connaissances équivalentes déterminées au moyen d’un examen / Interpreting canonical sources in the original Latin. Prerequisite: DCA 6921 or equivalent knowledge as determined by examination

DCA9997 PROJET DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL

DCA9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION

DCA9999 THÈSE DE DOCTORAT / PhD THESIS

DCL302 PHILOSOPHY OF LAW (3cr.)
Examination of topics, theories, writers in philosophy of law. May include comparative or critical materials.

DCL502 PHILOSOPHIE DU DROIT (3cr.)
Définition du droit et de la philosophie du droit; les buts du droit; les concepts juridiques; le raisonnement du droit; le language du droit; les philosophies et les théories du droit.

HAH6212 HEALTH CARE ETHICS (1.5cr.)
Definition, resolution and handling of ethical problems of administrators, physicians and other health care professionals. Codes of ethics, Principles of biomedical ethics, Relationships among biomedical ethics, law, health policy and resource allocation. Ethical analytical techniques. Prerequisite: HAH 6260.
HAH6260 HEALTH CARE SYSTEM ORGANIZATION AND POLICY (1.5cr.)

IPA5149 PROFESSIONAL ISSUES AND ETHICS IN SPIRITUAL CARE (3cr.)

IPA5549 QUESTIONS PROFESSIONNELLES ET QUESTIONS D'ÉTHIQUE EN SOINS SPIRITUELS (3cr.)

IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)

IPA6552 THÉOLOGIE ET SOINS SPIRITUELS (3cr.)

THO6342 ETHICS AND HEALTH SCIENCES (3cr.)
Examination of a problem in bioethics (e.g., human experimentation, medical genetics, allocation of limited resources). The study of a question in clinical ethics (e.g., informed consent, cessation of treatment, professional responsibility). Methodological and theological problems posed by this kind of applied ethics.

THO6742 ÉTHIQUE ET SCIENCES DE LA SANTÉ (3cr.)
Examen d'un problème de bioéthique (e.g., expérimentation humaine, génétique médicale, allocation des ressources). Étude d'une question d'éthique clinique (e.g. consentement éclairé, arrêt de traitement, responsabilité professionnelle). Problèmes théologiques et méthodologiques que pose ce type d'éthique sectorielle.

Cellular and Molecular Medicine (MSc)

The Department of Molecular and Cellular Medicine is located in the Faculty of Medicine and offers graduate programs leading to the degrees of Master of science (MSc) and Doctor of philosophy (PhD) in cellular and molecular medicine.

The objective of the program is to prepare candidates for a career in university teaching and research. During training, the student will develop a critical approach to published work and to his own work. Graduates acquire an excellent knowledge of their chosen field and a general understanding of the areas related to their own particular research project. They must demonstrate research skills and credibility as professionals in their area of research.

Most research groups of the Department are part of a research centre. In fact, much of the research is now focused within recently established research centres including the Centre for Neuromuscular Disease, the Kidney Research Centre, and the Centre for Research in Biopharmaceuticals. Members of the Department are involved in three main research fields: growth and development, pharmacology, and physiology. Further information is posted on the departmental website.

The Department is a participating unit in the following collaborative programs: the bioinformatics program (at the master’s level) and the human and molecular genetics program (at the master’s and doctoral levels).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate program in cellular and molecular medicine is governed by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered, applicants must:

1. Hold a bachelor's degree with specialization or a major (or equivalent) in science with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Collaborative Program in Bioinformatics at the Master’s Level
The Department may require students to take additional courses depending on their backgrounds. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. To be accepted, the thesis director must be a member of the collaborative program. Students are normally informed about their acceptance into the collaborative program at the same time as being informed about their admission into the primary program. For further details, see the Bioinformatics program.

**Program Requirements**

**Master's Degree Requirements**

The following requirements must be met:

1. Six credits of courses at the 5000 level or above with at least 3 credits in CMM approved by the the graduate program Director;
2. Enrollment in the seminar course (CMM8324S), which involve the presentation of a seminar and the attendance to the seminars presented by the Department;
3. Presentation and defense of a thesis (CMM7999) based on original research carried out under the direct supervision of a faculty member of the Department.

Note: The Department may require students to take additional courses, depending on their backgrounds. The list of courses being offered in each field in any given year will be indicated on the program website.

**Residence**

All students must complete a minimum of three sessions of full-time registration.

**Duration of the program**

The requirements of the program are usually fulfilled within two years of full-time studies.

**Transfer from Master's to PhD Program**

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master's thesis. For additional information, please consult the "Admission" section of the PhD program.

**Courses**

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

**CMMS5001 THE PATHOLOGICAL BASIS OF DISEASE** (3cr.)

Introductory Course for Non-Medial Graduate Students in the Life Sciences. This course will consist of a brief introduction to pathology describing the manifestation of disease at the macroscopic and microscopic level. This will be followed by (i) A description of various types of microscopy and methodology. (ii) Concepts in flow cytometry, tissue/cell fractionation. (iii) Histology and immunohistochemistry. (iv) Normal cells and tissues. (v) Organs. (vi) The general pathology of cells and tissues including hypertrophy, aplasia, atrophy, hyperplasia, metaplasia, dysplasia, neoplasia, storage diseases, extracellular space pathologies, necrosis and apoptosis. Blood vessel and cardiac pathologies will be covered as well as concepts in neuropahtology, organ/system specific pathologies and genetic diseases.

**CMMS5105 INTRODUCTION TO CANCER BIOLOGY** (3cr.)

An introduction to the biology of cancer. Major topics in cancer biology include the following: tumor suppression/oncogenes; apoptosis in cancer; cell immortalization and senescence; genomic instability; multistep tumorigenesis/inflammation in cancer; biology of angiogenesis; rational therapies.

**CMMS5111 COMPUTATIONAL CELL BIOLOGY** (3cr.)

Emphasis is on providing students with the background knowledge and the tools needed to develop and analyze models of cellular processes. Topics include modelling enzyme kinetics, signal transduction pathways, and gene regulatory networks, using differential equations, nonlinear dynamics, and stochastic processes. **Prerequisite: permission of program director and course coordinator.**
CMM5302 COMPREHENSIVE PHARMACOLOGY I (3cr.)
Extensive coverage of pharmacodynamics, pharmacokinetics, and the pharmacology of the autonomic and central nervous system. Students cannot obtain credit for both CMM 5301 and CMM 5302.

CMM5303 COMPREHENSIVE PHARMACOLOGY II (3cr.)
Extensive coverage of the pharmacology of antibiotic and anti-inflammatory drugs, of chemotherapeutic agents, and of the cardiovascular and gastro-intestinal systems. Students cannot obtain credit for both CMM 5301 and CMM 5303.

CMM5304 INTRODUCTION TO DEVELOPMENTAL BIOLOGY (3cr.)
Concepts in development and signalling pathways during development including formation of the germ layers; establishment of the body axis and principles of segmentation; patterning and homeobox genes; neurogenesis; axonal and neuronal guidance; stem cell concepts; germ cells; animal models in developmental biology.

CMM5311 PHYSIOLOGY AND PATHOPHYSIOLOGY OF ENERGY METABOLISM AND MUSCLE FUNCTIONS (3cr.)
Advanced comprehensive training in mammalian and human physiology with emphasis on pathophysiology. Topics include: neural and endocrine control of the hypothalamus-hypophysis axis; role of pancreas, adipose tissue and skeletal muscle in carbohydrate and lipid metabolism; cellular and molecular aspects of muscle contraction and fatigue in cardiac and skeletal muscle.

CMM5313 PHYSIOLOGY AND PATHOPHYSIOLOGY OF THE REPRODUCTIVE, RENAL AND GASTROINTESTINAL SYSTEMS (3cr.)
Advanced comprehensive training in mammalian and human physiology with emphasis on pathophysiology. Topics covered include reproductive physiology, molecular and bulk transport processes in the renal system, enteric control of the gastrointestinal tract.

CMM5315 CELLULAR AND MOLECULAR BASIS OF CARDIOVASCULAR FUNCTION/DYSFUNCTION (3cr.)
Mechanism of failing heart and cardiovascular system, its associated functions and associated conditions. Therapies for restoring function. Topics include: regulation of heart development, cell signaling, cellular and molecular mechanisms of atherosclerosis and heart disease, hormonal regulation, hypertension, bioenergetics, cardiovascular genomics and genetics, cell therapy, and regenerative medicine.

CMM5326 EXPERIMENTAL PREPARATIONS AND ANIMAL MODELS (3cr.)
Applied and theoretical course intended to give the potential researcher basic surgical skills. Lectures followed by demonstrations and/or practical exercises.

CMM7301 DIRECTED STUDIES (3cr.)
A program of study designed for a given student according to the student's educational requirements.

CMM7999 THÈSE DE MAÎTRISE / MSc THESIS

CMM8103 EPITHELIAL CELL POLARITY (3cr.)
Cell polarity with emphasis on tight junctions and Claudins (tight junction molecules). Topics include: the molecular basis of cell polarity and permeability barrier during development, organogenesis and disease including inflammatory disease and cancer.

CMM8105 ADVANCED TOPICS IN CANCER BIOLOGY (3cr.)
Advanced study of recent developments in the field of cancer biology with emphasis on cellular and molecular aspects. Specific topics to be covered include: angiogenesis, apoptosis, cancer genetics, cell signaling, genetic instability, oncogenes and tumour suppressors.

CMM8300 SPECIAL TOPICS IN REPRODUCTIVE AND DEVELOPMENTAL BIOLOGY (3cr.)
In-depth study of current topics in reproductive and developmental biology, with emphasis on state-of-the art molecular and cell biology techniques as well as their applications to reproductive diseases. Topics may include assisted reproductive technologies, embryonic stem cells, contraception, endocrine disruptors, reproductive toxicology, and transgenics.

CMM8310 CURRENT TOPICS IN RNA MOLECULAR BIOLOGY (3cr.)
Properties, mechanisms associated with regulation and the function of RNAs and Ribonucleoprotein (RNPs) as well as RNA organisms. Current knowledge on RNA expression (synthesis, processing, transport and localization), the structure-function relationship and molecular mechanisms associated with RNAs and RNA genomes, RNA in evolution and in the origin of life, and RNA as therapeutic agents. Prerequisites: BCH/BIO 3570-3170 or equivalent with the permission of the program director. Exclusion: BCH 8310.

CMM8324 SEMINARS I
Compulsory for one year for all students enrolled in the master’s program. Presentation of two seminars or one seminar and one poster required during the year as well as regular attendance at the departmental seminar series.

CMM8325 SEMINARS II
Compulsory for all students enrolled in the doctorate program. Presentation of two seminars or one seminar and one poster required during the year as well as regular attendance at the departmental seminar series.

CMM8340 NEUROMUSCULAR FUNCTION AND DYSFUNCTION (3cr.)
Topics to be covered include factors controlling muscle - and synapse-specific gene expression, regulation of myogenesis and muscle cell growth, formation of the neuromuscular junction, motor neuron - muscle interactions, the role of the cytoskeleton in organization of post-synaptic domains, functional role of ion channels in muscle, molecular genetics of neuromuscular disease.

**CMM8345 SPECIAL TOPICS IN GASTROENTEROLOGY (3cr.)**
Lectures, tutorials and seminar-discussion sessions, designed to provide advanced training in gastrointestinal function. Emphasis on pathophysiological mechanisms.

**CMM8350 ION CHANNELS: CELLULAR AND MOLECULAR ASPECTS OF MEMBRANE FUNCTIONS (3cr.)**
A study of the diversity, molecular structure, structure-function relationship, electrophysiological characteristics and physiological roles of different ion channels in excitable and non-excitable cells. The channels that are studied include the sodium, potassium, calcium and chloride channels.

**CMM8355 RENAL PHYSIOLOGY (3cr.)**
Lecture and seminar course with emphasis on electrolyte transport. Topics to include: detailed structure and function of nephron segments. Localization of primary and secondary active transport carriers, theories of autoregulation, hormone action in the kidney, drug action in the kidney, and regulation of renal vascular resistance.

**CMM9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAM (PhD)**

**CMM9999 THÈSE DE DOCTORAT / PhD THESIS**

**Chemical and Environmental Toxicology (MSc) (Collaborative)**

**The Institute**

The Ottawa-Carleton Institute combines the research strength of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master's (MSc) and doctoral (PhD) degrees in several fields (biology, chemistry, earth science, etc.). toxicology are as follows:

Toxicology is the study of effects of toxic substances on living systems. These toxic substances can either be organic or inorganic, synthetic or natural materials. Environmental toxicology further extends to aspects of chemical transport, fate, persistence and biological accumulation of toxic substances and their effects at the population and community levels. While individual researchers usually specialize in a particular area, toxicologists today must be able to appreciate significant research in other fields and therefore require an understanding of the basic principles of other disciplines. To meet this challenge the University of Ottawa and Carleton University offer a joint collaborative program leading to a master of science or a PhD degree with specialization in chemical and environmental toxicology.

This Ottawa-Carleton collaborative program in Chemical and Environmental Toxicology is intended to augment the research and training available to students through the individual supporting institutes.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

**Participating Units**

The primary participating units are:

1. The Ottawa-Carleton Institute of Biology (OCIB), the joint graduate program of the departments of Biology at the University of Ottawa and Carleton University.
2. The Ottawa-Carleton Institute of Chemistry (OCIC), the joint graduate program of the departments of Chemistry at the University of Ottawa and Carleton University.
3. The Ottawa-Carleton Geoscience Centre (OCGC), the joint graduate program of the departments of Earth Sciences at the University of Ottawa and Carleton University.

**Admission**

Admission to the collaborative program in chemical and environmental toxicology is governed by the «General Regulations» of the Ottawa-Carleton Institute and by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Candidates must indicate in their admission form that they wish to be accepted in the collaborative program.

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither
English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be admitted in one of the programs participating in the collaborative program of the Institute;
2. Complete a relevant introductory course in toxicology, either:
   (i) prior to admission to the collaborative program in chemical and environmental toxicology; Or
   (ii) While registered in the program by taking one of the two introductory courses (CHM8156 or BIO9104);
3. Provide a confidential letter of recommendation from a professor who is willing and available to act as thesis supervisor;
4. Be sponsored into the collaborative program by a faculty member, normally the thesis supervisor, who must be appointed, cross-appointed or stand as an adjunct at one or more of the participating units.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Program Requirements

Master's Degree Requirements

The following requirements must be met:

1. 3 compulsory credits of an introductory course in chemical and environmental toxicology (CHM8156 ou BIO9104);
2. Enrollment in the seminar course in toxicology (BIO9105), which involves the presentation of a seminar, and the regular attendance to the seminars presented by the Department;
3. Presentation and defense of a thesis in toxicology based on an original research carried out under the supervision of a faculty member participating in the chemical and environmental toxicology collaborative program.

The Department may require students to take additional courses depending on their backgrounds.

NOTE: The student must fulfill both the requirements for the master’s degree, and the requirements of the collaborative program.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d’Ottawa correspond à un cours de 0,5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

TOX8156 PRINCIPLES OF TOXICOLOGY (3cr.)
The basic theorems of toxicology with examples of current research problems. The concepts of exposure, hazard and risk assessment will be defined and illustrated with experimental material from some of the more dynamic areas of modern research.

TOX8157 CHEMICAL TOXICOLOGY (3cr.)
Advanced course in chemical toxicology dealing with both chemical hazards and exposure. Overview of empirical data relating to the toxicity of various classes of chemicals for test organisms, followed by study of toxicity at the cellular level, including studies of interactions between toxic substances and enzymatic
systems. Data applicable to the interpretation and monitoring of WHMIS health regulations. Initial events in enzyme induction and mutagenesis. Study of predictive capabilities in the areas of structure-activity relationships and mechanisms of enzyme induction, followed by assessment of mechanisms of exposure to toxic chemicals.

**TOX9104 ECOTOXICOLOGY** (3cr.)
Selected topics and advances in ecotoxicology with emphasis on the biological effects of contaminants. The potential for biotic perturbation resulting from chronic and acute exposure of ecosystems to selected toxicants will be covered along with the methods of pesticide, herbicide and pollutant residue analysis and the concept of bound residues.

**TOX9105 SEMINAR IN TOXICOLOGY** (3cr.)
A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topic. Student, faculty and invited seminar speakers.

**CHM8156 (CHEM 5708) PRINCIPLES OF TOXICOLOGY** (3cr.)
The basic theorems of toxicology with examples of current research problems. The concepts of exposure, hazard and risk assessment will be defined and illustrated with experimental material from some of the more dynamic areas of modern research.

**BIO9105 (BIOL 6405) SEMINAR IN TOXICOLOGY** (3cr.)
A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topic. Student, faculty and invited seminar speakers.

**BIO9104 (BIOL 6403) ECOTOXICOLOGY** (3cr.)
Selected topics and advances in ecotoxicology with emphasis on the biological effects of contaminants. The potential of biotic perturbation resulting from chronic and acute exposure of ecosystems to selected toxicants will be covered along with the methods of pesticide, herbicide and pollutant residue analysis and the concept of bound residues.

**CHM8157 (CHEM 5709) CHEMICAL TOXICOLOGY** (3cr.)
Advanced course in chemical toxicology dealing with both chemical hazard and exposure. Overview of the empirical data relating to the toxicity of various classes of chemicals to test organisms, followed by the study of toxicity at the cellular level, including studies of interactions between toxic substances and enzymatic systems. Data applicable to the interpretation and monitoring of the new WHMIS health regulations. Initial events in enzyme induction and mutagenesis. Study of predictive capabilities in the areas of structure-activity relationships and mechanisms of enzyme induction are considered, followed by an assessment of mechanisms of exposure to toxic chemicals.

**BIO5103 (BIOL 5003) COMPARATIVE BIOCHEMISTRY** (3cr.)
Advanced topics emphasizing biochemical structures, functions and methodologies in the context of animal (invertebrates and vertebrates) adaptations to environmental stress.

**BIO5305 (BIOL 5407) QUANTITATIVE ECOLOGY** (3cr.)
A course on analysis of the distribution and abundance of plants and animals, and of related environmental phenomena. Computer assignments and a major data analysis project will be required. Prerequisites: Graduate standing, courses in elementary ecology and statistics and permission of the department.

**BIO5306 (BIOL 5409) MATHEMATICAL MODELLING FOR BIOLOGISTS** (3cr.)
This course is designed to develop mathematical tools for the modelling of biological processes. The student is taught the necessary mathematics, a computer language, and guidance is given in the choice of simulation of a biological process.

**BIO8109 (BIOL 6001) ADVANCED MOLECULAR BIOLOGY I** (3cr.)
Recent advances in molecular biology. Topics for discussion may include the following: DNA structure and function, the organization of the genome; DNA, RNA and protein synthesis; the regulation of gene expression in eukaryotes and prokaryotes. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 8116/BIO 6002 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

**BIO8116 (BIOL 6002) ADVANCED MOLECULAR BIOLOGY II** (3cr.)
Recent advances in molecular biology. Topics for discussion may include the following: mutagenesis and DNA repair mechanisms; molecular aspects of gene transfer recombination and gene rearrangement; gene transfer mechanisms, the molecular biology of yeasts and fungi, especially with regard to industrial applications; the modern techniques of genetic engineering as applied to industrial and medical problems. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 6001 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

**BIO8162 (BIOL 5402) TOPICS IN COMPARATIVE ENDOCRINOLOGY** (3cr.)
A lecture and reading course concerned with classical as well as current topics in the field of comparative endocrinology. Special emphasis will be placed on the vertebrates. Prerequisite: An undergraduate Endocrinology course (BIO 4127 or equivalent).

**BIO8306 (BIOL 5508) ADVANCED TOPICS IN ECOLOGY I** (3cr.)
Lectures, seminars and discussions on current literature on experimental approaches, concepts and findings in population and community ecology, ecosystem
and landscape ecology and biostatistics. Course content to complement that of BIO 8307/BIO 5509; not necessary to take the two in a particular order.

**BIO8307 (Biol. 5509) ADVANCED TOPICS IN ECOLOGY II (3cr.)**
Lectures, seminars and discussions on current literature on experimental approaches, concepts and findings in population and community ecology, ecosystem and landscape ecology and biostatistics. Course content to complement that of BIO 8306/BIO 5508; not necessary to take the two in a particular order.

**BIO8365 (Biol. 5802) ADVANCED BEHAVIOURAL ECOLOGY (3cr.)**
Recent ideas and research on advanced topics dealing with the evolution of foraging, temporal, spatial, and reproductive strategies will be discussed and critically examined. Offered in alternate years.

**CHMB126 (Chem 5303) BIOINORGANIC CHEMISTRY (3cr.)**
Overview of recent developments in the mechanistic understanding of selected enzyme-catalyzed reactions. Topics include Cytochrome P450, methane monoxygenase, biotin and lipoic acid biosynthesis, methyl transfer, Vitamin B12, lipooxygenase, prostaglandin synthase; etc. Emphasis will be placed on biotransformations which are relatively poorly understood from a mechanistic point of view.

**CHMB832 (Chem 5203) TOPICS IN COORDINATION CHEMISTRY (1.5cr.)**
Brief introduction to basic concepts in coordination chemistry. Topics to include the following: carbon dioxide fixation, dinitrogen fixation, activation, olefin metathesis, nature of the M-M bond.

**CHMB837 (Chem 5005) PHYSICAL ORGANIC CHEMISTRY (1.5cr.)**
Hammet functions, transition state energies, stereochemistry of organic compounds, and mechanisms of organic reactions and their determination.

**CHMB839 (Chem 5402) MEDICINAL CHEMISTRY (1.5cr.)**
Preparation of drugs, their mode of action, their use in treating of disease. Evolution of medicine due to chemistry. Discussion of metabolic pathways and their modification to control and/or circumvent disease.

**CHMB8331 (Chem 5300) PHYSICAL CHEMISTRY OF BIOLOGICAL MACROMOLECULES (1.5cr.)**
Focus on how the application of physical techniques normally applied to small molecules, can be used to study macromolecular structure and function of DNA and proteins. Examples of applications to include: kinetics, electrochemistry, equilibria phenomena (thermodynamics).

**CHMB8332 (Chem 5301) ELECTROCHEMICAL PHENOMENA IN BIOLOGICAL SYSTEMS (1.5cr.)**
Description of theory accounting for the generation of membrane potentials. Application to the generation of nerve impulses.

**CHMB8333 (Chem 5302) SURFACE PHENOMENA IN BIOLOGICAL SYSTEMS (1.5cr.)**
Description of theory of surface tension phenomena in aqueous systems. Discussion of effects of cell and macromolecular structures in biological systems.

**CHMB8348 (Chem 5500) ANALYTICAL INSTRUMENTATION (1.5cr.)**
Principles of modern electronics, devices and instruments. Measurement of photonic and electrochemical signals. Conditioning of signals for feedback control and microcomputer interfacing. Computational data analysis techniques such as simplex optimization. Applications in chemical analysis include amperometric detector for capillary electrophoresis, and surface plasmon resonance immunosensor.

**CHMB8349 (Chem 5304) FREE RADICALS IN CHEMISTRY AND BIOLOGY (1.5cr.)**
Oxidative stress induced by free radicals plays a significant role in most fatal and chronic diseases. The chemistry of bio-radicals will be described and related to pathobiological processes such as lipid peroxidation and atherosclerosis, protein nitration and cross linking, and DNA scission.

**CHMB8352 (Chem 5501) ANALYTICAL APPROACH TO CHEMICAL PROBLEMS (1.5cr.)**
Case study of analytical approach to various chemical problems in agricultural, biochemical, environmental, food processing, industrial, pharmaceutical and material sciences. Analytical methods include capillary electrophoresis, chemiluminescence, Fourier transform infrared spectroscopy, inductively coupled plasma emission spectroscopy, mass spectrometry, biochemical sensors, and fiber optics for remote sensing.

**CHMB8353 (Chem 5502) TRACE AND ULTRATRACE ANALYTICAL CHEMISTRY (3cr.)**
Criteria for evaluation and selection of analytical techniques and methods. Electrometallurgical techniques. Simultaneous and sequential multielement determination. Atomic absorption, atomic emission and atomic fluorescence spectrometry, using optical spectrometric and mass- spectrometric determination. Applications of these techniques at trace and ultratrace levels in complex matrices.

**CHMB8354 (Chem 5503) CHEMICAL SPECIATION IN THE NATURAL ENVIRONMENT (3cr.)**
Evaluation of analytical techniques and their capability for quantitative determination of chemical species (as opposed to total element-determination) in the natural environment. Electro- chemical techniques for determination of chemical speciation of nutrient and toxicant elements present in the natural environment.

**GEO5136 (Erth 5306) PALEOBIOLOGY (3cr.)**
Selected topics in paleobiology of micro- and macro-invertebrates and vertebrates. Topics include extinctions, micro- and macro-evolutionary processes, long-term trends and cycles in the Phanerozoic, and functional morphology, as well as application of invertebrates to biostratigraphy, paleoceanography and paleoecology.
GEO5141 (GEOL 5401) PERMAFROST HYDROLOGY AND INVESTIGATIVE METHODS
An examination of groundwater flow in permafrost regions. The importance of groundwater in the formation of various types of ground ice, and the effect of groundwater flow on permafrost distribution.

GEO5142 (GEOL 5402) ENVIRONMENTAL GEOSCIENCE (3cr.)
A study-seminar course in which students will examine, in depth, certain environmental problems, including geological hazards, mineral and energy consumption and environmental degradation. The relation between development and the environment will be considered. Students will prepare a report and present a seminar on a subject of their choice, and will participate in a research project centered in the Ottawa area.

GEO5143 (GEOL 5403) ENVIRONMENTAL ISOTOPES AND GROUNDWATER GEOCHEMISTRY (3cr.)
Stable environmental isotopes (18O, 2H, 13C, 34S, 15N) in studies of groundwater origin and flow, and geothermal studies. Groundwater dating techniques involving tritium and radiocarbon, and exotic radioisotopes (e.g. 36Cl, 39Ar, 85Kr). Low temperature aqueous geochemistry and mineral solubility with emphasis on the carbonate system. Some applications to paleoclimatology will be discussed. Prerequisite: Fourth-year Hydrogeology (67.420 or GEO 4342) or equivalent.

GEO5147 (ERTH 5407) GEOCHEMISTRY OF NATURAL WATERS (3cr.)
Aqueous speciation, solubility of metals, minerals and gas, reaction kinetics and equilibria. Chemistry and dynamics of groundwaters and hydrothermal fluids.

GEO5153 (ERTH 5503) COMPUTER TECHNIQUES IN THE EARTH SCIENCES (3cr.)
A practical course in the application of computer techniques in the acquisition and interpretation of geoscientific data. Topics will be selected from the following: remote sensing and geographic information systems; geostatistical analysis techniques; analysis and modelling of geoscientific data. Prerequisite: Permission of the Institute.

GEO5163 (ERTH 5603) STABLE ISOTOPE GEOCHEMISTRY (3cr.)

**Chemical Engineering (MEng/MASc)**

The Department of chemical and biological engineering located in the Faculty of Engineering offers graduate programs leading to the degrees of Master of Applied Science (MASc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Chemical Engineering.

The main objective of the master’s programs is to refine the skills and research expertise of the students by expanding their specialized knowledge of chemical engineering primarily achieved through course work, research seminars, and technical training.

The PhD program prepares candidates for a career in teaching, research and/or development. Graduates are expected to have acquired autonomy in conducting research, preparing scholarly publications, and promoting chemical engineering.

Members of the Department are involved in four main research fields: materials development; process engineering; clean technologies and renewable energy; and, biomedical engineering. Further information is posted on the departmental website.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group. In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**

Admission to the graduate program in Chemical Engineering is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold an honours bachelor’s degree with specialization or a major in chemical engineering (or equivalent) with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. For admission to the MASc, identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The Department may require students to take additional courses depending on their backgrounds.

**Program Requirements**

**A- Master of Applied Science (MASc)**

The requirements of this program are as follows:

1. Successful completion of 12 credits in chemical engineering including the compulsory course CHG8116;
2. Successful completion of the seminar course CHG8101S;
3. Presentation and defense of a thesis (CHG7990) based on original research carried out under the direct supervision of a research faculty member in the Department.

**Residence**

All students must complete a minimum of three sessions of full-time registration.

**Thesis**

Students enrolled in the master in applied science and doctorate may submit their thesis in traditional monograph format or as a series of articles prepared for publication in scholarly journals. The regulations for submitting theses in article format can be found on the FGPS website in the guide 'Preparing a Thesis or Research Paper'.

**B- Master of Engineering (MEng)**

The requirements of this program are as follows:

1. 24 course credits and an engineering report (6 cr.);
   
   or

2. 30 course credits.

Course credits must be earned according to the following rules:

1. A minimum of 15 credits (including CHG 8116 Advanced Transport Phenomena and excluding the engineering project) must be taken among the courses offered by the Department of Chemical Engineering. These may be either graduate courses or fourth-year electives (requirement 2 limits the number of fourth-year electives that can be taken).
2. A part of the total course-credit requirement may be satisfied by taking advanced undergraduate courses to a maximum of nine credits. These can be either fourth-year Chemical Engineering electives or courses offered by other departments of the faculties of Engineering or Science.
3. Graduate courses offered by other departments may be taken for credit with permission of the program director, provided the first requirement is also satisfied.

**Courses**

Tous les cours décrits ci-après ne sont pas nécessairement offerts chaque année. La présence aux cours est obligatoire.

Not all of the following courses are necessarily given each year. Attendance at courses is compulsory.

**CHG6000 RAPPORT EN GÉNIE CHIMIQUE / CHEMICAL ENGINEERING REPORT** (6cr.)

**CHG7999 THÈSE DE M.Sc.A. / MASc. THESIS**
CHG8101S SEMINAR I (1cr.)
Oral presentation of selected topics and research papers. Attendance at all seminars is compulsory for MASc students.

CHG8102S SEMINAR II (1cr.)
Oral presentation of selected topics and research papers. Attendance at all seminars is compulsory for PhD students.

CHG8110 FLUID MECHANICS (3cr.)
Stream function, circulation and vorticity, form drag and drag coefficients, equations of motion, boundary layer theory, modern theory of turbulent motion, flow in porous media, non-Newtonian flow.

CHG8115 HEAT TRANSFER I (3cr.)
The general law of heat conduction. Steady and unsteady heat conduction in solids with or without internal heat sources. Radiant heat transmission.

CHG8116 ADVANCED TRANSPORT PHENOMENA (3cr.)
Advanced study of momentum, heat and mass transfer relevant to chemical engineering and also to areas such as environmental engineering, medicine and other scientific disciplines. Review of the analogy between mass, momentum and thermal transport and, in particular, of the physical principles and mathematical foundations required for the analysis of fluid flow, heat transfer and mass transfer, and of the advanced methods for the analysis of transport problems. Main emphasis on formulation of a given physical problem in terms of appropriate conservation equations, and obtaining an understanding of the associated physical phenomena. Use of many chemical engineering applications to illustrate the various principles.

CHG8120 RHEOLOGY AND POLYMER PROCESSING (3cr.)

CHG8123 CHEMICAL ENGINEERING THERMODYNAMICS I (3cr.)

CHG8132 (ENVE 5105) ADSORPTION SEPARATION PROCESSES (3cr.)

CHG8141 SPECIAL DIRECTED STUDIES I (3cr.)

CHG8143 SPECIAL DIRECTED STUDIES II (3cr.)

CHG8145 SPECIAL DIRECTED STUDIES III (3cr.)

CHG8153 (ENVJ5500) STATISTICAL MODELLING AND CONTROL OF DYNAMIC PROCESSES (3cr.)

CHG8157 STRATEGIES FOR ENGINEERING PROCESS ANALYSIS (3cr.)
Statistical experimental design and analysis techniques for industrial and laboratory investigations are presented. Topics include: the nature and analysis of process variation, comparisons of two or more processes, empirical modelling of processes, applications of factorial and fractional factorial designs, mixture designs, response surface methodologies and empirical optimization techniques. Prerequisite: MAT 2377 or equivalent, or permission of the instructor.

CHG8158 (ENVJ5304) POROUS MEDIA (3cr.)

CHG8161 CHEMICAL REACTION ENGINEERING (3cr.)
Kinetics of chemical reactions and its application to chemical engineering problems. Rate expressions and heterogeneous kinetics. Preparation and evaluation of catalyst activity. Promoters and poisons. Physical properties and transfer of mass and energy in porous catalysts. Interpretation of kinetic data and determination of mechanisms of catalyzed reactions.

CHG8175 MATERIAL TRANSPORT (3cr.)
Macroscopic mass, momentum, energy and mechanical energy balance equations.

**CHG8181 (ENVJ5501) BIOCHEMICAL ENGINEERING (3cr.)**

**CHG8186 (ENVJ5506) MODELLING OF STEADY-STATE PROCESSES (3cr.)**
A comprehensive examination of techniques for building and analyzing process models is made. Topics include: linear least squares estimation, non-linear least squares estimation, multiresponse parameter estimation, error in variables estimation, heteroscedasticity, design of experiments for precise parameter estimation and model discrimination.

**CHG8187 INTRODUCTION TO POLYMER REACTION ENGINEERING (3cr.)**

**CHG8188 POLYMER PROPERTIES AND CHARACTERIZATION (3cr.)**
Polymer properties are described and discussed in the context of their nature, source and means of measurement. Chemical and microstructural properties; physical states and transitions; thermal properties; mechanical properties and viscoelasticity models; degradation and stability; surface, electrical and optical properties, polymer additives; structure-property relationships.

**CHG8189 CHEMICAL ENGINEERING ANALYSIS (3cr.)**
Treatment and interpretation of experimental data. Formulation of ordinary and partial differential equations for the solution of problems arising in chemical engineering. Emphasis will be on problems requiring numerical techniques with examples taken from fluid flow, heat transfer and mass transfer. Selection of boundary conditions.

**CHG8191 SELECTED TOPICS CHEM ENGINEER (3cr.)**
Discussion of recent progress in chemical engineering.

**CHG8192 (ENVJ5502) MEMBRANE APPLICATIONS IN ENVIRONMENTAL ENGINEERING (3cr.)**
Course emphasizing the applications of membrane separation processes in the resolution of various environmental problems. Applications of reverse osmosis, ultrafiltration and pervaporation to the treatment of industrial waste waters. Applications of membrane gas and vapor permeation to the removal of pollutants from air. Discussion of fundamentals underlying each separation process.

**CHG8194 (ENVJ5504) MEMBRANE SEPARATION PROCESSES (3cr.)**
Advanced topics of membrane separations including reverse osmosis, ultrafiltration, gas separation, non-aqueous liquid separation, and membrane applications in biotechnology. The course involves problem solving in membrane transport, membrane design, and membrane process design.

**CHG8195 (ENVJ5505) ADVANCED NUMERICAL METHODS IN TRANSPORT PHENOMENA (3cr.)**
Survey course of numerical methods for solving linear and non-linear ordinary and partial differential equations. Techniques reviewed include Runge-Kutta and predictor-corrector methods, shooting techniques, control volume discretization methods and finite elements. Example problems from the field of transport phenomena.

**CHG8196 (ENVJ5507) INTERFACIAL PHENOMENA IN ENGINEERING (3cr.)**
Interfacial tension and interfacial free energy; contact angles; spreading of liquids; wetting of surfaces; experimental techniques. Interfacial tension of mixtures; Gibbs equation; absorbed and insoluble monolayers; properties of monolayers and films. Electrical phenomena at interfaces; the electrical double layer; zeta-potential; electrokinetic phenomena (electrophoresis, electro-osmosis, streaming potential); surface conductance. Dispersed systems; formation and practical uses of emulsions; spontaneous emulsification; flocculation.

**CHG8198 (ENVJ5503) REVERSE OSMOSIS (3cr.)**

**CHG9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAMINATION (PhD)**

**CHG9999 THÈSE DE DOCTORAT / DOCTORAL THESIS**

**Chemistry (MSc)**

**Ottawa-Carleton Joint Program**
General Information

Established in 1984, the Ottawa-Carleton Chemistry Institute (OCCI) combines the research strengths of the University of Ottawa and Carleton University. The institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Chemistry.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in the following research fields: inorganic chemistry; organic chemistry; theoretical chemistry; biological chemistry; analytical chemistry; and, physical chemistry. Additional information is posted in the departmental website.

The Institute is a participating unit in the collaborative program in chemical and environmental toxicology at the master’s and doctoral levels.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the General Regulations of the graduate faculty at each of the two universities. The general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate program in Chemistry is governed by the General Regulations of the Ottawa-Carleton Institute for Chemistry (OCIC) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

To be considered, applicants must:

1. Be the holder of a bachelor’s degree with a specialization, or a major in chemistry (or equivalent) with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Collaborative Programs

The Department of Chemistry is a participating unit in the collaborative program in Chemical and Environmental Toxicology. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, see the description of the program posted on the FGPS website.

Program Requirements

Master's Degree Requirements

The following requirements must be met:

1. Six credits of graduate courses at the 5000 level or above in chemistry or in related disciplines approved by the Department of Chemistry;
2. Enrollment in the seminar course CHM8250, which involves the presentation of a seminar and the regular attendance at the seminars presented by the Department;
3. Presentation and defense of a thesis (CHM7999) based on original research carried out under the direct supervision of a professor who is a member of the FGPS.

Residence

All students must complete a minimum of three sessions of full-time registration.
Minimum Standards
The passing grade in all courses is B. Students who fail two courses (equivalent to 6 credits), the thesis proposal, the comprehensive exam, or whose research progress report is deemed unsatisfactory are required to withdraw from the program.

Duration of the program
The requirements of the program are usually fulfilled within two years. The maximum time permitted is four years from the date of initial registration.

Transfer from Master’s to PhD Program
Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits de l'Université d'Ottawa correspond à un cours de 0.5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

CHM7999 (CHEM 5909) THÈSE DE MAÎTRISE / MSc THESIS

CHM8256 (CHEM 5801) SEMINAR I

CHM8257 (CHEM 5802) SEMINAR II

CHM8301 (CHEM 5001) ANALYTICAL MASS SPECTROMETRY (1.5cr.)
The principles of ion sources and mass spectrometers will be described, together with their applications to problems in chemistry and biochemistry. Introduction to the chemistry gaseous ions. Ion optics. Special emphasis on interpreting mass spectra.

CHM8302 (CHEM 5902) ADVANCED TOPICS IN INORGANIC CHEMISTRY (1.5cr.)
Topics of current interest in inorganic chemistry. Variable content from year to year.

CHM8303 (CHEM 5204) DESCRIPTIVE ORGANO METALLIC CHEMISTRY (1.5cr.)
Review of basic concepts of M-C bonds and of the preparation and reactivity of transition and non-transition metal organometallic species. Brief discussion of the most important catalytic processes (e.g. Ziegler-Natta, Fisher-Tropsch, catalytic hydrogenation and hydroformilation).

CHM8304 (CHEM 5901) ADVANCED TOPICS IN ORGANIC CHEMISTRY (1.5cr.)
Topics of current interest in organic chemistry. Variable content from year to year.

CHM8305 (CHEM 5400) SYNTHESIS METHODS (1.5cr.)
Discussion of modern reactions and reagents and their development. Modern methods such as Evans enolates, catalytic processes, organometallic methods. Combination of methods for the preparation of complex molecules and building blocks.

CHM8307 (CHEM 5205) IONS AND IONIC PROCESSES IN CHEMISTRY (1.5cr.)
Properties of water, hydration of ions, ionic interaction, colloidal and polymeric electrolytes. Ionization processes in solution.

CHM8308 (CHEM 5002) MULTINUCLEAR MAGNETIC RESONANCE SPECTROSCOPY (1.5cr.)

CHM8309 (CHEM 5903) ADVANCED TOPICS IN PHYSICAL / THEORETICAL CHEMISTRY (1.5cr.)
Topics of current interest in physical/theoretical chemistry. Variable content from year to year.

CHM8310 (CHEM 5007) INTRODUCTION TO PHOTOCHEMISTRY (1.5cr.)
Basic principles of photochemistry including selection rules, energy transfer processes and the properties of excited state reactions. Lasers and their applications to measurements of the dynamics of elementary reactions.

CHM8311 (CHEM 5008) ADVANCED AND APPLIED PHOTOCHEMISTRY (1.5cr.)

CHM8312 (CHEM 5507) APPLICATIONS OF THERMOCHEMISTRY TO CHEMICAL PROBLEMS (1.5cr.)
Measurement of and interrelationship between molecular, radical and ionic enthalpies and their relevance to bond strengths and chemical reactivity.

CHM8313 (CHEM 5508) ION STRUCTURES IN ORGANIC CHEMISTRY (1.5cr.)
Examination of the significance of structure on the generation and behaviour of organic cations and anions in gaseous and condensed phases.

CHM8314 (CHEM 5504) SURFACE CHEMISTRY ASPECTS OF ELECTROCHEMICAL SCIENCE (1.5cr.)

CHM8315 (CHEM 5505) ELECTROCHEMICAL SURFACE SCIENCE (1.5cr.)
Introduction to advanced in-situ techniques in electrochemistry: Scanning probe microscopy, Raman, infrared and laser spectroscopy. Prerequisite: CHM 8314, 8714.

CHM8316 (CHEM 5506) SURFACE CHEMISTRY (1.5cr.)
Adsorption phenomena and isotherms, surface areas of solids. Modern techniques in surface chemistry and surface science such as electron diffraction, Auger electron spectroscopy, photoelectron spectroscopy, electron energy loss spectroscopy, infrared and Raman spectroscopy. Current new techniques.

CHM8317 (CHEM 5104) IONIC REACTION INTERMEDIATES (1.5cr.)
Generation of ionic reaction intermediates in the condensed phase and their characterization by experimental techniques. Includes carbocations, zwitterionic intermediates.

CHM8318 (CHEM 5103) FREE RADICALS (1.5cr.)
Photochemical generation of free radical reaction intermediates in the condensed phase. Techniques to be explored include laser flash photolysis, pulse radiolysis, esr, CIDNP and matrix isolation.

CHM8319 (CHEM 5403) TOTAL SYNTHESSES (1.5cr.)
Discussion on philosophy and strategy development for complex syntheses, along with modern reagents and reactions that have shortened classical routes and lead to more efficient and atom economy.

CHM8320 (CHEM 5405) PERICYCLIC AND STEREOELECTRONIC EFFECTS (1.5cr.)
Pericyclic reactions, facial selectivity, stereoelectronic effects in carbohydrates and related acetal cleavage. Applications to complex synthetic problems.

CHM8321 (CHEM 5201) SOLID STATE CHEMISTRY (1.5cr.)
Thermodynamic and kinetic aspects of solid state synthesis. Characterization of solids. Chemical and physical properties of solids that may include aspects of intercalation reactions, ionic conductors, glasses, electronic, magnetic optical and physical/mechanical properties.

CHM8322 (CHEM 5203) TOPICS IN COORDINATION CHEMISTRY (1.5cr.)
Brief introduction to basic concepts in coordination chemistry. Topics to include the following: carbon dioxide fixation, dinitrogen fixation, activation, olefin metathesis, nature of the M-M bond.

CHM8323 (CHEM 5600) QUANTUM MECHANICAL METHODS THEORY (1.5cr.)
Examination of the theory behind quantum mechanical methods (HF, MP2, CI, DFT). Semi-empirical.

CHM8324 (CHEM 5601) QUANTUM MECHANICAL METHODS APPLICATIONS (1.5cr.)
Practical applications of methods taught in CHM 8323 such as thermochemistry, reaction pathway moeling, structure predictions. Prerequisite: CHM 8323 or 8723.

CHM8325 (CHEM 5003) SOLID STATE NMR SPECTROSCOPY (1.5cr.)
Brief introduction to solid state NMR spectroscopy. Topics include dipolar coupling interactions, chemical shielding anisotropy, the quadrupolar interaction and averaging techniques such as magic angle spinning.

CHM8326 (CHEM 5004) NMR SPECTROSCOPY (1.5cr.)
Advanced NMR techniques for both proton and carbon spectra, various decoupling and related experiments. Interpretation of NOSY, COSY and related data.
CHM8327 (CHEM 5005) PHYSICAL ORGANIC CHEMISTRY (1.5cr.)
Hammett functions, transition state energies, stereochemistry of organic compounds, and mechanisms of organic reactions and their determination.

CHM8328 (CHEM 5401) APPLICATIONS OF ORGANO METAL LIGANDS CHEMISTRY TO SYNTHESIS (1.5cr.)
Study of organometallic methods, many of which have become catalytic and involve metals such as Cu, Pd, Pt, Mo, Cr, Ru. Various applications to be discussed including Stille coupling, Heck reaction, ring closing metathesis.

CHM8329 (CHEM 5402) MEDICINAL CHEMISTRY (1.5cr.)
Preparation of drugs, their mode of action, their use in treating of disease. Evolution of medicine due to chemistry. Discussion of metabolic pathways and their modification to control and/or circumvent disease.

CHM8330 (CHEM 5404) HETEROATOMS (1.5cr.)
Focus on heterocycles. Reactivity of these heterocycles and their use for drugs and applications for the total synthesis particularly of alkaloids. Extensive examination of carbohydrate chemistry and other important oxygen heterocycles.

CHM8331 (CHEM 5300) PHYSICAL CHEMISTRY OF BIOLOGICAL MACROMOLECULES (1.5cr.)
Focus on how the application of physical techniques normally applied to small molecules, can be used to study macromolecular structure and function of DNA and proteins. Examples of applications to include: kinetics, electrochemistry, equilibria phenomena (thermodynamics).

CHM8332 (CHEM 5301) ELECTROCHEMICAL PHENOMENA IN BIOLOGICAL SYSTEMS (1.5cr.)
Description of theory accounting for the generation of membrane potentials. Application to the generation of nerve impulses.

CHM8333 (CHEM 5302) SURFACE PHENOMENA IN BIOLOGICAL SYSTEMS (1.5cr.)
Description of theory of surface tension phenomena in aqueous systems. Discussion of effects of cell and macromolecular structures in biological systems.

CHM8334 (CHEM 5009) NOVEL ORGANIC AND INORGANIC MOLECULES AND RADICALS (1.5cr.)
Topics to include neutralization-reionization techniques as well as flash pyrolysis and matrix isolation studies.

CHM8335 (CHEM 5006) IONIC PROCESSES IN THE ATMOSPHERE AND INTERSTELLAR SPACE (1.5cr.)
Discussion on the importance of ionic reactions in the upper atmosphere and in the interstellar medium. Study of dynamics of ion-molecule reactions and of experimental and theoretical approaches used for studying them.

CHM8336 (CHEM 5604) NON-EQUILIBRIUM KINETICS (1.5cr.)
Gas phase chemical kinetics of elementary and complex reaction mechanisms, as seen from a microscopic viewpoint. Unimolecular and bimolecular reactions under conditions of non-Boltzmann energy distributions. Consequences for combustion and atmospheric chemistry, as well as for fundamental kinetics.

CHM8337 (CHEM 5605) NON-LINEAR CHEMICAL KINETICS (1.5cr.)
Principles of non-linear dynamics as applied to very complex chemical reaction mechanisms containing feed-back processes. Monotonic, oscillatory, and chaotic dependence of concentrations on time. Gas phase and liquid phase reactions.

CHM8338 (CHEM 5100) UNIMOLECULAR REACTION DYNAMICS: EXPERIMENT AND THEORY (1.5cr.)
Presentation of the theoretical models that have been developed for the understanding of unimolecular reactions, focussing on statistical theories such as RRKM theory. Experimental techniques for exploring the kinetics and mechanism of unimolecular reactions, including mass spectrometry, coincidence spectroscopy and ZEKE spectroscopy.

CHM8339 (CHEM 5105) HETEROGENEOUS CATALYSIS (1.5cr.)
Principles of catalytic reactions and topics in modern applications of catalysis. Bonding of substrates on surfaces; cluster-surface analogy; ensemble requirements; mechanisms of catalysis on metal and metal oxide surfaces.

CHM8340 (CHEM 5106) ORGANOMETAL TRANSITION METAL CATALYSIS: E-H BOND ACTIVATION (1.5cr.)
Focus on the catalytic activation of E-H bonds by soluble organometallic complexes. Examples to include hydrogenation, hydrosilation and hydroboration catalysis, hydromamination and hydrophosphination.

CHM8341 (CHEM 5107) TRANSITION METAL CATALYSED POLYMERIZATION (1.5cr.)
Recent developments in polymerization catalysis via transition metal complexes, including insertion, metathesis, and atom-transfer polymerization. Brief overview of relevant concepts in polymer chemistry (e.g. molecular weight, polydispersity, living polymerization, the glass transition).

CHM8342 (CHEM 5200) CLAY MINERALS CHEMISTRY (1.5cr.)

CHM8343 (CHEM 5202) CHEMISTRY OF THE MAIN GROUP ELEMENTS (1.5cr.)
Fundamental and applied aspects of main group element chemistry. Topics may include non-metal chemistry, main group organometallic chemistry, application
of main group element compounds to 3 uses of main group element compounds in synthesis.

**CHM8344 (CHEM 5602) COMPUTATIONAL APPROACHES IN MEDICINAL CHEMISTRY** (1.5 cr.)
Theory and application of methods used in the pharmaceutical industry including molecular mechanics.

**CHM8345 (CHEM 5603) MOLECULAR ENERGY TRANSFER** (1.5 cr.)
Principles of energy transfer during non-reactive molecular collisions as deduced from experiment and theory, mostly in the gas phase. Translational, rotational, vibrational and electronic energies are discussed.

**CHM8505 SYNTHÈSE ORGANIQUE** (1.5 cr.)
Stratégies de synthèse complexes. Réactifs et réactions permettant des synthèses simplifiées et plus efficaces.

**CHM8508 SPECTROSCOPIE PAR RÉSONANCE MAGNÉTIQUE MULTINUCLÉAIRE** (1.5 cr.)

**CHM8714 ÉLÉMENTS DE LA CHIMIE DE LA FEUILLE** (1.5 cr.)

**CHM8722 SUJETS CHOISIS DE LA CHIMIE DE COORDINATION** (1.5 cr.)

**CHM8723 MÉTHODES DE LA MÉCANIQUE QUANTIQUE THÉORIE** (1.5 cr.)
Description de la théorie sur laquelle sont basées les méthodes de chimie quantique (HF, MPS, CI, DFT). French equivalent of CHM 8323.

**CHM8958 PROJET DE RECHERCHE / RESEARCH PROPOSAL**
Préparation d'un projet de recherche, sans rapport avec le sujet de thèse, à soutenir oralement devant un comité d'examen. L'étudiant doit démontrer sa capacité à définir, développer et justifier le mérite scientifique, la méthodologie, l'importance et la nouveauté du projet. Il doit réussir ce cours dans l'année qui suit la réussite de l'examen général. Les étudiants dont les résultats ne seraient pas satisfaisants peuvent se réinscrire une fois et doivent alors réussir en un semestre / Preparation of a research project, unrelated to the thesis topic, to be defended orally before an examining committee. Student required to demonstrate the ability to defend and justify the scientific merit, methodology, importance, and novelty of the project. Must be completed within one year of passing the comprehensive examination. Students who fail this activity may re-register for it once and must then successfully complete it within one session.

**CHM9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION**

**CHM9999 (CHEM 6909) THÈSE DE DOCTORAT / PhD THESIS**

**PHYS10 (PHYJ 5001) EXPERIMENTAL CHARACTERIZATION TECHNIQUES IN MATERIALS SCIENCE, PHYSICS, CHEMISTRY, AND MINERALOGY** (3 cr.)
Survey of experimental techniques used in materials science, condensed matter physics, solid state chemistry, and mineralogy to characterize materials and solid substances. Diffraction (X-ray diffraction, neutron diffraction...). Spectroscopy (infra-red spectroscopy, Raman spectroscopy, nuclear magnetic resonance, Mössbauer spectroscopy, electron spin resonance...). Microscopy and imaging (scanning electron microscopy, transmission electron microscopy, optical microscopy, magnetic resonance imaging...). Other analytic techniques (thermal analysis, wet chemistry, bulk thermodynamic properties, linear response and dc susceptibility...).

**Courses offered at Carleton University**

**CHM8355 (CHEM5000) TRACE ELEMENTAL ANALYSIS USING INDUCTIVELY COUPLED PLASMA EMISSION (ICP-ES) AND MASS SPECTROMETRY (ICP-MS)** (1.5 cr.)
ICP-ES/MS techniques are among the most powerful tools presently available for elemental analysis for a wide range of interests such as environmental, geological and biological applications. The fundamentals, state of the art instrumentation, applications, existing challenges, and new research and developments will be covered.

**CHM8500 (CHEM5009) SPECIAL TOPICS IN MOLECULAR SPECTROSCOPY** (3 cr.)
Topics of current interest in molecular spectroscopy. In past years, the following areas have been covered: Electronic spectra of diatomic and triatomic molecules and their interpretation using molecular orbital diagrams; Raman and resonance Raman spectroscopy; symmetry aspects of vibrational and electronic levels of ions and molecules in solids in the presence of weak and strong resonant laser radiation.

**CHM8181 (CHEM 5101) CHEMICAL PHYSICS OF ELECTRON-MOLECULE COLLISIONS** (3 cr.)
Basic classical scattering theory and quantum mechanical scattering theory. Experimental aspects, such as electron optics, electron gun fundamentals, energy analyzers and electron detectors. Applications to the understanding of the chemistry of materials.
CMN5115 COMMUNICATION ETHICS

1) Media Studies

Please be advised that, given the high level of competition for admission into the Department of Communication's graduate programs and the identity and diversity in communication involves study of the representations and communication challenges posed by "otherness" and diversity.

CLA5922 PAIENS ET CHRÉTIENS SOUS L'EMPIRE ROMAIN TARDIF / PAGANS AND CHRISTIANS IN THE LATER ROMAN EMPIRE

CLA5902 RECHERCHE SCIENTIFIQUE ET MÉTHODOLOGIE II / SCHOLARLY RESEARCH AND METHODOLOGY II

Compulsory courses (6cr.)

CLA5922 PAGANS AND CHRISTIANS IN THE LATER ROMAN EMPIRE
CLA5902 SCHOLARLY RESEARCH AND METHODOLOGY II

For students who write their thesis after having done their research in the laboratory. Bench-scale and pilot-scale experiments required to:

- a) assess the suitability of different physicochemical processes for the removal of toxic and non-standard wastewaters.
- b) design denitrification processes for suspended growth and fixed film growth systems.
- c) design excess biological phosphorus removal processes including the use of porous media.
- d) study the application of finite elements to folded plates, shells, and continua.
- e) examine convergence criteria and order of accuracy.
- f) analyze inertial and initial stress properties.
- g) evaluate dynamic and static stability of structures, retaining walls, dams, tunnels, and construction in cold climate.

Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physicochemical processes for the removal of toxic and non-standard wastewaters. Topics as follows: microbiology and biochemistry fundamentals of BNR, nitrification process design of suspended growth and fixed film growth systems, excess biological phosphorus removal design including the use of porous media; finite element, discrete element and finite difference methods; applications to foundations of structures, retaining walls, dams, tunnels, and construction in cold climate.

CVG7164 (ENVE 5203) MULTIPHASE FLOW AND CONTAMINANT TRANSPORT MODELLING

CVG7161 (ENVE 5102) TRAFFIC RELATED AIR POLLUTION

CVG5128 (ENVJ 5604) WATER RESOURCES PLANNING AND POLICY

CVG5120 (CIVJ 5506) WATER RESOURCES SYSTEMS

CVG7155 (CIVE 5309) TRANSPORTATION SUPPLY

CVG5156 (CIVJ 5301) FINITE ELEMENT METHODS I

CVG5146 (CIVJ 5302) NUMERICAL METHODS OF STRUCTURAL ANALYSIS

CVG5106 (CIVJ 5006) SITE IMPROVEMENTS

CVG7137 (ENVE 5303) ENVIRONMENTAL TOXICOLOGY

CVG8195 (ENVJ 5505) ADVANCED NUMERICAL METHODS IN TRANSPORT PHENOMENA

CVG7156 (CIVJ 5301) FINITE ELEMENT METHODS I

CVG5156 (CIVJ 5301) FINITE ELEMENT METHODS I

CHM8346 (CHEM 5102) SUPERCritical FLUIDS (1.5cr.)

Fundamental and practical aspects of the uses of supercritical fluids in the chemistry laboratory. Thermodynamic treatment of high pressure multicomponent phase equilibria, transport properties, solubilities, supercritical fluid extraction and chromatography for analytical purposes, reactions in supercritical fluids, equipment considerations, new developments.

CHM8126 (CHEM 5303) BIOORGANIC CHEMISTRY (3cr.)

Overview of recent developments in the mechanism of enzyme-mediated reactions. Topics include proteins, lipids, nucleic acids, and carbohydrates. Emphasis will be placed on enzyme reactions and their mechanisms.

CHM8349 (CHEM 5304) FREE RADICALS IN CHEMISTRY AND BIOLOGY (1.5cr.)

Oxidative stress induced by free radicals plays a significant role in most fatal and chronic diseases. The chemistry of bio-radicals will be described and related to pathobiological processes such as lipid peroxidation and atherosclerosis, protein nitration and cross linking, and DNA scission.

CHM8356 (CHEM5308) PHYSICAL METHODS IN INORGANIC CHEMISTRY (1.5cr.)

The characterization of inorganic materials and coordination complexes by electronic absorption and electron paramagnetic spectroscopies, temperature and field dependent magnetic susceptibilities, and crystallography will be examined.

CHM8347 (CHEM 5309) ELECTRON TRANSFER: THEORY AND EXPERIMENT (1.5cr.)

The development of classical, semi-classical and quantum mechanical electronic transfer models is described. In addition, the course will examine recent experimental results and the application of electronic transfer theory to biological systems.

CHM8164 (CHEM 5406) ORGANIC POLYMER CHEMISTRY (3cr.)

Basic principles of industrial and synthetic polymers. Polymerization and polymer characterization. Selected topics to cover some important polymers with emphasis on the synthesis, commodity plastics, engineering thermoplastics and specialty polymers. Students should have a basic knowledge of organic reaction mechanisms and stereochemistry. Previously offered at University of Ottawa. Revised description and prerequisites.

CHM8134 (CHEM 5407) SPECTROSCOPY FOR ORGANIC CHEMISTS (3cr.)

Analysis of proton NMR spectra. Fourier transform 13C NMR, strategies for structure elucidation, relaxation times, two-dimensional NMR. Aspects of mass spectrometry.

CHM8350 (CHEM 5408) INTRODUCTION TO POLYMER STRUCTURE AND MORPHOLOGY (1.5cr.)

Flexible and rigid rod polymers: effect of molecular constitution and conformation; examples of various polymer architectures and function; the amorphous state and glass transition; the crystalline state: typical crystal structures of polymers; polymorphism; crystallinity and long spacing. Thermal and solvent-induced crystallization; Lamellar and Spherulitic morphology.

CHM8351 (CHEM 5409) MORPHOLOGY OF POLYMERS AND COMPOSITES (1.5cr.)

Liquid crystalline state of polymers; morphology of block copolymers and polymer blends; plasticizers and fillers for tailoring properties; depression of glass transition and melting temperature; phase stability of polymer composites; mechanical properties; self-assembled systems; polymer nano-composites for electronic devices; common experimental techniques.

CHM8348 (CHEM 5500) ANALYTICAL INSTRUMENTATION (1.5cr.)

Principles of modern electronics, devices and instruments. Measurement of photonic and electrochemical signals. Conditioning of signals for feedback control and microcomputer interfacing. Computational data analysis techniques such as simplex optimization. Applications in chemical analysis include amperometric detector for capillary electrophoresis, and surface plasmon resonance immunosensor.

CHM8352 (CHEM 5501) ANALYTICAL APPROACH TO CHEMICAL PROBLEMS (1.5cr.)

Case study of analytical approach to various chemical problems in agricultural, biochemical, environmental, food processing, industrial, pharmaceutical and material sciences. Analytical methods include capillary electrophoresis, chemiluminescence, Fourier transform infrared spectroscopy, inductively coupled plasma emission spectroscopy, mass spectrometry, biochemical sensors, and fiber optics for remote sensing.

CHM8353 (CHEM 5502) TRACE AND ULTRATRACE ANALYTICAL CHEMISTRY (3cr.)

Criteria for evaluation and selection of analytical techniques and methods. Electroanalytical techniques. Simultaneous and sequential multielement determination. Atomic absorption, atomic emission and atomic fluorescence spectrometry, using optical spectrometric and mass-spectrometric determination. Applications of these techniques at trace and ultratrace levels in complex matrices.

CHM8354 (CHEM 5503) CHEMICAL SPECIATION IN THE NATURAL ENVIRONMENT (3cr.)

Evaluation of analytical techniques and their capability for quantitative determination of chemical species (as opposed to total element-determination) in the natural environment. Electro-chemical techniques for determination of chemical speciation of nutrient and toxicant elements present in the natural environment.

CHM8156 (CHEM 5708) PRINCIPLES OF TOXICOLOGY (3cr.)

The basic theorems of toxicology with examples of current research problems. The concepts of exposure, hazard and risk assessment will be defined and illustrated with experimental material from some of the more dynamic areas of modern research.
CMN5195 (CMN5195) SPECIAL TOPICS (3cr.)
Advanced course in chemical toxicology dealing with both chemical hazard and exposure. Overview of the empirical data relating to the toxicity of various classes of chemicals to test organisms, followed by the study of toxicity at the cellular level, including studies of interactions between toxic substances and enzymatic systems. Data applicable to the interpretation and monitoring of the new WHMIS health regulations. Initial events in enzyme induction and mutagenesis. Study of predictive capabilities in the areas of structure-activity relationships and mechanisms of enzyme induction are considered, followed by an assessment of mechanisms of exposure to toxic chemicals.

CMN5165 (CMN5165) NEW DIRECTIONS IN JOURNALISM (3cr.)
A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topics. Student, faculty and invited seminar speakers.

CMN5115 (CMN5115) COMMUNICATION ETHICS (3cr.)
Under unusual circumstances and with the recommendation of the research supervisor, it is possible to engage in a directed study on a topic of particular value to the student. This may also be used for credit if there are insufficient course offerings in a particular field of chemistry.

CHM5900 (CMN5900) DIRECTED SPECIAL STUDIES (3cr.)
A study of nuclear stability and decay; chemical studies of nuclear phenomena. Application of radioactivity. Prerequisites: permission of the Department.

Civil Engineering (MEng / MASc)

Ottawa-Carleton Joint Program

General Information

Established in 1984, the Ottawa-Carleton Institute of Civil Engineering (OCICE) combines the research strengths and resources of the Departments of Civil and Environmental Engineering at Carleton University with that of the Department of Civil Engineering at the University of Ottawa. The Institute offers graduate programs leading to the degrees of Master of Applied Science (MASc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Civil Engineering.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in six main research fields: environmental engineering; fire safety engineering; geotechnical engineering; structural engineering; transportation engineering; and, water resources engineering. Additional information is posted in the departmental website.

Most of the courses in the graduate programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The program operates within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the general regulations of the graduate faculty at each of the two universities.

Admission

Admission to the graduate programs in Civil Engineering is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold an honours bachelor's degree with specialization or a major in civil engineering, or in the sub-disciplines normally considered to be part of civil engineering;
2. Have a minimum average of B (70%) in their bachelor's degree;
3. Demonstrate strong academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
4. Provide at least two confidential letters of recommendation from professors who are familiar with the applicant’s work;
5. For admission to the MASc, identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

Applicants holding an honours bachelor’s (or major) degree in an engineering discipline other than civil engineering or in science may be considered for admission to a qualifying program with the following conditions:

1. Graduates from honours engineering or science programs with a mathematics content equivalent to that of the civil engineering undergraduate program will have to take a minimum of four undergraduate civil engineering courses in their area of graduate specialty.
2. Graduates from other science programs (i.e. those without the mathematical content covered in a civil engineering undergraduate program) will have to take all the core engineering undergraduate mathematics courses in addition to four qualifying undergraduate civil engineering courses in their area of specialty.

Program Requirements

A- Master of Applied Science (MASc)

The requirements of the program are as follows:

1. Successful completion of 18 course credits;
2. Participation in the Civil Engineering departmental seminar series;
3. Presentation and defense of a thesis (CVG7999) based on original research carried out under the direct supervision of a research faculty member in the Department.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree. Undergraduate civil engineering courses will not be accepted towards a graduate degree. Graduate students may still be required to take undergraduate courses for credit to fulfill the admission requirements.

Residence

All students must complete a minimum of three sessions of full-time registration. The maximum time permitted is four years.

Minimum Standards

The passing grade in all courses is 70% (B). Students who fail six credits, or the thesis proposal, or whose research progress report is deemed unsatisfactory are required to withdraw from the program.

Duration of the program

The requirements of the program are usually fulfilled within two years of full-time studies.

B- Master of Engineering (MEng)

1- Project Option

The requirements of the program are as follows:

1. Completion of 36 credits including at least 24 course credits;
2. Participation and regular attendance to the Civil Engineering departmental seminar series;
3. Completion of a civil engineering project (CVG6000).

2- Course Work Option

The requirements of the program are as follows:

1. Completion of 36 credits, with a minimum of 18 course credits selected from the list of courses offered by the Ottawa-Carleton Institute for Civil Engineering;
2. Participation and regular attendance to the Civil Engineering departmental seminar series.

Areas of Research

Graduate courses are listed below, grouped by areas of research.

Geotechnical Engineering
CVG5100 (CIVJ 5000) DEEP FOUNDATIONS (3cr.)
CVG5103 (CIVJ 5003) DAM ENGINEERING (3cr.)
CVG5106 (CIVJ 5006) SITE IMPROVEMENTS (3cr.)
CVG5161 (CIVJ 5106) MECHANICS OF UNSATURATED SOILS (3cr.)
CVG5171 (CIVJ 5102) STRENGTH AND DEFORMATION BEHAVIOUR OF SOIL AND ROCK (3cr.)
CVG5174 (CIVJ 5104) SOIL PLASTICITY (3cr.)
CVG5175 NUMERICAL METHODS FOR GEOTECHNICAL ENGINEERS (3cr.)
CVG5178 (CIVJ 5108) ICE MECHANICS (3cr.)
CVG7100 (CIVE 5209) CASE STUDIES IN GEOTECHNICAL ENGINEERING (3cr.)
CVG7101 (CIVE 5300) ADVANCED SOIL MECHANICS I (3cr.)
CVG7102 ADVANCED SOIL MECHANICS II (3cr.)
CVG7103 (CIVE 5303) PAVEMENTS AND MATERIALS (3cr.)
CVG7104 (CIVE 5500) EARTH RETAINING STRUCTURES (3cr.)
CVG7105 (CIVE 5501) FOUNDATION ENGINEERING (3cr.)
CVG7106 (CIVE 5502) IN SITU METHODS IN GEOMECHANICS (3cr.)
CVG7107 (CIVE 5503) NUMERICAL METHODS IN GEOMECHANICS (3cr.)
CVG7108 (CIVE 5504) SEEPAGE AND WATER FLOW THROUGH SOILS (3cr.)

Structural Engineering

CVG5142 (CIVJ 5201) ADVANCED STRUCTURAL DYNAMICS (3cr.)
CVG5143 (CIVJ 5202) ADVANCED STRUCTURAL STEEL DESIGN (3cr.)
CVG5144 (CIVJ 5300) ADVANCED REINFORCED CONCRETE (3cr.)
CVG5145 (CIVJ 5203) THEORY OF ELASTICITY (3cr.)
CVG5146 (CIVJ 5302) NUMERICAL METHODS OF STRUCTURAL ANALYSIS (3cr.)
CVG5147 (CIVJ 5204) THEORY OF PLATES AND SHELLS (3cr.)
CVG5148 (CIVJ 5304) PRESTRESSED CONCRETE DESIGN (3cr.)
CVG5149 (CIVJ 5304) STRUCTURAL STABILITY (3cr.)
CVG5150 (CIVJ 5206) ADVANCED CONCRETE TECHNOLOGY (3cr.)
CVG5153 (CIVJ 5209) WIND ENGINEERING (3cr.)
CVG5154 (CIVJ 5308) RANDOM VIBRATION (3cr.)
CVG5155 (CIVJ 5306) EARTHQUAKE ENGINEERING (3cr.)
CVG5156 (CIVJ 5301) FINITE ELEMENT METHODS I (3cr.)
CVG5157 (CIVJ 5303) FINITE ELEMENT METHODS II (3cr.)
CVG5158 (CIVJ 5307) ELEMENTS OF BRIDGE ENGINEERING (3cr.)
CVG5159 (CIVJ 5309) LONG SPAN STRUCTURES (3cr.)
CVG7109 (CIVE 5505) GEOTECHNICAL EARTHQUAKE ENGINEERING (3cr.)
CVG7170 (CIVE 5609) FUNDAMENTALS OF FIRE SAFETY ENGINEERING (3cr.)
CVG7171 (CIVE 5610) FIRE DYNAMICS I (3cr.)
CVG7172 (CIVE 5613) FIRE DYNAMICS II (3cr.)
CVG7173 (CIVE 5611) PEOPLE IN FIRES (3cr.)
CVG7174 (CIVE 5612) FIRE MODELLING (3cr.)
CVG7175 (CIVE 5614) DESIGN FOR FIRE RESISTANCE (3cr.)
CVG71720 (CIVE 5101) INTRODUCTORY ELASTICITY (3cr.)
CVG7121 (CIVE 5102) ADVANCED ELASTICITY (3cr.)
CVG7122 (CIVE 5103) FINITE ELEMENT METHODS IN STRESS ANALYSIS (3cr.)
CVG7123 (CIVE 5104) EARTHQUAKE ENGINEERING AND ANALYSES (3cr.)
CVG7124 (CIVE 5105) ADVANCED FINITE ELEMENT ANALYSIS IN STRUCTURAL MECHANICS (3cr.)
CVG7125 (CIVE 5203) THEORY OF STRUCTURAL STABILITY (3cr.)
CVG7126 (CIVE 5204) BEHAVIOUR AND DESIGN OF STRUCTURAL STEEL MEMBERS (3cr.)
CVG7127 (CIVE 5205) ANALYSIS OF ELASTIC STRUCTURES (3cr.)
CVG7128 (CIVE 5206) PRESTRESSED CONCRETE (3cr.)
CVG7129 ADVANCED STRUCTURAL DESIGN (3cr.)
CVG7130 (CIVE 5208) ADVANCED REINFORCED CONCRETE (3cr.)
CVG7131 (CIVE 5600) PROJECT MANAGEMENT (3cr.)
CVG7132 COMPUTER-AIDED DESIGN OF BUILDING STRUCTURES (3cr.)
CVG7134 DYNAMICS OF STRUCTURES (3cr.)
CVG7135 ENGINEERING MASONRY BEHAVIOUR AND DESIGN (3cr.)
CVG7139 BEHAVIOUR AND DESIGN OF STEEL STRUCTURES (3cr.)
CVG7140 (CIVE 5601) STATISTICS, PROBABILITIES AND DECISION-MAKING (3cr.)
CVG7141 (CIVE 5602) ADVANCED METHODS IN COMPUTER-AIDED DESIGN (3cr.)
CVG7142 ENGINEERING MANAGEMENT (3cr.)
CVG7143 (CIVE 5605) DESIGN OF STEEL BRIDGES (3cr.)
CVG7144 (CIVE 5606) DESIGN OF CONCRETE BRIDGES (3cr.)
CVG7145 (CIVE 5607) INTRODUCTION TO BRIDGE DESIGN (3cr.)

Transportation Engineering
Courses

Les cours inscrits entre parenthèses sont de Carleton University / Course codes in parentheses are for Carleton University.

Les cours suivants ne sont pas tous offerts chaque année / Not all of the following courses are necessarily given each year.

**CVG5100 (CIVJ 5000) DEEP FOUNDATIONS** (3cr.)
Deep foundation types in North American practice (driven or bored piles, and slurry trench techniques); axial and lateral capacity and settlement analysis for single piles and pile groups; field inspection methods; pile dynamics; performance and analysis of static test loading.

**CVG5103 (CIVJ 5003) DAM ENGINEERING** (3cr.)
Factors influencing design and construction of embankment dams and types of dam; site investigation and in situ testing at dam sites; analysis of seepage and reduction measures including grouting; design of filters; determination of stability of slopes at end of construction, full reservoir, and at drawdown; tailings dams; earthquake response; construction aspects; and contract specifications.

**CVG5106 (CIVJ 5006) SITE IMPROVEMENTS** (3cr.)
Description, design procedures and usage of current site improvement techniques, including preloading, earth reinforcement, dynamic consolidation,
vibrocompaction, blasting densification, lime treatment, drains, and geotechnical fabrics.

**CVG5111 (CIVJ 5501) HYDRAULIC STRUCTURES (3cr.)**
Classification and function of hydraulic structures; analysis and design of hydraulic works for gravity dams, arch dams, earth fill and rock-fill dams; ancillary works including water intakes, various types of spillways, control structures, energy dissipation and stilling basin, bottom outlets. Advanced topic in channel design including transitions; hydraulic transients, free surface and free surge analysis; water towers and compensation basins; penstocks. Navigation locks. Coastal protection works and maritime structures.

**CVG5112 (CIVJ 5502) NUMERICAL MODELLING IN WATER RESOURCES (3cr.)**
Discrete systems, water supply systems, EPANET; surface runoff routing, non-linear systems, HEC-RAS; watershed water balance, groundwater flow, space discretization, time discretization, transport of pollutant, two-dimensional flows, finite element modeling.

**CVG5120 (CIVJ 5506) WATER RESOURCES SYSTEMS (3cr.)**
Conservation of water resources. Multi-purpose project planning: study of domestic and foreign water development projects. Techniques for simulation, optimization, linear and dynamic programming.

**CVG5122 (CIVJ 5508) GROUND WATER AND SEEPAGE (3cr.)**
Types and physical properties of aquifers, hydraulic conductivity of isotropic, anisotropic and multilayered soils, unidirectional, radial and two-dimensional flows-steady and unsteady flows, Dupuit's theory, method of images, partially penetrating wells, safe yields, groundwater contaminant transport, numerical modelling. Also offered at the undergraduate level with different requirements as CVG 4122 for which additional credit is precluded.

**CVG5123 (CIVJ 5509) ADVANCED TOPICS IN HYDROLOGY (3cr.)**
Selected topics of current interest in surface and groundwater hydrology.

**CVG5124 (CIVJ 5605) COASTAL ENGINEERING (3cr.)**
Key concepts in coastal engineering. Wave mechanics and coastal hydrodynamics, (2) sediment transport and coastal morphodynamics and (3) coastal structures and coastal zone management. Wave mechanics and coastal hydrodynamics to include small-amplitude wave theory, finite amplitude wave theories (Stokes, Cnoidal and solitary wave), wave generation, wave transformations, development and prediction, hydrodynamics of coastal circulation. Sediment transport and coastal morphodynamics to include: wave and current-induced sediment transport, coastal sediment processes, longshore and cross-shore beach morphologic transformations, etc. Coastal structures and coastal zone management to include: beach erosion control, coastal structures (dikes, breakwaters, groins, seawalls), beach nourishment, coastal pollution and control, nearshore area development.

**CVG5125 (CIVJ 5601) STATISTICAL METHODS IN HYDROLOGY (3cr.)**
Concepts of probability and random variables applied to hydrology. Statistical distributions, their approximation and analysis. Statistical inference, including tests of significance and estimation theory. Linear and multivariate correlation and regression techniques. Data generation and simulation techniques for design of water-resource systems. Introduction to hydrologic and meteorologic time series.

**CVG5130 (ENVJ 5900) WASTEWATER TREATMENT PROCESS DESIGN (3cr.)**
The physical, chemical and biological processes involved in the treatment of domestic and industrial wastes. Waste characteristics, stream assimilation, biological oxidation, aeration, sedimentation, anaerobic digestion, sludge disposal.

**CVG5132 (ENVJ 5901) UNIT OPERATIONS OF WATER TREATMENT (3cr.)**
Unit operations and unit processes involved in the treatment of a water supply for various uses. Topics included are: water quality, water microbiology, sedimentation, chemical treatment, disinfection, water chemistry, flocculation.

**CVG5133 (ENVJ 5906) SOLID WASTE DISPOSAL (3cr.)**
Collection and disposal of solid wastes. Sanitary landfill, composting, incineration and other methods of disposal. Material and energy recovery.

**CVG5134 (ENVJ 5907) CHEMICAL ANALYSIS FOR ENVIRONMENTAL ENGINEERING (3cr.)**

**CVG5135 (CIVJ 5608) WATER SUPPLY AND SANITATION IN DEVELOPING COUNTRIES (3cr.)**

**CVG5137 (ENVJ 5905) WATER AND WASTEWATER TREATMENT PROCESS ANALYSIS (3cr.)**
Mass balancing in complex systems. Reaction kinetics and kinetic data analysis: classical and computer based methods. Reactor design: ideal reactors and real reactors. Analysis of tracer tests. Interfacial mass transfer: common theories. Mass transfer models. Prerequisite: CVG 3132 or equivalent. Students with a Chemical Engineering background may not take this course for credit.

**CVG5138 (ENVJ 5902) ADVANCED WATER TREATMENT (3cr.)**
Scope, limitations and design procedures for water treatment processes for the removal of toxic and non-standard contaminants. Current water treatment
problems and regulations, activated carbon treatment, ion exchange, disinfection practices and oxidation via advanced oxidation processes (ozonation and UV oxidation), iron and manganese removal, recent developments in coagulation, membranes, air stripping. *Prerequisite: CVG 3132 or equivalent.*

**CVG5139 (ENVJ 5700) ENVIRONMENTAL ASSESSMENT OF CIVIL ENGINEERING PROJECTS** (3cr.)
Procedures and methods for systematic evaluation of the environmental impact of civil engineering projects including wastewater disposal systems, solid waste disposal systems, and water resource development systems.

**CVG5140 (CIVJ 5607) IRRIGATION AND DRAINAGE** (3cr.)

**CVG5142 (CIVJ 5201) ADVANCED STRUCTURAL DYNAMICS** (3cr.)
Dynamic behaviour of civil engineering structures under excitations due to earthquakes, wind, waves, etc. Advanced methods in dynamic analysis of structures. Prediction of structural response. Design considerations.

**CVG5143 (CIVJ 5202) ADVANCED STRUCTURAL STEEL DESIGN** (3cr.)
Analysis of thin-walled beams, design applications including members under combined forces, analysis and design of beams under non-uniform torsion, limit state design methodology, comparative study of modern structural steel standards, formulating elastic and plastic interaction relations for members under combined forces, designing columns, beams, beam columns, for cross-sectional strengths, local buckling and global stability considerations, design of bracing systems.

**CVG5144 (CIVJ 5300) ADVANCED REINFORCED CONCRETE** (3cr.)

**CVG5145 (CIVJ 5203) THEORY OF ELASTICITY** (3cr.)
Stress-strain relations. Theories of plane stress and plane strain. Use of stress functions, energy and variational methods in the analysis of elastostatic problems.

**CVG5146 (CIVJ 5302) NUMERICAL METHODS OF STRUCTURAL ANALYSIS** (3cr.)
Numerical procedures and methods of successive approximations for the solution of structural problems. Virtual work, principles of minimum potential and complementary energy. Applications of variation and finite difference techniques to the solutions of complicated problems in beams, plates and shells.

**CVG5147 (CIVJ 5204) THEORY OF PLATES AND SHELLS** (3cr.)
Stress distribution in flat plates of various shapes. Large deflection theory, numerical methods. Membrane theory, bending theory for cylindrical shells, bending theory for shells of revolution.

**CVG5148 (CIVJ 5304) PRESTRESSED CONCRETE DESIGN** (3cr.)

**CVG5149 (CIVJ 5304) STRUCTURAL STABILITY** (3cr.)
Elastic, inelastic, and torsional buckling of columns, beam column behaviour, plane and space frame stability, lateral torsional buckling of beams, global buckling of truss systems, plate and shell buckling, local buckling in tubulars, use of energy methods, matrix analysis, and finite element analysis in modeling stability problems, bracing requirements, standard provisions and design considerations in structural stability.

**CVG5150 (CIVJ 5206) ADVANCED CONCRETE TECHNOLOGY** (3cr.)
Cement: types, hydration, physical properties; aggregate: classification, grading, properties; fresh concrete: influence of basis constituents and admixtures on workability, mixing, placing; strength of hardened concrete; nature of strength, influence of constituents, curing methods; durability; chemical attack, frost action, thermal effects; elasticity, shrinkage and creep; special concrete; lightweight, high density; mix design; approaches, weigh batching, volume proportioning, special mixes; field and laboratory test methods.

**CVG5153 (CIVJ 5209) WIND ENGINEERING** (3cr.)
The structure and climate of wind; wind loading on structures; wind induced dynamic problems of structures; environmental aerodynamics; dispersion of pollutant; analysis of wind data; experimental investigations.

**CVG5154 (CIVJ 5308) RANDOM VIBRATION** (3cr.)

**CVG5155 (CIVJ 5306) EARTHQUAKE ENGINEERING** (3cr.)
CVG5156 (CIVJ 5301) FINITE ELEMENT METHODS I (3cr.)

CVG5157 (CIVJ 5303) FINITE ELEMENT METHODS II (3cr.)

CVG5158 (CIVJ 5307) ELEMENTS OF BRIDGE ENGINEERING (3cr.)
Introduction; limit state design; highway bridge design loads; analysis and design of concrete decks; impact and dynamics; load capacity rating of existing bridges and construction in cold climate.

CVG5159 (CIVJ 5309) LONG SPAN STRUCTURES (3cr.)

CVG5160 (CIVJ 5503) SEDIMENT TRANSPORT (3cr.)
An introduction to particle transport, with special emphasis on river engineering applications, including natural channel design. Sediment properties, initiation of motion, bed load, suspended load, fluvial dunes, alluvial channels, bank erosion and protection, natural channel design. Special topics include contaminated sediments, local scour, morphodynamic modelling, fluvial habitat.

CVG5161 (CIVJ 5106) MECHANICS OF UNSATURATED SOILS (3cr.)
Introduction to unsaturated soils, phases of an unsaturated soil, phase properties and relations, stress state variables for saturated and unsaturated soils. Measurement of soil suction: theory of soil suction, capillarity, measurements of total suction and matric suction. Flow Laws: flow of water and measurement of permeability, shear strength theory: history, failure envelope for unsaturated soils, triaxial and direct shear tests, typical results, simple testing procedures, volume change behavior including expansive soils behavior. Soil-water characteristic curve: its behavior and use in predicting the engineering properties of unsaturated soils, practical applications of the principles of unsaturated soils.

CVG5162 (CIVJ 5504) RIVER HYDRAULICS (3cr.)
Advanced concepts of river hydraulics, with an emphasis on field measurement techniques and application of numerical models. Navier-Stokes equations, turbulence, flow resistance, numerical modelling of simplified momentum and continuity equations, field-based measurement and statistical analysis of velocity fields. Special topics include contaminant transport, morphodynamic modelling.

CVG5171 (CIVJ 5102) STRENGTH AND DEFORMATION BEHAVIOUR OF SOIL AND ROCK (3cr.)
Principle of effective stress and pore pressure parameters; shear strength of saturated and partly saturated soils and rockfill; stress paths, residual strength, and liquefaction; classical theory of consolidation and its limitation; consolidation under constant and variable heads; non-linear theory of consolidation; and creep.

CVG5174 (CIVJ 5104) SOIL PLASTICITY (3cr.)
Applications of advanced constitutive relations to soil mechanics problems; modern concepts in soil plasticity, yield criteria, associated and non-associated flow rules, work hardening, kinematic hardening, and strain softening rules; comparisons between observed soil behaviour and the predictions of Cam-clay, Strain dilatancy, Endocriconic models, Nested surfaces and Bounding surface models.

CVG5175 NUMERICAL METHODS FOR GEOTECHNICAL ENGINEERS (3cr.)
Non-linear analysis of stresses and deformations using the effective stress concept; analysis of consolidation using the excess pore water pressure concept; flow through porous media; finite element, discrete element and finite difference methods; applications to foundations of structures; retaining walls, dams, tunnels, pipelines, human-made and natural slopes in rock and soil.

CVG5178 (CIVJ 5108) ICE MECHANICS (3cr.)
Ice conditions in the Arctic; ice physics; classification of ice; mechanical properties of ice; mathematical modelling of creep and fracture behaviour of ice; offshore structures in arctic environments; ice forces acting on structures; ice induced vibrations; iceberg impact loads; physical modelling of ice-structure interaction; ice as a construction material; case histories.

CVG5179 (ENVJ 5908) ANAEROBIC DIGESTION (3cr.)
Advanced theoretical, biological, and practical aspects of anaerobic digestion processes. Principles to be applied to the design and application of conventional and advanced anaerobic processes used for treatment of municipal and industrial wastewaters. Topics to include microbiology and biochemistry fundamentals, techniques for monitoring anaerobic digestion performance, municipal sludge stabilization, anaerobic composting, anoxic/anaerobic bioremediation, Andrew’s dynamic model. Design of the following: two-phase digestion; Downflow Stationary Fixed Film (DSFF) reactors; Upflow Anaerobic Sludge Blanket (UASB); Upflow Blanket Filter (UBF) reactors; and Anaerobic Sequencing Batch Reactors (ASBR).

CVG5180 (ENVJ 5909) BIOLOGICAL NUTRIENT REMOVAL (3cr.)
Advanced theoretical, biological, and practical aspects of biological nutrient removal (BNR) (nitrification, denitrification and excess biological phosphorus) processes. Principles to be applied to the design and application of conventional and advanced BNR processes used for treatment of municipal and industrial wastewaters. Topics as follows: microbiology and biochemistry fundamentals of BNR, nitrification process design of suspended growth and fixed film growth.
systems, denitrification process design of suspended growth and fixed film growth systems, excess biological phosphorus removal design including prefermentation. Design of 2,3,4 and 5 stage BNR systems. General activated sludge model and Simworks for BNR systems. Retrofit of exiting plants and pilot plant testing for BNR.

CVG5232 (ENVJ 5911) UNIT OPERATIONS OF WATER TREATMENT LAB (1.5cr.)
Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physicochemical processes for particular applications, and b) design a full-scale facility. Conventional analytical techniques used in water treatment (pH, alkalinity, hardness, turbidity, color, spectrophotometric analysis). Process analysis techniques for process evaluation and scale-up including: zone sedimentation, batch flux settling tests, coagulation with iron and aluminum salts, flocculent sedimentation, filtration and fluidization, flotation. **Prerequisite:** CVG 3132 or equivalent. **Co-requisite:** CVG 5132.

CVG5238 (ENVJ 5912) ADVANCED WATER TREATMENT PROCESSES LAB (1.5cr.)
Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physicochemical processes for the removal of toxic and non-standard contaminants, and b) design a full-scale facility. Tracer tests and none-ideal reactor behaviour, activated carbon adsorption equilibria and kinetics, aeration. Total organic carbon analysis, spectrophotometry. Process analysis, techniques for process evaluation and scale-up including: aeration, analysis of non-ideal flow conditions. Tracer study of three basins, adsorption isotherm tests, activated carbon mini-column tests, oxidation kinetic tests. **Prerequisite:** CVG 3132 or equivalent. **Co-requisite:** CVG 5138.

CVG5331 (ENVJ 5902) SLUDGE UTILIZATION AND DISPOSAL (3cr.)
Introduction to sludge processing technology and procedures to be used in the planning and design of sludge treatment processes. Evaluate the economics and performance of sludge unit process operations. Selection of methods for final disposition of sludge.

CVG6000 RAPPORT EN GÉNIE CIVIL / CIVIL ENGINEERING REPORT (1cr.)

CVG6108 (CIVE 5906) DIRECTED STUDIES I (3cr.)
Special courses set up for one student on an exceptional basis. Limited to one in the Master’s level and to two total Master's plus PhD.

CVG6109 (CIVE 5907) DIRECTED STUDIES II (3cr.)
Special courses set up for one student on an exceptional basis. Limited to one in the Master’s level and to two total Master's plus PhD.

CVG 6300 TO 6320 SPECIAL TOPICS IN CIVIL ENGINEERING (3 cr.)

CVG6508 ÉTUDES DIRIGÉES I (3cr.)
Cours individuels créés seulement pour les cas exceptionnels. Un étudiant peut en suivre un au niveau de la maitrise ou un total de deux pour les études de maîtrise et de doctorat.

CVG6509 ÉTUDES DIRIGÉES II (3cr.)
Cours individuels créés seulement pour les cas exceptionnels. Un étudiant peut en suivre un au niveau de la maîtrise ou un total de deux pour les études de maîtrise et de doctorat.

CVG7999 THÈSE DE M.Sc.A. / MASc THESIS
Pour les étudiants qui écrivent leur thèse de maîtrise après avoir fait leur travail de recherche en laboratoire. / For students writing the Master's thesis after completion of laboratory research.

CVG9998 EXAMEN GÉNÉRAL DE DOCTORAT / COMPREHENSIVE EXAMINATION (PhD)

CVG9999 THÈSE DE DOCTORAT / PhD THESIS
Pour les étudiants qui rédigent leur thèse de doctorat après avoir fait leur travail de recherche en laboratoire. / For students writing their PhD thesis after completion of laboratory research.

### Classical Studies (MA)

The Department of Classical and Religious Studies, located in the Faculty of Art, offers a master’s program leading to the degree of Master of Arts in Classical Studies. The program comprises one main field: Late Antiquity (A.D. 200-700).

The objective of this program is to prepare the students for further study in the field of late antiquity, the important transitional period between classical antiquity and the Middle Ages. The Department also offers the possibility of studying Coptic, Syriac, Arabic and Ethiopic (in addition to Latin and Greek). Candidates will acquire a thorough background that will enable them to pursue doctoral studies.

The program aims to refine critical and scholarly skills and to broaden the knowledge of its graduates in certain areas. The ability to conduct detailed research, to argue coherently, to write an academic paper, and other skills learned can be applied in careers outside academia. Several graduates find positions in local or federal government, where their training at the M.A. level is clearly valued.

The program operates within the general framework of the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of
the University of Ottawa, which are posted on the FGPS website.

Admission

1. An honours bachelor’s, or an equivalent degree, in Classics, in Medieval History or in a closely related area, with an overall average of at least 70% (B) and 75% (B+) in the advanced classical studies courses.

2. Eighteen credits of classical language courses (twelve credits in either Greek or Latin and six credits in the other language) with a minimum average of 75% (B+).

Preference will be given to candidates who have already completed the 18 credits. However, candidates with only 12 credits will be considered on condition that the six other credits will be completed with a minimum average of 75% (B+) within the first year of the program.

Program Requirements

MA with research paper

Compulsory courses (6cr.)
CLA5901 RECHERCHE SCIENTIFIQUE ET MÉTHODOLOGIE I / SCHOLARLY RESEARCH AND METHODOLOGY I (3cr.)¹
CLA5902 RECHERCHE SCIENTIFIQUE ET MÉTHODOLOGIE II / SCHOLARLY RESEARCH AND METHODOLOGY II (3cr.)¹

Optional courses (12 cr. from the following list)
CLA5120 THE LATIN CHRONICLE TRADITION (3cr.)
CLA5121 LATE ROMAN HISTORIOGRAPHY (3cr.)
CLA5122 TOPICS IN LATIN PALAEOGRAPHY (3cr.)
CLA5520 L’ARMÉE ROMAINE DE L’EMPIRE TARDIF (3cr.)
CLA5521 JUSTINEN ET L’EMPIRE DU VIe SIÈCLE (3cr.)
CLA5920 LA VILLE DURANT L’ANTIQUITÉ TARDIVE / THE CITY IN LATE ANTIQUITY (3cr.)
CLA5921 ROME ET LES SASSANIDES / ROME AND THE EAST (3cr.)
CLA5922 PAIENS ET CHRÉTIENS SOUS L’EMPIRE ROMAIN TARDIF / PAGANS AND CHRISTIANS IN THE LATER ROMAN EMPIRE (3cr.)
CLA5923 ASPECTS DE LA LITTÉRATURE DE L’ANTIQUITÉ TARDIVE / TOPICS IN LATE ANTIQUE LITERATURE (3cr.)
CLA5924 ASPECTS DE L’HISTOIRE DE L’ANTIQUITÉ TARDIVE / TOPICS IN LATE ANTIQUE HISTORY (3cr.)
CLA5925 INTRODUCTION À UNE LANGUE ANCIENNE / INTRODUCTION TO AN ANCIENT LANGUAGE (3cr.)
CLA5926 LECTURES DIRIGÉES EN LANGUES ANCIENNES / DIRECTED READINGS IN ANCIENT LANGUAGE (3cr.)

Elective courses (6 cr.)
Students will also be able to choose, with permission of the Director of Graduate Studies, relevant graduate courses in religious studies, in history, in philosophy or other disciplines, where available. Responsibility for checking that they have any prerequisites rests with them.

Classical language courses (6cr.)
This requirement applies only to students who have not completed 18 credits of classical language courses before admission. The exact number of credits is indicated at the time of admission.

Research paper (6cr.)
CLA5999 MÉMOIRE / RESEARCH PAPER (6cr.)

MA with thesis

Compulsory courses (6cr.)
CLA5901 RECHERCHE SCIENTIFIQUE ET MÉTHODOLOGIE I / SCHOLARLY RESEARCH AND METHODOLOGY I (3cr.)¹
CLA5902 RECHERCHE SCIENTIFIQUE ET MÉTHODOLOGIE II / SCHOLARLY RESEARCH AND METHODOLOGY II (3cr.)¹

Option courses (12cr. from the following list)
CLA5120 THE LATIN CHRONICLE TRADITION (3cr.)
CLA5121 LATE ROMAN HISTORIOGRAPHY (3cr.)
CLA5122 TOPICS IN LATIN PALAEOGRAPHY (3cr.)
CLA5520 L’ARMÉE ROMAINE DE L’EMPIRE TARDIF (3cr.)
CLA5521 JUSTINEN ET L’EMPIRE DU VIe SIÈCLE (3cr.)
CLA5920 LA VILLE DURANT L’ANTIQUITÉ TARDIVE / THE CITY IN LATE ANTIQUITY (3cr.)
CLA5921 ROME ET LES SASSANIDES / ROME AND THE EAST (3cr.)
Classical language courses (6cr.)
This requirement applies only to students who have not completed 18 credits of classical language courses before admission. The exact number of credits is indicated at the time of admission.

Thesis
CLA7999 THÈSE DE MAÎTRISE / MA THESIS

1. Includes a sight translation requirement.

Courses

Tous les cours, à l'exception de CLA 5999 sont des cours de trois crédits. Les cours suivants ne sont pas tous offerts à chaque année.

With the exception of CLA 5999, all courses carry three credits. Not all of these courses will be offered every year.

CLA5120 THE LATIN CHRONICLE TRADITION (3cr.)
Survey of Latin chronicles from the first century B.C. to the sixth century A.D.

CLA5121 LATE ROMAN HISTORIOGRAPHY (3cr.)
Survey of the historians of late antiquity, including ecclesiastical and secular historians, with some attention to chroniclers.

CLA5122 TOPICS IN LATIN PALAEOGRAPHY (3cr.)
Consideration of various issues to be confronted in the transmission of texts from late antiquity.

CLA5520 L’ARMÉE ROMAINE DE L’EMPIRE TARDIF (3cr.)
Étude de l’évolution de l’armée romaine à partir des réformes de Dioclétien jusqu’au règne d’Héraclius.

CLA5521 JUSTINIEN ET L’EMPIRE DU VIe SIÈCLE (3cr.)
Justinien et le VIe siècle : analyse approfondie de l’une des périodes les plus importantes de l’Antiquité tardive, qui couvre les reconquêtes de l’Ouest, les grands travaux de construction de l’empereur et ses nombreuses autres réformes.

CLA5901 RECHERCHE SCIENTIFIQUE ET MÉTHODOLOGIE I / SCHOLARLY RESEARCH AND METHODOLOGY I (3cr.)
Survol du IVe s. de notre ère (284-395), examen des grandes questions de la période, étude de la méthodologie et des techniques de recherche, notamment analyse et critique des arguments, et synthèse des débats entre chercheurs.

CLA5902 RECHERCHE SCIENTIFIQUE ET MÉTHODOLOGIE II / SCHOLARLY RESEARCH AND METHODOLOGY II (3cr.)
Survol des Ve et VIe siècles de notre ère (395-602), examen des grandes questions de la période, étude poussée de la méthodologie et des techniques de recherche. Un overview of the fifth and sixth centuries A.D. (395-602), review of the main issues in the period, further consideration of methodology and research techniques.

CLA5920 LA VILLE DURANT L’ANTIQUITÉ TARDIVE / THE CITY IN LATE ANTIQUITY (3cr.)
Analyse du destin tant débattu de la ville classique dans l’antiquité tardive. An examination of the much-disputed fate of the city in late antiquity.

CLA5921 ROME ET LES SASSANIDES / ROME AND THE EAST (3cr.)
Examen des relations entre l’Iran et l’Empire romain d’Orient depuis la prise de pouvoir des Sassanides jusqu’aux victoires de l’empereur Héraclius.

CLA5922 PAIENS ET CHRÉTIENS SOUS L’EMPIRE ROMAIN TARDIF / PAGANS AND CHRISTIANS IN THE LATER ROMAN EMPIRE (3cr.)
Étude de la christianisation progressive de l’Empire et des royaumes qui lui ont succédé.

CLA5923 ASPECTS DE LA LITTÉRATURE DE L’ANTIQUITÉ TARDIVE / TOPICS IN LATE ANTIQUE LITERATURE (3cr.)
Considération approfondie d'un ou plusieurs auteurs ou ouvrages.

**CLA5924 ASPECTS DE L'HISTOIRE DE L'ANTIQUITÉ TARDIVE / TOPICS IN LATE ANTIQUE HISTORY (3cr.)**
Considération approfondie d'un ou plusieurs aspects de l'histoire de la période.

**CLA5925 INTRODUCTION À UNE LANGUE ANCIENNE / INTRODUCTION TO AN ANCIENT LANGUAGE (3cr.)**
Un cours d'introduction en syriaque, copte, éthiopien ou en arabe classique.

**CLA5926 LECTURES DIRIGÉES EN LANGUES ANCIENNES / DIRECTED READINGS IN ANCIENT LANGUAGE (3cr.)**
Lectures dirigées en latin, grec, syriaque, copte, éthiopien ou l'arabe classique.

**CLA5999 MÉMOIRE / RESEARCH PAPER (6cr.)**
Le mémoire, noté S/NS, sera évalué par le professeur qui l'a dirigé et par un autre lecteur.

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**Communication (MA / MComm)**

The Department of Communication offers a Master of Arts (MA) in Communication with thesis or with research paper as well as a Master of Communication (MC) by coursework. In addition, the Department offers two graduate certificates, one in organizational communication and the other in government communication.

The program focuses on five fields of specialization: media studies; organizational communication; health communication; identity and diversity in communication; government communication.

Media studies field examines the content and the modes of operation of traditional and emerging media in their social, cultural, economical, political and regulatory contexts.

Organizational communication focuses on interpersonal and group interactions in the workplace; communication challenges posed by an increasingly diverse and virtual workforce; planning for internal and external communication in private, public, and nonprofit organizations; media relations; and management of risks, among other topics.

Health communication explores concepts, research, and theories regarding health communication issues at the micro level (e.g., interactions between patient and healthcare provider), mezzo level (e.g., role of information and new communication technologies in health care organizations) and macro level (e.g., role of media in shaping public perceptions of health and illness and educating the public on health care issues).

Identity and diversity in communication involves study of the representations and communication challenges posed by "otherness" and diversity in an era of globalization and accelerated circulation of information. Identity issues may relate to ethnicities, races, cultures, age groups, sexual orientations, genders, classes, abilities, language, religion, and value orientations.

Government communication focuses on the mechanism of internal and external communication in a bureaucratic and political environment. Governments studied may function at the local, regional, national or international levels.

Both teaching and research explore major issues related to new information and communication technologies in media and organizations at the national and international levels.

The programs are offered on a full-time or on a part-time basis in French and in English. In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English, except those in the graduate certificate in government communication. Students in the bilingual graduate certificate in government communication must submit their work in the language of the course.

The program operates within the general framework of the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website: www.etudesup.uottawa.ca

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**Admission**

**Admission Requirements**

The requirements for admission to the MA program in Communication or to the Master of Communication program are as follows:

1. an honours bachelor's degree (or equivalent) with a specialization or major in Communication or a related discipline;
   or
2. an honours bachelor's degree (or equivalent) in another discipline, with a minor in Communication and two or more years of relevant experience;
an honours bachelor's degree (or equivalent) in another discipline, with three or more years of relevant experience;
2. a minimum overall average of 70% (B), calculated in accordance with FGPS guidelines;
3. All applicants must be able to understand, speak, and write proficiently either English or French. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. In addition, a passive knowledge of the other language (ability to understand the spoken and written word) is necessary. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS.

Candidates who do not fully meet the above requirements may be admitted upon successful completion of a maximum of five advanced undergraduate qualifying courses in Communication. The specific courses are determined by the Admissions Committee based on its evaluation of the candidate’s previous academic and professional experience relevant to Communication.

Please be advised that, given the high level of competition for admission into the Department of Communication's graduate programs and the limited number of available spaces, an overall average of 70% does not guarantee entry. The Department of Communication reserves the right to alter the minimum average required in accordance with the quality and quantity of applications it receives each year.

Program Requirements

The program offers a Master of Arts (MA) in Communication with thesis or with research paper as well as a Master of Communication (MC) by coursework.

Master of Arts (MA)

The MA with thesis has the following requirements:

a) 12 credits as follows:
   - CMN 5100 Research Methods (3cr.)
   - One theory seminar (3cr.) specific to the student's chosen field of specialization
   - Two optional seminars (6 cr.) from the student's field of specialization

b) CMN 6990 Research Proposal (cr.)
The student must have his thesis or research paper director and topic approved by the graduate studies committee before the end of their second session of studies.

c) CMN6999 Master's Thesis
The thesis can take one of two forms.
   - The traditional form involves research work consisting of a review of the literature, critical analysis and synthesis (100 pages);
   - The second form can be a creative work. In this case, it includes two parts: a production of some sort (video, CD-Rom, multimedia, etc.); a written commentary on the creative process based on a review of the work of key researchers in the field (50 pages).

In both cases, the thesis must meet the standards specified by the FGPS. For details consult section G of the general regulations of the FGPS and the guide Preparing a Thesis or a Research Paper.

The MA with research paper has the following requirements:

a) 18 credits as follows:
   - CMN 5100 Research Methods (3cr.)
   - One theory course specific to the student's chosen field of specialization (3cr.)
   - Four optional seminars (12cr.) with at least three in the student's chosen field of specialization

b) CMN 6990 Research Proposal (cr.)
The student must have his thesis or research paper director and topic approved by the graduate studies committee before the end of their second session of studies.

c) CMN 6998 Research paper
The research paper is approximately 50 pages long and is evaluated by another professor once the student's supervisor has approved it. The research paper analyses and broadens one of the topics discussed in the courses. The work surrounding the research paper can be theoretical in nature (for instance, based on a literature review) or can adopt a more empirical approach (based on observation or on a case study). The subject matter will relate to the student's chosen field of specialization.
Master of Communication (MC)

The Master of Communication has the following requirements:

30 credits as follows:

- CMN 5100 Research Methods (3cr.)
- One course chosen from the following list (3cr.):
  - CMN5130 DIVERSITY IN THE WORKPLACE : COMMUNICATION CHALLENGES (3cr.)
  - CMN5131 ORGANIZATIONAL COMMUNICATION THEORIES (3cr.)
  - CMN5132 THEORIES AND EFFECTS OF THE MEDIA (3cr.)
  - CMN5133 HEALTH COMMUNICATION THEORIES (3cr.)
  - CMN5141 GOVERNMENT COMMUNICATION (3cr.)
  - CMN5190 MEDIA, IDENTITY AND DIVERSITY (3cr.)
- Five seminars specific to the student's chosen field of specialization (15cr.)
  The student's chosen field of specialization governs course selection, which requires approval from the graduate program director.
- Three electives (9cr.)
  Electives are selected from the list of graduate courses in Communication or from other graduate programs subject to approval by the director of graduate studies.

List of courses by field

1) Media Studies

Compulsory Courses
CMN5100 RESEARCH METHODS (3cr.)
CMN5132 THEORIES AND EFFECTS OF THE MEDIA (3cr.)

Non-Credit Compulsory Courses
CMN6990 PROPOSITION DE RECHERCHE / RESEARCH PROPOSAL
CMN6998 MÉMOIRE / RESEARCH PAPER
CMN6999 THÈSE DE MAÎTRISE / MASTER'S THESIS

Optional Courses
CMN5105 CONTEMPORARY COMMUNICATION ISSUES (3cr.)
CMN5110 SOCIAL HISTORY OF COMMUNICATION TECHNOLOGIES (3cr.)
CMN5115 COMMUNICATION ETHICS (3cr.)
CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)
CMN5133 HEALTH COMMUNICATION THEORIES (3cr.)
CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)
CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
CMN5155 ADVANCED RESEARCH IN TRADITIONAL AND EMERGING MEDIA (3cr.)
CMN5160 POLITICAL USES OF MEDIA (3cr.)
CMN5161 CONSTRUCTION OF SOCIAL REALITY BY THE MEDIA (3cr.)
CMN5165 NEW DIRECTIONS IN JOURNALISM (3cr.)
CMN5170 INTERNATIONAL COMMUNICATION (3cr.)
CMN5190 MEDIA, IDENTITY AND DIVERSITY (3cr.)
CMN5195 SPECIAL TOPICS (3cr.)
CMN5900 ÉTUDES DIRIGÉES EN COMMUNICATION / DIRECTED STUDIES IN COMMUNICATION (3cr.)

2) Organizational Communication

Compulsory Courses
CMN5100 RESEARCH METHODS (3cr.)
CMN5131 ORGANIZATIONAL COMMUNICATION THEORIES (3cr.)

Non-Credit Compulsory Courses
CMN6990 PROPOSITION DE RECHERCHE / RESEARCH PROPOSAL
CMN6998 MÉMOIRE / RESEARCH PAPER
CMN6999 THÈSE DE MAÎTRISE / MASTER'S THESIS
Optional Courses
CMN5105 CONTEMPORARY COMMUNICATION ISSUES (3cr.)
CMN5115 COMMUNICATION ETHICS (3cr.)
CMN5130 DIVERSITY IN THE WORKPLACE : COMMUNICATION CHALLENGES (3cr.)
CMN5133 HEALTH COMMUNICATION THEORIES (3cr.)
CMN5135 COMMUNICATION MANAGEMENT (3cr.)
CMN5136 VIRTUAL WORK TEAMS (3cr.)
CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)
CMN5141 GOVERNMENT COMMUNICATION (3cr.)
CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
CMN5155 ADVANCED RESEARCH IN TRADITIONAL AND EMERGING MEDIA (3cr.)
CMN5195 SPECIAL TOPICS (3cr.)
CMN5170 INTERNATIONAL COMMUNICATION (3cr.)
CMN5900 ÉTUDES DIRIGÉES EN COMMUNICATION / DIRECTED STUDIES IN COMMUNICATION (3cr.)

3) Health Communication

Compulsory Courses
CMN5100 RESEARCH METHODS (3cr.)
CMN5133 HEALTH COMMUNICATION THEORIES (3cr.)

Non-Credit Compulsory Courses
CMN6990 PROPOSITION DE RECHERCHE / RESEARCH PROPOSAL
CMN6998 MÉMOIRE / RESEARCH PAPER
CMN6999 THÈSE DE MAÎTRISE / MASTER'S THESIS

Optional Courses
CMN5105 CONTEMPORARY COMMUNICATION ISSUES (3cr.)
CMN5115 COMMUNICATION ETHICS (3cr.)
CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)
CMN5130 DIVERSITY IN THE WORKPLACE : COMMUNICATION CHALLENGES (3cr.)
CMN5132 THEORIES AND EFFECTS OF THE MEDIA (3cr.)
CMN5136 VIRTUAL WORK TEAMS (3cr.)
CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
CMN5155 ADVANCED RESEARCH IN TRADITIONAL AND EMERGING MEDIA (3cr.)
CMN5165 NEW DIRECTIONS IN JOURNALISM (3cr.)
CMN5195 SPECIAL TOPICS (3cr.)
CMN5900 ÉTUDES DIRIGÉES EN COMMUNICATION / DIRECTED STUDIES IN COMMUNICATION (3cr.)

4) Identity and Diversity in Communication

Compulsory Courses
CMN5100 RESEARCH METHODS (3cr.)
CMN5190 MEDIA, IDENTITY AND DIVERSITY (3cr.)

Non-Credit Compulsory Courses
CMN6990 PROPOSITION DE RECHERCHE / RESEARCH PROPOSAL
CMN6998 MÉMOIRE / RESEARCH PAPER
CMN6999 THÈSE DE MAÎTRISE / MASTER'S THESIS

Optional Courses
CMN5105 CONTEMPORARY COMMUNICATION ISSUES (3cr.)
CMN5110 SOCIAL HISTORY OF COMMUNICATION TECHNOLOGIES (3cr.)
CMN5115 COMMUNICATION ETHICS (3cr.)
CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)
CMN5130 DIVERSITY IN THE WORKPLACE : COMMUNICATION CHALLENGES (3cr.)
CMN5132 THEORIES AND EFFECTS OF THE MEDIA (3cr.)
CMN5133 HEALTH COMMUNICATION THEORIES (3cr.)
CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)
CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
CMN5160 POLITICAL USES OF MEDIA (3cr.)
CMN5161 CONSTRUCTION OF SOCIAL REALITY BY THE MEDIA (3cr.)
CMN5170 INTERNATIONAL COMMUNICATION (3cr.)
5) Government Communication

Compulsory Courses
CMN5100 RESEARCH METHODS (3cr.)
CMN5141 GOVERNMENT COMMUNICATION (3cr.)

Non-Credit Compulsory Courses
CMN6990 PROPOSITION DE RECHERCHE / RESEARCH PROPOSAL
CMN6998 MÉMOIRE / RESEARCH PAPER
CMN6999 THÈSE DE MAÎTRISE / MASTER'S THESIS

Optional Courses
CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)
CMN5135 COMMUNICATION MANAGEMENT (3cr.)
CMN5131 ORGANIZATIONAL COMMUNICATION THEORIES (3cr.)
CMN5130 DIVERSITY IN THE WORKPLACE: COMMUNICATION CHALLENGES (3cr.)
CMN5136 VIRTUAL WORK TEAMS (3cr.)
CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)
CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
CMN5115 COMMUNICATION ETHICS (3cr.)
CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
CMN5170 INTERNATIONAL COMMUNICATION (3cr.)
CMN5160 POLITICAL USES OF MEDIA (3cr.)
CMN5165 NEW DIRECTIONS IN JOURNALISM (3cr.)
CMN5195 SPECIAL TOPICS (3cr.)
CMN5900 ÉTUDES DIRIGÉES EN COMMUNICATION / DIRECTED STUDIES IN COMMUNICATION (3cr.)

Residence
All students admitted full-time to the master's program must complete a minimum of three sessions of full-time registration.

Duration of Program
Full-time students are expected to fulfill all requirements of the MA program within two years and of the Master of Communication within one year. The maximum time permitted, part-time or full-time basis, is four years from the date of initial registration in the program.

Courses

Pour connaître les cours offerts à chaque session, veuillez consulter l'horaire / Please consult the schedule to know the courses offered at each session.

CMN5100 RESEARCH METHODS (3cr.)
Research design and methods relevant to the Master's thesis or research paper project.

CMN5500 MÉTHODES DE RECHERCHE (3cr.)
Différentes étapes de l'élaboration du projet de thèse ou du mémoire de maîtrise.

CMN5105 CONTEMPORARY COMMUNICATION ISSUES (3cr.)
State of the art of the discipline. Exploration of major domains of communication research, along with contemporary issues being addressed by scholars in these fields of specialization.

CMN5505 ENJEUX CONTEMPORAINS EN COMMUNICATION (3cr.)
Étude des avancées les plus récentes de la discipline. Exploration des principaux domaines de recherche en communication et des enjeux contemporains étudiés par les spécialistes œuvrant dans différents champs de la discipline.

CMN5110 SOCIAL HISTORY OF COMMUNICATION TECHNOLOGIES (3cr.)
Exploration of the social, political, economic, cultural and ethical ramifications of communication technologies as they have evolved over time. Relationship
between innovation in new communication technologies and social and cultural change.

**CMN5510 HISTOIRE SOCIALE DES TECHNOLOGIES DE COMMUNICATION (3cr.)**
Exploration de l’évolution historique des ramifications sociales, politiques, économiques, culturelles et éthiques du développement des technologies de communication. Étude des liens entre les innovations en matière de technologie de communication et les changements sociaux et culturels.

**CMN5115 COMMUNICATION ÉTHICS (3cr.)**
Emphasis on the significance of ethical principles and responsibilities of public communicators, as well as sanctions faced when communicators fail to uphold these principles. Critique of self-regulation of the media. Analysis of argumentation. Study of legal precedents with respect to defamation.

**CMN5515 ÉTHIQUE DE LA COMMUNICATION (3cr.)**
L’accent sera mis sur la signification des principes éthiques et de la responsabilité des communicateurs publics ainsi que sur les sanctions auxquelles s’exposent les communicateurs qui ne respectent pas ces principes. Critique de l’autorégulation des médias. Analyse de l’argumentation. Étude de la jurisprudence en matière de diffamation.

**CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)**
Theories and applications relevant to campaigns that promote issues and causes in the public interest. Strategies and techniques. Cases studies in the areas of health, environment, education and other public domains.

**CMN5250 CAMPAGNES DE COMMUNICATION PUBLIQUE : THÉORIES ET APPLICATIONS (3cr.)**
Theories et pratiques relatives aux campagnes de communication faisant la promotion d’enjeux ou de causes d’intérêt publique. Stratégies et techniques. Études de cas dans les secteurs de la santé, de l’environnement et d’autres domaines.

**CMN5130 DIVERSITY IN THE WORKPLACE : COMMUNICATION CHALLENGES (3cr.)**
Theories and pragmatics of intercultural communication as applicable to various forms of communication (verbal and nonverbal) between and among individuals of different ethnicities, races, cultures, age groups, sexual orientations, genders, classes, abilities, language, religion, and value orientations. Focused on workplace interactions.

**CMN5530 DIVERSITÉ AU TRAVAIL : DÉFIS COMMUNICATIONNELS (3cr.)**
Theories et pratiques de communication interculturelle en milieu de travail. Étude des différentes formes de communication (verbale et non verbale) impliquant des individus de culture, d’âge, d’orientation sexuelle, de genre, de langue, de religion et de compétences différents. Les cas présentés dans le cours se concentreront sur les interactions en milieu de travail.

**CMN5131 ORGANIZATIONAL COMMUNICATION THEORIES (3cr.)**
Different approaches (e.g., interactionist, narrative, critical) to organizational communication research, with a focus on benchmark studies and key researchers. Role of theories in understanding communication challenges faced by contemporary organizations. Issues related to communication networks, organizational learning, management of diversity, computerization of organizations, and management of risks, among others.

**CMN5531 THÉORIES DE LA COMMUNICATION ORGANISATIONNELLE (3cr.)**
Revue de diverses approches en communication organisationnelle (interactionniste, narrative, critique). L’accent sera mis sur les études et les principaux chercheurs qui représentent des points de référence dans le domaine. Le rôle des théories dans la compréhension des défis auxquels font face les organisations modernes. Enjeux liés aux réseaux de communication, à l’apprentissage organisationnel, à la gestion de la diversité, à l’informatisation des organisations, à la gestion du risque, et autres.

**CMN5132 THEORIES AND EFFECTS OF THE MEDIA (3cr.)**
Critique de traditional (e.g., cultivation, social learning, and dependency), interpretive (e.g., narrative and genre), and critical/cultural (e.g., political economy) theories of the mass media. Contemporary research directions in the field of mass and emerging communications. Study of the effects on audience behavior.

**CMN5532 THÉORIES ET EFFETS DES MÉDIAS (3cr.)**
Analyse critique des théories classiques des médias de masse (cultivation, apprentissage social et conditionnement), interprétatives (narrative et identité sexuelle), critique et culturelle (économie politique). Nouvelles perspectives de la recherche dans le domaine des médias de masse traditionnels et émergents. Étude des effets sur le comportement des récepteurs.

**CMN5133 HEALTH COMMUNICATION THEORIES (3cr.)**
Concepts, research, and theories regarding health communication issues at the micro level (e.g., interactions between patient and healthcare provider), mezzo level (e.g., role of information in healthcare organizations) and macro level (e.g., role of media in shaping public perceptions of health and illness). Qualitative, quantitative, and mixed-method research, with a strong focus on interdisciplinary approaches to health communication and public health research.

**CMN5533 THÉORIÉS DE LA COMMUNICATION ET DE LA SANTÉ (3cr.)**
Théories, concepts et recherches liées au domaine de la communication et de la santé au niveau micro (interactions entre le patient, le médecin et les dispensateurs de soins), au niveau intermédiaire (rôle de l’information dans les organisations de soins de santé) et au niveau macro (le rôle des médias dans la construction des représentations sociales de la santé et de la maladie). Analyse quantitative, qualitative et mixte avec accent sur les approches interdisciplinaires et les recherches en santé publique.
CMN5135 COMMUNICATION MANAGEMENT (3cr.)
Role of communication in organizational development, team development, and corporate/institutional positioning. Internal and external communication in public and private organizations. Case studies of Canadian and international organizations.

CMN5535 GESTION DES COMMUNICATIONS (3cr.)
Rôle de la communication dans le développement organisationnel, dans le développement des équipes et dans la projection de l'image de l'organisation. Communication interne et externe dans les organisations publiques et privées. Études de cas d'organisations canadiennes et internationales.

CMN5136 VIRTUAL WORK TEAMS (3cr.)
Theoretical and practical issues raised by the integration of mediated and distance communication into the work place, including those specific to the functioning of virtual teams (e.g., E-leadership, cohesion, communication, and trust).

CMN5536 ÉQUIPES VIRTUELLES: ENJEUX COMMUNICATIONNELS (3cr.)
Différentes problématiques théoriques et pratiques soulevées par l'intégration de modes de communication médiatisée et à distance au sein des collectifs de travail, incluant des problématiques spécifiques liées notamment au fonctionnement d'équipes virtuelles (e.g., E-leadership, cohésion, communication et confiance dans les équipes virtuelles).

CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)
Impact of information and communication technologies and political, cultural, and global dynamics on organizations. Theoretical and critical reflections on the strategic management of change in organizations, the transformation of organizational cultures, and intervention practices. Case studies of hybrid cultures.

CMN5540 COMMUNICATION, MONDIALISATION ET CHANGEMENT (3cr.)
Influence des technologies d'information et de communication, de la dynamique politique, culturelle et globale sur les organisations. Réflexions théoriques et critiques portant sur les stratégies de gestion du changement dans les organisations, sur la transformation des cultures organisationnelles et les interventions pratiques. Études de cas de cultures hybrides.

CMN5141 GOVERNMENT COMMUNICATION (3cr.)
Issues and concerns of particular relevance to the public service communication community. Preparation of a consultation report that focuses on a specific communication challenge faced by professional communicators.

CMN5541 COMMUNICATION GOUVERNEMENTALE (3cr.)
Enjeux et préoccupations spécifiques à la communauté des communicateurs d'agences publiques. Préparation d'un rapport de consultation qui met l'accent sur un défi particulier qu'ont à relever les communicateurs professionnels.

CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
The role of communication in general—and mass media and the Internet in particular—in high risk situations such as conflict, war, disaster, emergency, and acts of terrorism (including biological threats) in a variety of cultural contexts. Characteristics of modern risk societies, risk identification and management, the relationship between risk and crisis communication, and crisis management strategies. Case studies.

CMN5542 COMMUNICATION DE CRISE ET DU RISQUE (3cr.)
Le rôle de la communication en général, des médias de masse et d'Internet en particulier, dans des situations de crise comme la guerre, les désastres naturels, les urgences et les actes terroristes (incluant les menaces biologiques) dans une variété de contextes culturels. Caractéristiques des sociétés modernes à haut risque, identification et gestion des risques et des crises, relations entre les risques et la communication de crise, étude des stratégies de gestion de crise. Études de cas.

CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
Research directions in organizational learning, collective intelligence and information architecture, situated in the technical context of the general digitization of communication and the socio-cultural context of knowledge societies and human development policies. Interdisciplinary perspectives. Case studies from the work place, education, health, and cultural industries.

CMN5550 GESTION DES CONNAISSANCES (3cr.)
Principales orientations de la recherche sur l'apprentissage organisationnel, l'intelligence collective et l'architecture de l'information, situées à la fois dans le contexte technique de la numérisation généralisée de la communication et dans le contexte socioculturel de la société de la connaissance et des politiques de développement humain. Une perspective interdisciplinaire sera privilégiée. Des études de cas en milieu de travail, en éducation, en santé et dans les industries culturelles.

CMN5155 ADVANCED RESEARCH IN TRADITIONAL AND EMERGING MEDIA (3cr.)
Empirical and critical studies of traditional and emerging media in various social contexts: organizational, domestic, educational, etc. Emerging research trends (qualitative and quantitative).

CMN5555 RECHERCHES AVANCÉES SUR LES MÉDIAS TRADITIONNELS ET CEUX EN ÉMERGENCE (3cr.)
Études empiriques et critiques des médias traditionnels et en émergence dans différents contextes : monde du travail, vie quotidienne, éducation, etc. Nouveaux courants de recherche (qualitative et quantitative).

CMN5160 POLITICAL USES OF MEDIA (3cr.)
Critical review of key aspects of contemporary theory, research, and practice in political communication. Uses of traditional and emerging media by governments, politicians, and civil society (NGOs, activist groups and citizens) to communicate with their publics, influence public and policy agendas, effect social and political change, monitor public opinion, manage their reputation, and/or build networks of resistance. Impact of changing communication technologies on government media relations. Case studies.

CMN5560 USAGES POLITIQUES DES MÉDIAS (3cr.)
Revue critique des principaux aspects de la théorie contemporaine, de la recherche et des pratiques de communication politique. Usage des médias traditionnels et émergents par les gouvernements, les politiciens et la société civile (agences non gouvernementales, groupes de militants et de citoyens) pour communiquer avec leur public respectif, pour influencer leur public et pour promouvoir leur cause et provoquer le changement social et politique, évaluer l’opinion publique, gérer leur réputation et/ou développer des réseaux de résistance. Influence des technologies de communication sur les relations entre le gouvernement et les médias.

CMN561 CONSTRUCTION OF SOCIAL REALITY BY THE MEDIA (3cr.)
Study of the media strategies that aim to create the verisimilitude of everyday life. Analysis of the contemporary production of authenticity (or its simulation) in media genres such as televised reality shows, mock news shows, cringe comedy, and polemical documentaries.

CMN5561 PRÉSENTATION ET SIMULATION DE LA RÉALITÉ PAR LES MÉDIAS (3cr.)
Étude des stratégies médiatiques de construction des effets de réel. Analyse de la production contemporaine de l'authentique (ou de sa simulation) dans les genres médiatiques comme la téléréalité, les parodies de bulletin d'information et les documentaires polémiques.

CMN5165 NEW DIRECTIONS IN JOURNALISM (3cr.)
Theoretical and empirical studies of recent trends and changes in journalistic practices. Impact of social, economic and technological factors on journalism (e.g., commoditization of information, concentration of ownership, and digital media convergence). New socio-critical practices. Audience research.

CMN5565 NOUVELLES ORIENTATIONS EN JOURNALISME (3cr.)

CMN5170 INTERNATIONAL COMMUNICATION (3cr.)
Contemporary approaches to international communication. The role of traditional and emerging media, international institutions, governmental agencies, and NGOs. Analysis of problems related to participatory communication and alternative models.

CMN5570 COMMUNICATION INTERNATIONALE (3cr.)
Approches contemporaines de la communication internationale. Le rôle des médias traditionnels et des nouveaux médias, des institutions internationales, agences gouvernementales, ONGs. Analyse de questions spécifiques telles que la communication participative et les modèles alternatifs.

CMN5190 MEDIA, IDENTITY AND DIVERSITY (3cr.)
Study of identity issues as seen through the prism of the media and relating to ethnicities, races, cultures, age groups, sexual orientations, genders, classes, abilities, language, religion, and value orientations. Study of the representations and challenges posed by "otherness" and diversity in an era of globalization and accelerated circulation of information.

CMN5590 MÉDIAS, IDENTITÉ ET DIVERSITÉ (3cr.)

CMN5195 SPECIAL TOPICS (3cr.)

CMN5595 THÈMES SPÉCIAUX (3cr.)

CMN5900 ÉTUDES DIRIGÉES EN COMMUNICATION / DIRECTED STUDIES IN COMMUNICATION (3cr.)
Étude d'une problématique particulière ou approfondissement de ses connaissances dans un domaine des communications. Le sujet de recherche est déterminé et développé en consultation avec le professeur responsable. Le projet doit être différent de ce qui a pu être soumis dans d'autres cours. Limite d'un cours d'études dirigées par étudiant. Préalable: Permission du Comité des études supérieures. / Opportunity to study an area of particular interest or to pursue an interest in greater depth. Research topic to be selected and developed in consultation with the supervising professor. Should not repeat work submitted in other courses. Maximum of one directed studies course per student. Prerequisite: Permission of the Graduate Studies Committee.

CMN6990 PROPOSITION DE RECHERCHE / RESEARCH PROPOSAL
Réduction d’une proposition de thèse ou de mémoire conformément aux lignes directrices du département de communication. La proposition doit comprendre une recension critique, préparée en consultation avec le directeur ou la directrice de thèse ou de mémoire, des principaux travaux consacrés au sujet. Il faut défendre la proposition devant un comité consultatif constitué de la directrice ou du directeur et d’un autre professeur (pour le mémoire) ou de deux autres professeurs (pour la thèse). Si la proposition n’est pas acceptée la première fois, l’étudiant pourra la soumettre et la présenter une deuxième fois à la session suivante. Si la proposition n’est pas approuvée lors de la deuxième soumission, une note de « non satisfaisant » sera attribuée pour la proposition et le retrait du programme s'imposera. Le cours est noté S/NS. Préalable : CMN5500 / Preparation of an MA thesis or research paper proposal, based on guidelines
established by the department of communication. The proposal should include a thorough and critical review of literature on the research topic, prepared in consultation with the supervisor of the thesis or research paper. The proposal must be defended before an advisory committee consisting of the supervisor and one other professor (research paper) or two other professors (thesis). Students whose proposal is not accepted on the first attempt may submit and present it a second time in the following session. Failure to obtain approval on the second attempt leads to a grade of "not satisfactory" for the proposal and to compulsory withdrawal from the program. The course is graded S/N/S. Prerequisite: CMN3100.

CMN6998 MÉMOIRE / RESEARCH PAPER
Préalable : CMN 6990 / Prerequisite: CMN 6990

CMNG99 THÈSE DE MAÎTRISE / MASTER'S THESIS
Préalable : CMN 6990 / Prerequisite CMN 6990

Computer Science (MCS)

Ottawa-Carleton Joint Program

General Information

Students may include courses from both universities in their programs, and may select a supervisor from either university, but they should apply to the university with which their supervisor is associated. Their study program is administered by the university at which they are enrolled and is subject to its regulations.

The program operates within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the general regulations of the graduate faculty at each of the two universities.

Students who wish to pursue studies in computer science leading to the degree of Master of Computer Science (MCS) or Doctor of Philosophy in Computer Science (PhD) can do so in joint programs offered by the School of Information Technology and Engineering at the University of Ottawa and the School of Computer Science at Carleton University under the auspices of the Ottawa-Carleton Institute for Computer Science. The Institute is responsible for supervising these programs and for providing a framework for interaction between the universities in graduate computer science education. In addition to the faculty members from the two computer science programs, the Institute also has members with computer science expertise from other departments. The program includes a CO-OP option. The degree awarded is the Master of Computer Science (MCS). Requests for information and application forms should be sent to the graduate secretaries handling the admission process (Contact OCICS).

The Department of Computer Science is a participating unit in the collaborative program in bioinformatics at the master's level.

Admission

Admission to the program is competitive. Minimum requirements are a BSc (Honours) in Computer Science or equivalent with a 75 per cent (B+) or higher average. All candidates must demonstrate fluency in either English or French.

NOTE: Equivalent is considered to be an honours university program which includes at least 12 three-credit courses in Computer Science, four of which must be at the fourth-year level, as well as eight three-credit courses in Mathematics, two of which must be at the third- or fourth-year level. These courses must include all the following topics:


CO-OP Program

To be admissible to the CO-OP program, students must be enrolled full time in the Master of Computer Science Program, must meet the minimum CGPA requirement of the Faculty of Graduate and Postdoctoral Studies (7.0, i.e., 75% or its equivalent), must enter the program in the Fall term, and must be a Canadian citizen, resident, or permanent resident. Applications for the CO-OP program must be received by the end of the first month of the student’s enrollment in the MCS program. Admission to the CO-OP program will be on a competitive basis and will be managed by the CO-OP Office.

Collaborative Program in Bioinformatics at the Master's Level

The Institute of Computer Science is a participating unit in the collaborative program in bioinformatics at the master's level. This program has been established for the students wishing to include an interdisciplinary component in Bioinformatics as part of their degree in Computer Science.

Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. To be accepted, the thesis director must be a member of the collaborative program. Students are normally informed about their acceptance into the collaborative program at the same time as being informed about their admission into the primary program. For further details, see the Bioinformatics
Qualifying Program

Applicants who lack the required undergraduate preparation may be admitted to a qualifying-year program. The basis for admission to the qualifying year of the Masters program will normally be an honours degree in a related discipline with a "B" average (70-74%), provided that the honours program in question includes the equivalent of three years of an honours computer science program. A major degree holder with superior academic standing may be considered for admission to the qualifying year with suitable background preparation.

Collaborative Specialization in Software Engineering at the Master's Level

The Ottawa-Carleton Institute for Computer Science is one of the participating units in the specialization in Software Engineering at the Master's level. For further details, please consult the professor in charge of the specialization.

Program Requirements

Master's Degree Requirements

Normally, students in the program will be expected to complete a thesis. Each candidate submitting a thesis will be required to defend it orally. However, students may be permitted to take a non-thesis option.

1. The master's with thesis

Students in the thesis option must take five three-credit courses or equivalent, fulfil the graduate seminar requirement, and complete a thesis.

2. The non-thesis option

Students in the non-thesis option must take eight three-credit courses or equivalent, the Intensive Graduate Project Course in Computer Science, and fulfil the graduate seminar requirement.

Subject to the approval of the graduate coordinator, a student may take up to half of the course credits in the program in other disciplines (e.g. electrical engineering, mathematics and physics).

Graduate Seminar (CSI 5902)

To fulfill the requirements of the CSI 5902 the student must:

- make a successful presentation
- satisfy the attendance requirement as specified in the student handbook

The graduate seminar requirements must be fulfilled within two consecutive sessions.

Course selection must be approved by the student's academic advisor, and must include at least:

- one three-credit course in Software Engineering (category E)
- one three-credit course in the Theory of Computing (category T)
- one three-credit course in either Computer Applications (category A) or Computer Systems (category S)

At most, two three-credit courses at the fourth year level are permitted

A student may be permitted to carry out thesis work off campus provided suitable arrangements are made for supervision and experimental work, and prior approval is obtained from the Joint Program Committee and the Faculty of Graduate and Postdoctoral Studies.

3. The requirements of the CO-OP program are as follows:

Complete two work terms.

CO-OP students must register in the “CO-OP Work Term” (CSI 6001, CSI 6002) in each of the two work terms. They must register full-time and add either a course or their thesis/research paper to their registration.

Each work term is graded P/F, based on the employer’s report and on the written report completed by the student. (The report must be 30 pages, including appendices.) The report is evaluated by the professor in charge of the graduate CSI CO-OP program.

The credits awarded for CO-OP terms may not be used to obtain equivalences for other courses. In other words, the CO-OP credits are additional to the minimum requirements of the degree.

To remain enrolled in the CO-OP program, the students must:
be registered full-time;
- maintain a 7.0 cumulative grade point average;
- obtain a satisfactory grade (P) for each CO-OP work term.

Collaborative Program in Bioinformatics at the Master's Level

For the requirements, refer to the Bioinformatics collaborative program.

Residence

All full-time students must complete a minimum of three sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the initial registration in the program.

Minimum standards

The passing grade in all courses is B. Students who fail 6 credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Courses

Les cours sont regroupés selon les catégories suivantes :

Génie du logiciel (symbole E dans la liste des cours)
- systèmes de bases de données et systèmes intelligents; génie informatique; conception de langages et de leurs traducteurs.

Théorie de l'informatique (symbole T dans la liste des cours)
- théorie des bases de données; principes de protocoles; théorie de la complexité; algorithmes algébriques; algorithmes combinatoires; algorithmes des nombres théoriques et géométriques; théorie des automates et langages formels.

Applications informatiques (symbole A dans la liste des cours)
- intelligence artificielle; applications graphiques; modélisation et simulation; analyse numérique; optimisation.

Systèmes informatiques (symbole S dans la liste des cours)
- architectures spécialisées; traitement du signal, image et langage; informatique répartie; réseaux juxtaposés et locaux; systèmes de bureautique.

Courses are grouped according to the following categories:

Software Engineering (code E in the course list)
- Database and Knowledge-based Systems; Software Engineering; Software Translator and Language Design.

Theory of Computing (code T in the course list)
- Theory of Databases; Principle of Protocols; Complexity Theory; Algebraic Algorithms; Combinatorial Algorithms; Number-Theoretic and Geometric Algorithms; Automata Theory and Formal Languages.

Computer Applications (code A in the course list)
- Artificial Intelligence; Computer Graphics; Modelling and Simulation; Numerical Analysis; Optimization.

Computer Systems (code S in the course list)
- Specialized Architectures; Signal, Image and Speech Processing; Distributed Computing; Local and Wide Area Networks; Office Information Systems.

Génie du logiciel (symbole E dans la liste des cours) / Software Engineering (code E in the course list)

CSI5107 (COMP 5609) PROGRAM CONSTRUCTION AND FAULT TOLERANCE (3cr.)

CSI5109 (COMP 5701) SPECIFICATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

**CSI5111 (COMP 5501) SOFTWARE QUALITY ENGINEERING** (3cr.)

**CSI5112 (COMP 5207) SOFTWARE ENGINEERING** (3cr.)
Topics of current interest in Software Engineering, such as software development systems, structured systems analysis and design, management of software, software tools, validation and verification, programming environments.

**CSI5113 (COMP 5001) FOUNDATIONS OF PROGRAMMING LANGUAGES** (3cr.)

**CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN** (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decomposition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.

**CSI5118 (COMP 5302) AUTOMATED VERIFICATION AND VALIDATION OF SOFTWARE** (3cr.)
Topics in formal test derivation methods, test management, high-level, CASE-based verification and validation, data-flow & control-flow measures and metrics for assessing quality of designs and code, regression analysis & testing. Prerequisite: a four-year undergraduate degree in computer science, computer engineering, or software engineering.

**CSI512 (COMP 5301) SOFTWARE USABILITY** (3cr.)
Design principles and metrics for usability. Qualitative and quantitative methods for the evaluation of software system usability: Heuristic evaluation, usability testing, usability inspections and walkthroughs, cognitive walkthroughs, formal usability experimentation. Ethical concerns when performing studies with test users. Economics of usability. Integration of usability engineering into the software engineering lifecycle.

**CSI5123 (COMP 5106) LANGUAGES FOR PARALLEL COMPUTING** (3cr.)

**CSI5134 (COMP 5004) FAULT TOLERANCE** (3cr.)
Hardware and software techniques for fault tolerance. Topics include modeling and evaluation techniques, error detecting and correcting codes, module and system level fault detection mechanisms, design techniques for, fault-tolerant and fail-safe systems, software fault tolerance through recovery blocks, N-version programming, algorithm-based fault tolerance, checkpointing and recovery techniques, and survey of practical fault-tolerant systems.

**CSI5143 (COMP 5403) REAL-TIME SYSTEMS DEVELOPMENT** (3cr.)
An advanced course in real-time OO systems development that deals with modeling systems at different abstraction levels. A systematic and traceable modeling process is introduced. Topics include: modeling notations (including UML-RT), development process, design patterns, and system testing. Expect a substantial design project. Precludes additional credit for ELG 6186. Prerequisite: Computer Science CSI 5314 or equivalent.

**CSI5184 (COMP 5504) LOGIC PROGRAMMING** (3cr.)
Review of Logic Programming (LP) as a foundation of fifth generation software. Two approaches to LP: automated deduction and procedural semantics. Software development methodology in the LP framework. Advanced Prolog programming. Implementations of LP. The course includes a programming project and a presentation.

**CSI5310 (COMP 5400) SOFTWARE PATTERNS** (3cr.)
Survey of current developments in software patterns, three-part rules expressing relations between software contexts, problems and solutions. Discussion of Pattern categories: architectural, design, analysis, refactoring, general-purpose, anti-patterns, and idioms. Students required to apply existing patterns and to develop and defend new ones. Prerequisites: 95.304 or CSI 3300 or equivalent

**CSI5314 (COMP 5104) OBJECT-ORIENTED SOFTWARE DEVELOPMENT** (3cr.)

**CSI5507 (COMP 5609) LES PROGRAMMES: CONSTRUCTION ET TOLÉRANCE AUX FAUTES** (3cr.)

**CSI5509 (COMP 5701) MÉTHODES POUR LA SPÉCIFICATION DE SYSTÈMES RÉPARTIS** (3cr.)
CS15511 (COMP 5501) GÉNIE DE LA QUALITÉ DES LOGICIELS (3cr.)

CS15584 (COMP 5804) PROGRAMMATION LOGIQUE (3cr.)

CS17161 (COMP 6603) ADVANCED TOPICS IN PROGRAMMING SYSTEMS AND LANGUAGES (3cr.)
CS17314 (COMP 6104) ADVANCED TOPICS IN OBJECT-ORIENTED SYSTEMS (3cr.)
CS17561 (COMP 6603) ÉTUDES AVANCÉES EN SYSTÈMES ET LANGUAGES DE PROGRAMMATION (3cr.)

Théorie de l'informatique (symbole T dans la liste des cours) / Theory of Computing (code T in the course list)

CS15100 (COMP 5306) DATA INTEGRATION (3cr.)
Materialized and virtual approaches to integration of heterogeneous and independent data sources. Emphasis on data models, architectures, logic-based techniques for query processing, metadata and consistency management, the role of XML and ontologies in data integration; connections to schema mapping, data exchange, and P2P systems. Prerequisite: COMP 3005 or equivalent.

CS15101 (COMP 5307) KNOWLEDGE REPRESENTATION (3cr.)
KR is concerned with representing knowledge and using it in computers. Emphasis on logic-based languages for KR, and automated reasoning techniques and systems; important applications of this traditional area of AI to ontologies and semantic web. Prerequisites: COMP 1805 and COMP 3005, or equivalents.

CS15102 (COMP 5308) TOPICS IN MEDICAL COMPUTING (3cr.)
CS15104 (COMP/MATH 5807) FORMAL LANGUAGE AND SYNTAX ANALYSIS (3cr.)
CS15107 (COMP 5609) PROGRAM CONSTRUCTION AND FAULT TOLERANCE (3cr.)

CS15108 (COMP 5700) SOFTWARE SPECIFICATION AND VERIFICATION (3cr.)

CS15110 (COMP 5707) PRINCIPLES OF FORMAL SOFTWARE DEVELOPMENT (3cr.)
Methodologies in formal software specification, development, and verification. The use of theorem proving, automated deduction, and other related formal methods for software correctness. Applications in program verification, mobile code safety, and protocol verification.

CS15121 (COMP 5408) ADVANCED DATA STRUCTURES (3cr.)
CS15126 (COMP 5108) ALGORITHMS IN BIOINFORMATICS (3cr.)
Fundamental mathematical and algorithmic concepts underlying computational molecular biology; physical and genetic mapping, sequence analysis (including alignment and probabilistic models), genomic rearrangement, phylogenetic inference, computational proteomics and systems modelling of the whole cell. Prerequisites: CSI 3105, COMP 3804 or equivalent.

CS15127 (COMP 5409) APPLIED COMPUTATIONAL GEOMETRY (3cr.)
CS15144 (COMP 5404) COMPUTER-AIDED PROGRAM VERIFICATION (3cr.)
CS15148 (COMP 5103) WIRELESS AD HOC NETWORKING (3cr.)

CS15149 (COMP 5007) GRAPHICAL MODELS (3cr.)
Bayesian networks, factor graphs, Markov random fields, maximum a posteriori probability (MAP) and maximum likelihood (ML) principles, elimination algorithm, sum-product algorithm, decomposable and non-decomposable models, junction tree algorithm, completely observed models, iterative proportional fitting algorithm, expectation-maximization (EM) algorithm, iterative conditional modes algorithm, variational methods, applications. Precludes credit for ELC5131 (EAG5131) and ELC7177 (EACJ 5605). Prerequisite: Permission of the program director.

CSIS161 (COMP 5500) PRINCIPLES OF DISTRIBUTED SIMULATION (3cr.)
Distributed simulation principles and practices. Synchronization protocols: Optimistic vs Conservative, Deadlock detection in conservative simulations, Time warp simulation. Distributed interactive simulation: Data distribution management, Interest management, High Level Architectures (HLA), Run Time Infrastructure (RTI). Distributed web-based simulation. Distributed agent based simulation. Real time applications of distributed simulation. Distributed and collaborative virtual simulations.

CSIS162 (COMP 5702) ORDER: ITS ALGORITHMS AND GRAPHICAL DATA STRUCTURES (3cr.)
In general terms, this course aims to pursue the twin themes of graphical data structures and optimization in theoretical computer science. The particular application areas bear on computational geometry and scheduling; the theoretical tools which we develop arise from ordered sets. To this end the course intends to provide a comprehensive introduction to the combinatorial and computational theory of ordered sets. The special emphasis on the upward drawing and linear extension is intended to develop the tools appropriate to the applications of ordered sets in computer science.

CSIS163 (COMP 5703) ALGORITHM ANALYSIS AND DESIGN (3cr.)
Topics of current interest in the design and analysis of computer algorithms for graph-theoretical applications; e.g. shortest paths, chromatic number, etc. Lower bounds, upper bounds, and average performance of algorithms. Complexity theory.

CSIS164 (COMP 5008) COMPUTATIONAL GEOMETRY (3cr.)

CSIS165 (COMP 5709) COMBINATORIAL ALGORITHMS (3cr.)
Design of algorithms for solving problems that are combinatorial in nature, using both sequential and parallel models of computation. Parallel algorithms for enumerating basic combinatorial objects (permutations, combinations, set partitions) and for solving optimization problems (knapsack, minimal cover, branch-and-bound). Polyminoes, polygonal systems, enumeration and classification and benzenoid and coronoid hydrocarbons in chemistry. Combinatorial geometry (Voronoi diagrams, polytopes arrangements). Algorithmic problems in many-valued logics (base enumeration, tautology checking, minimization, finding the spectra).

CSIS166 (COMP 5805) APPLICATIONS OF COMBINATORIAL OPTIMIZATION (3cr.)
Topics in combinatorial optimization with emphasis on applications in Computer Science. Topics include network flows, various routing algorithms, polyhedral combinatorics, and the cutting plane method.

CSIS169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
Computational aspects and applications of design and analysis of mobile and wireless networking. Topics include Physical, Link Layer, Media Access Control, Wireless, Mobile LANs, (Local Area Networks), Ad-Hoc, Sensor Networks, Power Consumption optimization, Routing, Searching, Service Discovery, Clustering, Multicasting, Localization, Mobile IP, TCP (Internet Protocol/Transmission Control Protocol), File Systems, Mobility Models, Wireless Applications. (Cannot be combined for credit with ELG 6168)

CSIS173 (COMP 5203) DATA NETWORKS (3cr.)

CSIS174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CSIS185 (COMP 5107) STATISTICAL AND SYNTACTIC PATTERN-recognition (3cr.)

CSIS308 (COMP 5003) PRINCIPLES OF DISTRIBUTED COMPUTING (3cr.)

CSIS367 (COMP 5300) STRUCTURE IN COMPLEXITY THEORY (3cr.)

CSIS390 (COMP 5005) LEARNING SYSTEMS FOR RANDOM ENVIRONMENTS (3cr.)

CSIS507 (COMP 5609) LES PROGRAMMES: CONSTRUCTION ET TOLÉRANCE AUX FAUTES (3cr.)

CSIS508 (COMP 5700) SPÉCIFICATION ET VÉRIFICATION DE LOGICIELS (3cr.)
Mathématiques pour la spécification et la vérification. Modèle de spécifications. Cycle de vie de la spécification. Réutilisation à base de spécifications. Spécificer

**CS15510 (COMP 5707) PRINCIPES DE DÉVELOPPEMENT FORMAL DE LOGICIELS (3cr.)**

**CS15526 (COMP 5180) ALGORITHMES EN BIOINFORMATIQUE (3cr.)**
Assemblage de l'ADN, recherche de gènes, comparaison de chaînes, alignement de séquences, structures grammaticales, structures secondaires et tertiaires. Les récents développements, tels que les puces d'ADN et de protéines. Travail additionnel requis dans le cas des étudiants inscrits sous la cote CSI 5526. Préalable: CSI 3305 ou (dans le cas des étudiants diplômés) permission du responsable de programme.

**CS15562 (COMP 5702) ORDRE: ALGORITHMES ET STRUCTURES GRAPHIQUES DE DONNÉES (3cr.)**
Structures graphiques de données et optimisation en informatique théorique. Applications à la géométrie computationnelle et à l'ordonnancement; outils engendrés par les ensembles ordonnés. Théorie combinatoire et computationnelle, d'ensembles ordonnés. Accent sur le "upward drawing" et l'extension linéaire, les deux outils pour les applications d'ensembles ordonnés en informatique.

**CS15565 (COMP 5709) ALGORITHMES COMBINATOIRES (3cr.)**
Conception d'algorithmes de problèmes de nature combinatoire, à l'aide de modèles séquentiels et parallèles. Algorithmes parallèles pour l'énnumération d'objets combinatoires de base (permutations, combinaisons, partitions), et pour résoudre des problèmes d'optimisation (knapsack, recouvrement minimal, méthode branch-and-bound); systèmes polygonaux, applications en chimie; géométrie combinatoire (diagrammes de Voronoï, polytopes, arrangements); problèmes en logique à valeur multiple, énumération de base, vérification de tautologie, minimisation, recherche du spectre.

**CS17160 (COMP 6601) ADVANCED TOPICS IN THE THEORY OF COMPUTING (3cr.)**

**CS17170 (COMP 6602) ADVANCED TOPICS IN DISTRIBUTED COMPUTING (3cr.)**

**CS17970 (COMP 6602) THÈMES EN INFORMATIQUE RÉPARTIE**

**Applications informatiques (symbole A dans la liste des cours) / Computer Applications (code A in the course list)**

**CS15100 (COMP 5306) DATA INTEGRATION (3cr.)**
Materialized and virtual approaches to integration of heterogeneous and independent data sources. Emphasis on data models, architectures, logic-based techniques for query processing, metadata and consistency management, the role of XML and ontologies in data integration; connections to schema mapping, data exchange, and P2P systems. Prerequisite: COMP 3005 or equivalent.

**CS15101 (COMP 5307) KNOWLEDGE REPRESENTATION (3cr.)**
KR is concerned with representing knowledge and using it in computers. Emphasis on logic-based languages for KR, and automated reasoning techniques and systems; important applications of this traditional area of AI to ontologies and semantic web. Prerequisites: COMP 1805 and COMP 3005, or equivalents.

**CS15102 (COMP 5308) TOPICS IN MEDICAL COMPUTING (3cr.)**

**CS15105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)**
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4185 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

**CS15114 (COMP 5504) AUTOMATED OFFICE SYSTEMS (3cr.)**
Study of office automation and its extension into commerce and marketing. Tools for collaboration, information transformation, data gathering, storage and retrieval, office agents and CSCW, funds transfer, electronic mail systems and messaging, use of WWW. Ergonomic, legal and regulatory aspects, social and economic factors.

**CS15116 (COMP 5407) AUTHENTICATION AND SOFTWARE SECURITY (3cr.)**
Specialized topics in security including advanced authentication techniques, user interface aspects, electronic and digital signatures, security infrastructures and protocols, software vulnerabilities affecting security, non-secure software and hosts, protecting software and digital content. Prerequisites: Basic course in Statistics or permission of the program director.

**CS15124 (COMP 5204) COMPUTATIONAL ASPECTS OF GEOGRAPHIC INFORMATION SYSTEMS (3cr.)**
CS15126 (COMP 5108) ALGORITHMS IN BIOINFORMATICS (3cr.)
Fundamental mathematical and algorithmic concepts underlying computational molecular biology; physical and genetic mapping, sequence analysis (including alignment and probabilistic models), genomic rearrangement, phylogenetic inference, computational proteomics and systems modeling of the whole cell. Prerequisites: CSI 3105, COMP 3804 or equivalent.

CS15128 (COMP 5002) SWARM INTELLIGENCE (3cr.)

CS15129 (COMP 5305) ADVANCED DATABASE SYSTEMS (3cr.)

CS15145 (COMP 5109) STATISTICAL APPROACHES TO NATURAL LANGUAGE PROCESSING (3cr.)

CS15146 (COMP 5402) COMPUTER GRAPHICS (3cr.)

CS15147 (COMP 5201) COMPUTER ANIMATION (3cr.)

CS15151 (COMP 5205) VIRTUAL ENVIRONMENTS (3cr.)

CS15162 (COMP 5702) ORDER: ITS ALGORITHMS AND GRAPHICAL DATA STRUCTURES (3cr.)
In general terms, this course aims to pursue the twin themes of graphical data structures and optimization in theoretical computer science. The particular application areas bear on computational geometry and scheduling; the theoretical tools which we develop arise from ordered sets. To this end the course intends to provide a comprehensive introduction to the combinatorial and computational theory of ordered sets. The special emphasis on the upward drawing and linear extension is intended to develop the tools appropriate to the applications of ordered sets in computer science.

CS15168 (COMP 5309) DIGITAL WATERMARKING (3cr.)
Overview of recent advances in watermarking of image, video, audio, and other media. Spatial, spectral, and temporal watermarking algorithms. Perceptual models. Use of cryptography in steganography and watermarking. Robustness, security, imperceptibility, and capacity of watermarking. Content authentication, copy control, intellectual property, digital rights management, and other applications. Prerequisites: ELG 4172 or CEG 4311 or CSI 4135 or equivalent.

CS15180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE (3cr.)
A programming-oriented introduction to selected topics in Artificial Intelligence (A.I.). Topics for consideration include: A.I. programming techniques, pattern matching systems, natural language systems rule-based systems, constraint systems, learning systems, and cognitive systems. Assignments will be both (a) programming-oriented, requiring implementation and/or extensions of prototypes in Lisp and/or Prolog and (b) research-oriented, requiring readings of special topics in current A.I. journals.

CS15183 (COMP 5206) EVOLUTIONARY COMPUTATION AND ARTIFICIAL LIFE (3cr.)

CS15304 (COMP 5602) KNOWLEDGE ENGINEERING (3cr.)
Review of basic concepts from artificial intelligence for knowledge engineering. Types of knowledge and knowledge representations. The importance of logic and natural language. Expert systems and other knowledge-based software. Knowledge acquisition tools and techniques. The relation to software engineering. Exercises in knowledge acquisition, representation, and processing will be given.

CS15306 (COMP 5006) NATURAL LANGUAGE UNDERSTANDING (3cr.)

CS15380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S) (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master’s programs in e-business technologies or the certificate in e-commerce.

CS15386 (COMP 5505) NATURAL LANGUAGE PROCESSING (3cr.)
Definitions, applicatons, challenges, lexicons, thesauri, corpora and other linguistic resources. Morphological analysis; tagging. Selected syntactic theories: phrase
structure grammars, unification-based grammars. Parsing techniques: chomsky, deterministic parsing, logic grammars. Selected semantic representations: logic, logical forms, conceptual graphs, Element of semantic and pragmatic analysis: reference, scope, focus. Elements of statistical language processing and text mining. Introduction to corpus linguistics. Term projects, one on syntax and one on semantics, will be done in Prolog and logic grammars. Prerequisite: CSI 4106 or permission of the program director.

CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)

CSI5388 (COMP 5801) TOPICS IN MACHINE LEARNING (3cr.)
Prerequisite: CSI 4106 or permission of the program director.

CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5514 (COMP 5504) BUREAUTIQUE (3cr.)
Une étude de la bureautique. Les systèmes de bureautique, réseaux locaux, systèmes de traitement de texte, transferts de fonds, messageries et échanges de documents. La politique économique, sociale et légale des systèmes bureautiques.

CSI5526 (COMP 5180) ALGORITHMES EN BIOINFORMATIQUE (3cr.)
Assemblage de l'ADN, recherche de gènes, comparaison de chaînes, alignement de séquences, structures grammaticales, structures secondaires et tertiaires. Les récents développements, tels que les puces d'ADN et de protéines. Travail additionnel requis dans le cas des étudiants inscrits sous la cote CSI 5526. Préalable : CSI 3505 ou (dans le cas des étudiants diplômés) permission du responsable de programme.

CSI5562 (COMP 5702) ORDRE: ALGORITHMES ET STRUCTURES GRAPHIQUES DE DONNÉES (3cr.)
Structures graphiques de données et optimisation en informatique théorique. Applications à la géométrie computationnelle et à l'ordonnancement; outils engendrés par les ensembles ordonnés. Théorie combinatoire et computationnelle, d'ensembles ordonnés. Accent sur le "upward drawing" et l'extension linéaire, les deux outils pour les applications d'ensembles ordonnés en informatique.

CSI5580 (COMP 5100) SUJETS EN INTELLIGENCE ARTIFICIELLE (3cr.)

CSI5780 (COMP 5405) SYSTÈMES ET ARCHITECTURES DES LOGICIELS POUR LE COMMERCE ÉLECTRONIQUE (3cr.)

CSI5787 (COMP 5706) FOUILLE DES DONNÉES ET APPRENTISSAGE DES CONCEPTS (3cr.)

CSI5789 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE (3cr.)

CSI7162 (COMP 6604) ADVANCED TOPICS IN COMPUTER APPLICATIONS (3cr.)

Systèmes informatiques (symbole S dans la liste des cours) / Computer Systems (code S in the course list)
CSI5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4185 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

CSI5109 (COMP 5701) SPECIFICATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CSI5114 (COMP 5504) AUTOMATED OFFICE SYSTEMS (3cr.)
Study of office automation and its extension into commerce and marketing. Tools for collaboration, information transformation, data gathering, storage and retrieval, office agents and CSCW, funds transfer, electronic mail systems and messaging, use of WWW. Ergonomic, legal and regulatory aspects, social and economic factors.

CSI5116 (COMP 5407) AUTHENTICATION AND SOFTWARE SECURITY (3cr.)
Specialized topics in security including advanced authentication techniques, user interface aspects, electronic and digital signatures, security infrastructures and protocols, software vulnerabilities affecting security, non-secure software and hosts, protecting software and digital content. Prerequisites: Basic course in Statistics or permission of the program director.

CSI5129 (COMP 5305) ADVANCED DATABASE SYSTEMS (3cr.)

CSI5131 (COMP 5704) PARALLEL ALGORITHMS AND THEIR IMPLEMENTATION (3cr.)
Introduction: models of computation, levels of parallelism; performance measures for parallel algorithms; need for parallel algorithms. Parallel algorithms: techniques in matrix multiplication, solution of linear equations, transforms and differential equations; systolic arrays for the implementation of parallel algorithms in the areas of matrix arithmetic, transforms and relational database operations. VLSI implementations: VLSI and parallel computing structures; mapping of high-level computations into VLSI structures.

CSI5132 (COMP 5105) PARALLEL PROCESSING SYSTEMS (3cr.)
Introduction to issues involved in designing and using parallel processing systems. Topics include: taxonomy and applications of parallel systems; SIMD systems; multiprocessor systems; multiprocessor systems; computation versus communication issues in parallel processing; scheduling parallel systems; spinning versus blocking; interconnection networks; hot-spot contention. Prerequisite: permission of the School.

CSI5133 (COMP 5608) SIMULATION AND TESTING OF LOGIC CIRCUITS (3cr.)

CSI5134 (COMP 5004) FAULT TOLERANCE (3cr.)
Hardware and software techniques for fault tolerance. Topics include modeling and evaluation techniques, error detecting and correcting codes, module and system level fault detection mechanisms, design techniques for fault-tolerant and fail-safe systems, software fault tolerance through recovery blocks, N-version programming, algorithm-based fault tolerance, checkpointing and recovery techniques, and survey of practical fault-tolerant systems.

CSI5141 (COMP 5009) ASSOCIATIVE DATA STRUCTURES AND ADVANCED DATABASES (3cr.)

CSI5142 (COMP 5402) PROTOCOLS FOR MOBILE AND WIRELESS NETWORKS (3cr.)

CSI5143 (COMP 5403) REAL-TIME SYSTEMS DEVELOPMENT (3cr.)
An advanced course in real-time OO systems development that deals with modeling systems at different abstraction levels. A systematic and traceable modeling process is introduced. Topics include: modeling notations (including UML-RT), development process, design patterns, and system testing. Expect a substantial design project. Precludes additional credit for ELG 6186. Prerequisite: Computer Science CSI 5314 or equivalent.

CSI5147 (COMP 5201) COMPUTER ANIMATION (3cr.)

CSI5148 (COMP 5103) WIRELESS AD HOC NETWORKING (3cr.)

CSI5161 (COMP 5606) PRINCIPLES OF DISTRIBUTED SIMULATION (3cr.)
Distributed simulation principles and practices. Synchronization protocols: Optimistic vs Conservative, Deadlock detection in conservative simulations, Time
warp simulation. Distributed interactive simulation: Data distribution management, Interest management, High Level Architectures (HLA), Run Time Infrastructure (RTI). Distributed web-based simulation. Distributed agent based simulation. Real time applications of distributed simulation. Distributed and collaborative virtual simulations.

**CSI5168 (COMP 5309) DIGITAL WATERMARKING** (3cr.)
Overview of recent advances in watermarking of image, video, audio, and other media. Spatial, spectral, and temporal watermarking algorithms. Perceptual models. Use of cryptography in steganography and watermarking. Robustness, security, imperceptibility, and capacity of watermarking. Content authentication, copy control, intellectual property, digital rights management, and other applications. **Prerequisites: ELG 4172 or CEG 4311 or CSI 4133 or equivalent.**

**CSI5169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING** (3cr.)
Computational aspects and applications of design and analysis of mobile and wireless networking. Topics include Physical, Link Layer, Media Access Control, Wireless, Mobile LANs (Local Area Networks), Ad-Hoc, Sensor Networks, Power Consumption optimization, Routing, Searching, Service Discovery, Clustering, Multicasting, Localization, Mobile IP/TCP (Internet Protocol/Transmission Control Protocol), File Systems, Mobility Models, Wireless Applications. (Cannot be combined for credit with ELG 6168)

**CSI5170 (COMP 5800) DISTRIBUTED DATA PROCESSING** (3cr.)
Graph- and non-graph-related algorithms in a distributed environment, such as breadth-first-search, selection in a ring, distributed file sorting, etc. Approaches to distributed database management design: distributed query and update processing, concurrency control, optimal allocation of resources and users, etc. Modelling techniques for distributed systems, such as Petri-nets, etc. Security in a distributed environment.

**CSI5171 (COMP 5303) NETWORK ARCHITECTURES, SERVICES, PROTOCOLS AND STANDARDS** (3cr.)
Contemporary network architectures and protocols, with special consideration of telephony and mobility standards. Wireline and wireless network evolution. Telephony features and the feature interaction problem. Intelligent network architecture. Cellular networks and personal communications systems. Seamless network architectures. Mobile data communications. The Open Distributed Processing Reference model and derived architectures. Discussion of sample current architectures and issues, such as General System for Mobile Communication, IEA/TIA 41, Wireless Intelligent Networks, International Mobile Telephony 2000, migration towards the Internet. **Prerequisites: No prerequisites except the general maturity and knowledge of data communications principles that should have been acquired by Computer Engineering and Computer Science graduates.**

**CSI5173 (COMP 5203) DATA NETWORKS** (3cr.)

**CSI5174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS** (3cr.)

**CSI5185 (COMP 5107) STATISTICAL AND SYNTACTIC PATTERN RECOGNITION** (3cr.)

**CSI5308 (COMP 5003) PRINCIPLES OF DISTRIBUTED COMPUTING** (3cr.)

**CSI5311 (COMP 5101) DISTRIBUTED DATABASES AND TRANSACTION PROCESSING SYSTEMS** (3cr.)
Principles involved in the design and implementation of distributed databases and distributed transaction processing systems. Topics include: distributed and multi-database system architectures and models, atomicity, synchronization and distributed concurrency control algorithms, data replication, recovery techniques, and reliability in distributed databases.

**CSI5312 (COMP 5102) DISTRIBUTED OPERATING SYSTEMS** (3cr.)

**CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S)** (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. **Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master’s programs in e-business technologies or the certificate in e-commerce.**

**CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES** (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. **Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master’s programs in e-business technologies or the certificate in e-commerce.**

**CSI5509 (COMP 5701) MÉTHODES POUR LA SPÉCIFICATION DE SYSTÈMES RÉPARTIS** (3cr.)

**CSI5514 (COMP 5504) BUREAUITIQUE** (3cr.)
Une étude de la bureautique. Les systèmes de bureautique, réseaux locaux, systèmes de traitement de texte, transferts de fonds, messageries et échanges de documents. La politique économique, sociale et légale des systèmes bureautiques.
CSI5780 (COMP 5405) SYSTÈMES ET ARCHITECTURES DES LOGICIELS POUR LE COMMERCE ÉLECTRONIQUE (3cr.)

CSI5789 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE (3cr.)

CSI7131 (COMP 6100) ADVANCED PARALLEL AND SYSTOLIC ALGORITHMS (3cr.)

CSI7163 (COMP 6605) ADVANCED TOPICS IN COMPUTER SYSTEMS (3cr.)

CSI7170 (COMP 6602) ADVANCED TOPICS IN DISTRIBUTED COMPUTING (3cr.)

CSI7970 (COMP 6602) THÈMES EN INFORMATIQUE RÉPARTIE

Thèses et projets / Theses and Projects

CSI5140 (COMP 5900) SELECTED TOPICS IN COMPUTER SCIENCE (3cr.)

CSI5900 (COMP 5902) PROJETS DE RECHERCHE EN INFORMATIQUE / GRADUATE PROJECTS IN COMPUTER SCIENCE (3cr.)

CSI5901 (COMP 5901) ÉTUDES DIRIGÉES / DIRECTED STUDIES (3cr.)

CSI5902 (COMP 5904) COLLOQUE / SEMINAR (3cr.)

CSI5903 STAGE EN COMMERCE ÉLECTRONIQUE / ELECTRONIC COMMERCE WORK TERM (3cr.)
Expérience en milieu de travail. Noté: S (satisfaisant)/ NS (non satisfaisant) selon les résultats du rapport écrit et l’évaluation de l’employeur. Préalable : recevoir la permission du Comité du programme. / Practical experience. S (satisfactory) / NS (not satisfactory) grade, to be based on the grades obtained for the written report as well as on the evaluations of the employer. Prerequisite: permission of the Program Committee.

CSI6001 STAGE COOP I / CO-OP WORK TERM I (6cr.)
Expérience en milieu de travail. Noté P (réussite) / F (échec) par un professeur du programme selon les résultats du rapport écrit et l’évaluation du superviseur de stage. Préalable: permission du responsable des études supérieures. / Experience in a workplace setting. Graded P (pass)/ F (fail) by a professor in the program based on the written report and the evaluation of the internship supervisor. Prerequisite: permission of the graduate studies co-ordinator.

CSI6002 STAGE COOP II / CO-OP WORK TERM II (6cr.)
Expérience en milieu de travail. Noté P (réussite) / F (échec) par un professeur du programme selon les résultats du rapport écrit et l’évaluation du superviseur de stage. Préalable: permission du responsable des études supérieures. / Experience in a workplace setting. Graded P (pass)/ F (fail) by a professor in the program based on the written report and the evaluation of the internship supervisor. Prerequisite: permission of the graduate studies co-ordinator.

CSI6900 (COMP 5903) PROJETS DE RECHERCHE INTENSIVE EN INFORMATIQUE / INTENSIVE GRADUATE PROJECTS IN COMPUTER SCIENCE (6cr.)
Cours de six crédits s’échelonnant sur une période de deux sessions. L’envergure du projet de recherche exigé dans ce cours est deux fois plus grande que dans le cas de CSI 5900. Les cours CSI 6900 et CSI 5900 sont mutuellement exclusifs. Cours ouvert uniquement aux étudiants inscrits à la maîtrise sans thèse. / A two-session course. The project is twice the scope of projects in CSI 5900. Not to be combined for credit with CSI 5900. Not to be taken in the thesis option.

CSI7161 (COMP 6603) ADVANCED TOPICS IN PROGRAMMING SYSTEMS AND LANGUAGES (3cr.)

CSI7900 (COMP 6902) PROJETS DE RECHERCHE EN INFORMATIQUE / GRADUATE PROJECTS IN COMPUTER SCIENCE (3cr.)

CSI7901 (COMP 6901) ÉTUDES DIRIGÉES / DIRECTED STUDIES (3cr.)

CSI7999 (COMP 5905) THÈSE DE MAÎTRISE EN INFORMATIQUE / MASTER OF COMPUTER SCIENCE THESIS

CSI9901 COLLOQUE / SEMINAR

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Conflict Studies (MA)

Saint Paul University offers an MA in Conflict Studies, which is conferred jointly by the senates of Saint Paul University and the University of Ottawa. The focus of the program is on the ethnic and religious identity distinctions that characterize many deep-rooted conflicts. The program explores the meaning of and generates processes for reconciliation, healing, and structural change. It combines a social science orientation common to Conflict Studies programs with a philosophical, ethical and theological orientation. The field of specialization is ethnic and religious dimensions of conflict in Canada.

Program Objectives

1. Analysis: to explore the connections between conflict, violence, social justice, conflict resolution and peacebuilding in human communities;
2. Training: to develop the attitudes, knowledge, research and skills necessary to analyze ethnic and religious conflicts so as to cultivate peace;
3. Outcomes: to produce graduates who are competent
   - to analyze ethnic and religious conflicts in a multidisciplinary perspective and
   - to devise and evaluate appropriate conflict resolution strategies.

Two levels of learning are distinguished:

- Foundational Level: this level entails intensive study of major themes in Conflict Studies. Graduate training is initiated in research skills and methodologies in preparation for the research project.
- Advanced Level: this level of study concentrates on the development of specific dimensions of Conflict Studies. Research seminars meet to define the problem, purpose, scope and methodology of the master’s research project.

Admission

Admission to the program is competitive. Minimum requirements are:

1. Four year undergraduate degree with honours (or a major) in Political Science, Psychology, Theology, Ethics or the equivalent, such as a BA with honors (or a major) in criminology, philosophy, or law;
2. A minimum (70-74%) "B" average in the baccalaureate degree.

Experience in the field of conflict resolution or a related area will also be taken into consideration. Candidates are interviewed as part of the selection process.

If the minimum requirements for admission to the first year are not satisfied, a candidate may enroll in a qualifying program, the content of which is determined by the Coordinator of the program on a case by case basis. A student who enrolls must submit a new application prior to being admitted to the MA program.

Program Requirements

Students may prepare for a master's degree in one of two ways:

1. The successful completion of 27 credits at the graduate level and the preparation and effective defence of a thesis (ECS 6999) before a board of at least two examiners, members of the Faculty of Graduate and Postdoctoral Studies, and presided over by the Coordinator of the
2. The successful completion of 36 credits at the graduate level including a research paper submitted at the end of the Research Seminar (ECS 6140). The research paper should be about 50 pages in length.

For admission to the thesis option, a student admitted to the MA in Conflict Studies program must first obtain 9 credits (through courses or through advanced standing), and then apply to the Admissions Committee for permission to enroll in the thesis option. To do so, the student must find a suitable supervisor and submit a detailed topic and plan of research. The Committee will examine the application and inform the student of its decision.

If a student chooses the thesis option and the thesis uses a quantitative methodology, a course in quantitative methodology is required. If the thesis uses a qualitative methodology, one of the following is required: a course in qualitative methodology, participant observation, content analysis, evaluation research or an honours thesis in the area of qualitative methodology.

**Compulsory Courses (21 credits)**

All students must take the following seven courses:

- ECS5101 IDENTITY-BASED CONFLICT (3cr.)
- ECS5110 HISTORY OF CONFLICT RESOLUTION (3cr.)
- ECS5302 APPROACHES TO CONFLICT AND SOCIAL JUSTICE (3cr.)
- ECS5304 ETHICAL DIMENSIONS OF CONFLICT (3cr.)
- ECS5311 RELIGIOUS IDENTITIES AND CONFLICT (3cr.)
- ECS5313 CONFLICT RESOLUTION: ANALYSIS AND DESIGN (3cr.)
- ECS5330 CONFLICT RESOLUTION: RESULTS ASSESSMENT (3cr.)

**Research (6 credits) (option with research paper)**

- ECS5103 RESEARCH METHODS (3cr.)
- ECS6140 RESEARCH SEMINAR (3cr.)

**Research (3 credits) (option with thesis)**

- ECS5103 RESEARCH METHODS (3cr.)
- ECS6999 THÈSE DE M.A. / MA THESIS

**Elective Courses (9 credits)**

Students select three courses (one if the thesis option is chosen) from the list of electives. A maximum of two graduate courses (6 credits) may be taken from other faculties and universities with prior authorization from the Director of the program.

**Courses**

Tous les cours, à l’exception de la thèse, comptent 3 crédits et ils peuvent être offerts soit à la session d’automne, soit à celle d’hiver. Toutefois, le séminaire de recherche (ECS 6540) et la thèse (ECS 6999) se poursuivent à l’année longue.

All courses listed, with the exception of the thesis, are worth 3 credits and may be offered either in the fall or the winter session. However, the research seminar (ECS 6140) and the thesis (ECS 6999) are ongoing throughout the year.

**Cours obligatoires / Compulsory Courses (21 cr.)**

**ECS5101 IDENTITY-BASED CONFLICT** (3cr.)

Theoretical concepts to understand the dynamics of religious and ethnic conflicts. Application of these concepts to particular situations. Religion, ethnicity, gender, class, and other identity signifiers. Human identity needs, mimetic theory, and structures of domination. Ethno-nationalist movements and victimization.

**ECS5110 HISTORY OF CONFLICT RESOLUTION** (3cr.)

Conflict resolution approaches and institutions created over time in different regions of the world. Traditional dispute resolution mechanisms. State and law. Democratic institutions. Third party involvement and promotion of peace.

**ECS5313 CONFLICT RESOLUTION: ANALYSIS AND DESIGN** (3cr.)

Basic conflict analysis design and methodologies in intervention strategies for dealing with identity-based conflict. Sequencing, timing and other contingencies due to emotional factors. Case presentations. Ethical questions related to planning of conflict resolution strategies.

**ECS5302 APPROACHES TO CONFLICT AND SOCIAL JUSTICE** (3cr.)

Approaches employed to analyze conflict and to build peace with social justice. Contemporary theories from political sciences, social psychology, and theology addressing conflict and social justice.
ECS5304 ETHICAL DIMENSIONS OF CONFLICT (3cr.)
Conceptual and procedural ethical issues concerning norms of justice and reconciliation. Relation of ethical issues to self-other dialectics, dynamics of discourse and power, gender and class, memory and agency.

ECS5311 RELIGIOUS IDENTITIES AND CONFLICT (3cr.)
Implication of religious identities, traditions and actors in escalating, diverting or transforming deep-rooted conflicts in different societies. Comparative multi-religious framework. Sociology of religion and contextual theological hermeneutics.

ECS5330 CONFLICT RESOLUTION: RESULTS ASSESSMENT (3cr.)
Hermeneutical and empirical methodologies used to analyze and evaluate conflict resolution strategies, conflict resolution projects and programs. Case study presentations.

ECS5501 CONFLITS IDENTITAIRES (3cr.)

ECS5510 HISTOIRE DE LA RÉSOLUTION DE CONFLITS (3cr.)

ECS5702 APPROCHES DES CONFLITS ET DE LA JUSTICE SOCIALE (3cr.)
Approches employées dans l'analyse des conflits, la promotion de la paix et de la justice sociale. Théories contemporaines des conflits et de la justice sociale tirées des sciences politiques, de la psychologie sociale et de la théologie.

ECS5711 IDENTITÉS RELIGIEUSES ET CONFLITS (3cr.)

ECS5531 RÉSOLUTION DE CONFLITS : ANALYSE ET CONCEPTION (3cr.)
Analyse de base des conflits et méthodologies dans l'élaboration de stratégies d'intervention dans les conflits identitaires. Le temps séquentiel, la durée et les effets de facteurs émotifs. Études de cas. Questions éthiques reliées à la planification des interventions en résolution de conflit.

ECS5704 DIMENSIONS ÉTHIQUES DES CONFLITS (3cr.)
Problématiques éthiques conceptuelles et procédurales liées aux normes de la justice et de la réconciliation. Liens des thèmes éthiques à la dialectique du soi et de l'autre, à la dynamique du discours et du pouvoir, au genre et à la classe, à la mémoire et au rôle des agents humains.

ECS5730 RÉSOLUTION DE CONFLITS : RÉSULTATS ET ÉVALUATION (3cr.)
Usage de méthodologies de type herméneutique et empirique dans l'analyse et l'évaluation d'initiatives de résolution de conflits, de projets et programmes de résolution de conflits. Études de cas.

Cours au choix / Elective Courses (9 cr.)
ECS5112 TRAUMA, HEALING AND RECONCILIATION (3cr.)
Violence and trauma in the context of identity-based conflicts. Emotional, spiritual, physical and cognitive dimensions of the human person. Reconciliation, forgiveness and trauma healing.

ECS5114 GENOCIDE AND RECONCILIATION (3cr.)
Degeneration of conflicts into unforgettable and unforgivable atrocities. Causes, mechanisms, attitudes leading to extreme mass violence. Role of faith in healing memories. Case study of genocides in Germany, South Africa, Rwanda and among indigenous peoples in North and South America.

ECS5116 POLITICAL ECONOMY OF CONFLICT (3cr.)
Influence of development and allocation of economic resources on political conflict, including ethnic and religious strife. Influence of globalization on the propensity of societies toward violence.

ECS5118 CONTEMPORARY PEACEBUILDING (3cr.)
National and international policies and programs designed to eliminate the causes of violent conflict and prevent their re-emergence. Dialogue and reconciliation. Political and economic reforms. Local development and empowerment.

ECS5119 MEDIATION AND NEGOTIATION: THEORY AND RESEARCH (3cr.)
Theoretical and empirical aspects of strategies and processes of mediation and negotiation. Critical examination of contemporary approaches to mediation and negotiation. Cases of successful or unsuccessful negotiations. Roles, capacities and motivations of parties.
ÉCS5120 SELECTED TOPICS IN CONFLICT STUDIES (3cr.)

ÉCS5132 GROUP PROCESS: THEORY AND RESEARCH (3cr.)
Group theory and research on groups. Understanding conflict resolution in terms of settings, conflicts, members' behaviour, leadership attitudes and competencies. Group processes in transformation of conflicts. Proposing appropriate interventions.

ÉCS5133 SPIRITUALITY AND CONFLICT (3cr.)
Impact of conflict on spirituality and of spirituality on conflict. Part played in conflict by the spiritual life and convictions of those involved.

ÉCS5135 GENDER AND CONFLICT (3cr.)
Multidisciplinary examination of cases of domination and marginalization. Social and cultural constructions of gender. Role of these constructs in structures of domination. Challenges met in transforming these structures.

ÉCS5136 INDIGENOUS CULTURES, CONFLICT AND COEXISTENCE (3cr.)
Implication of indigenous identities in the emergence and transformation of conflicts. Ethnic and religious dimensions of indigenous cultural resurgence in Canada and other national contexts. Conflict reduction and pluralistic coexistence.

ÉCS5333 DIALOGUE: THEORY AND RESEARCH (3cr.)
Dialogue as exploration of hidden assumptions and the flow of ideas. Conflict as a rupture of dialogue within oneself or between people. Theoretical background and research to understand processes needed for a dialogue to achieve deeper levels of mutual understanding among participants.

ÉCS5512 TRAUMATISMES, GUÉRISON ET RÉCONCILIATION (3cr.)
La violence et le traumatisme dans le contexte de conflits identitaires. Composantes affective, spirituelle, physique et cognitive de l'être humain. Réconciliation, pardon et guérison des traumatismes.

ÉCS5514 GÉNOCIDE ET RÉCONCILIATION (3cr.)
Dégénérescence des conflits en atrocités inoubliables et impardonnables. Causes, mécanismes et attitudes qui mènent à des formes de violence collective extrêmes. Rôle de la foi dans la guérison de la mémoire. Étude de cas de génocide en Allemagne, en Afrique du Sud, au Rwanda, ainsi qu'en Amérique parmi les populations indigènes.

ÉCS5516 ÉCONOMIE POLITIQUE DES CONFLITS (3cr.)
Influence du développement et de l'allocation des ressources économiques sur les conflits, en particulier les conflits ethniques et religieux. Influence de la mondialisation sur la propension des sociétés au conflit et à la violence.

ÉCS5518 CONSOLIDATION DE LA PAIX CONTEMPORAINE (3cr.)

ÉCS5519 MÉDIATION ET NÉGOCIATION: THÉORIE ET RECHERCHE (3cr.)
Aspects théoriques et empiriques de divers processus et stratégies de médiation et de négociation. Analyse critique des principales approches contemporaines de la médiation et de la négociation. Cas de négociations réussies ou non. Rôles, capacités et motivations des personnes impliquées.

ÉCS5520 THÈMES CHOISIS EN ÉTUDES DE CONFLITS (3cr.)

ÉCS5532 PROCESSUS DE GROUPE : THÉORIE ET RECHERCHE (3cr.)
Théorie des groupes et recherche sur les groupes. Compréhension de la résolution de conflits par rapport au cadre d'interaction, aux comportements, au style de leadership et aux compétences des participants. Processus de groupe dans la transformation des conflits. Proposition d'interventions appropriées.

ÉCS5713 SPIRITUALITÉ ET CONFLITS (3cr.)
Influence des conflits sur la spiritualité et de la spiritualité sur les conflits. Rôle des conflits dans la vie spirituelle et influence sur les croyances des personnes touchées.

ÉCS5715 RAPPORTS SOCIAUX DE SEXE ET CONFLITS (3cr.)
Examen multidisciplinaire de cas de domination et de marginalisation. Les rapports sociaux de sexe comme construction sociale et culturelle. Rôle de ces constructions dans des structures de domination. Défis particuliers aux tentatives de transformer ces structures.

ÉCS5716 CULTURES INDIGÈNES, CONFLITS ET COEXISTENCE (3cr.)
Implication des identités indigènes dans l'émergence et la transformation des conflits. Résurgence culturelle et religieuse indigène au Canada et dans d'autres contextes nationaux. Capacités de réduction des conflits et de coexistence pluraliste.

ÉCS5733 DIALOGUE : THÉORIE ET RECHERCHE (3cr.)
Le dialogue comme processus d'exploration des croyances cachées et échange d'idées. Le conflit vu comme rupture du dialogue en soi ou entre personnes. Bases théoriques et résultats de la recherche pour que le dialogue améliore le niveau de compréhension mutuelle entre les participants.
Recherche / Research

ECS5103 RESEARCH METHODS (3cr.)
Critical evaluation of research findings in the human sciences. Qualitative and quantitative methods of gathering, validating, and interpreting evidence. Issues in research ethics. Applications in graduate research projects and theses.

ECS5503 MÉTHODES DE RECHERCHE (3cr.)
Évaluation critique concernant les résultats de la recherche en sciences humaines. Méthodes qualitatives et quantitatives pour la collecte des données, leur validation et leur interprétation. Aspects éthiques de la recherche. Application à des projets de recherche universitaires et à la rédaction de thèse.

ECS6140 RESEARCH SEMINAR (3cr.)

ECS6540 SÉMINAIRE DE RECHERCHE (3cr.)

ECS6999 THÈSE DE M.A. / MA THESIS

Counselling and Spirituality (MA)

Master's Program

The Faculty of Human Sciences at Saint Paul University offers programs leading to a graduate certificate in Couple Counselling and Spirituality, and to a Master of Arts (MA) and a Doctor of Philosophy (PhD) in Counselling and Spirituality. The MA program includes an option of obtaining a specialization in Women's Studies.

The graduate certificate and the master's and PhD diplomas are conferred jointly by the Senates of Saint Paul University and of the University of Ottawa, with which Saint Paul is federated.

The objective of the master’s program is to train specialists to counsel and spiritually guide couples or individuals and to prepare graduates for a career in research.

The MA program offers three concentrations: individual counselling; couple counselling; spiritual care. Each concentration includes three components: knowledge acquisition, a research project or thesis; and professional practice.

The PhD program allows students to specialize in one of three fields: issues relating to special populations within society; existential and spiritual issues in counselling; and counselling in multi-faith and cross-cultural settings.

The MA program is offered on a full-time basis, with part-time registration permitted only under exceptional circumstances. The PhD program is offered on a full-time basis. The graduate certificate can be taken part-time. Both the MA and PhD programs are offered in English and in French. The graduate certificate is offered in English. In accordance with University of Ottawa regulations, students are permitted to write assignments, exams, and theses in either French or English.

The programs operate within the overall framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa. These regulations are posted on the FGPS website. The specific regulations of the programs and the course descriptions are approved by the Senate of both the University of Ottawa and of Saint Paul University.

Admission

Admission Requirements

The requirements for admission to the MA in Counselling and Spirituality are the following:

1. an honours bachelor's degree or its equivalent;
2. 12 credits of theology at university level;
3. 48 credits in psychology, sociology, social work, health sciences, theology, or in related fields such as, but not exclusively, animation, social communications, mission sciences or conflict studies.

Among the 48 credits;
- at least 18 credits in psychology, and at least another 6 credits which can be in psychology, sociology or social work for the concentration in counselling (individual or couple);

- at least 12 credits in psychology, at least 6 credits in sociology, and at least another 6 credits which can be in psychology, in sociology or in social work for the concentration in spiritual care;

4. Applicants must have a minimum 70 per cent (B) average in the honours bachelor's degree and the credits mentioned under points 2 and 3 above. The latter credits can be included in the honours bachelor's degree.

Applicants who lack the necessary qualifications in theology may be admitted to a qualifying year at Saint Paul University. Students wishing to complete this qualifying year at another university are advised to have their course of studies approved by the Faculty of Human Sciences.

The academic record, maturity and motivation of the candidates, as well as their experience in the field of pastoral activity, are additional credentials considered by the admissions committee. Candidates will also be required to pass an interview and write a report describing the interaction that will have taken place during the interview.

Documents required for admission

Two official transcripts of the applicant’s previous university record are required, as well as two letters of recommendation on the official forms provided. Applicants must complete a self-evaluation form and answer a questionnaire giving their reasons and purpose for applying to the program, and list previous work experience in the helping professions.

A recent criminal record check is required to do a practicum in the hospitals for the spiritual care concentration. Students should normally request admission to the collaborative program in Women’s Studies at the same time as they are applying for to the MA program. For information on the Women’s Studies program, please consult the relevant section on the website of the Faculty of Graduate and Postdoctoral Studies (FGPS) at: http://www.grad.uottawa.ca.

Program Requirements

Degree Requirements

The MA program requires successful completion of 39 credits (non-thesis option) or 45 credits (thesis option). These credits are distributed between coursework, practica, and research. The number of practicum credits specified for each concentration is the minimum and some students, depending on their profile may be required to do a greater number. Students are evaluated in their practica at the end of each session. A written report of each evaluation is kept in the student's confidential file. The evaluations at the end of the second and third sessions are particularly significant in assessing the student's capacity for continued participation in the program. The practica for each year constitute a single unit and must be taken consecutively.

The Concentrations

a) Individual counselling

Compulsory courses (36 credits)

IPA5134 PRACTICAL THEOLOGY (3cr.)
IPA5131 METHODOLOGY OF EMPIRICAL RESEARCH (3cr.)
IPA5144 SPIRITUALITY AND COUNSELLING (3cr.)
IPA5146 PROFESSIONAL ISSUES AND ETHICS IN PASTORAL COUNSELLING (3cr.)
IPA6108 PSYCHOPATHOLOGY AND TREATMENT (3cr.)
IPA6120 THEORIES OF INDIVIDUAL COUNSELLING (3cr.)
IPA6156 RESEARCH SEMINAR (3cr.)

Professional practice

IPA6221 PRACTICUM IN INDIVIDUAL COUNSELLING I (6cr.)
IPA6321 PRACTICUM IN INDIVIDUAL COUNSELLING II (3cr.)
IPA6115 PERSONAL DEVELOPMENT SEMINAR
IPA7108 INTEGRATIVE SEMINAR
IPA7221 PRACTICUM IN INDIVIDUAL COUNSELLING III (6cr.)

One elective (3 cr.)

b) Couple counselling

Compulsory courses (36 credits):

IPA5131 METHODOLOGY OF EMPIRICAL RESEARCH (3cr.)
IPA5134 PRACTICAL THEOLOGY (3cr.)
IPA5144 SPIRITUALITY AND COUNSELLING (3cr.)
IPA5146 PROFESSIONAL ISSUES AND ETHICS IN PASTORAL COUNSELLING (3cr.)
IPA6108 PSYCHOPATHOLOGY AND TREATMENT (3cr.)
IPA7104 THEORIES OF COUPLE COUNSELLING (3cr.)
IPA6156 RESEARCH SEMINAR (3cr.)

Professional practice
IPA6115 PERSONAL DEVELOPMENT SEMINAR
IPA6221 PRACTICUM IN INDIVIDUAL COUNSELLING I (6cr.)
IPA6321 PRACTICUM IN INDIVIDUAL COUNSELLING II (3cr.)
IPA7108 INTEGRATIVE SEMINAR
IPA7205 PRACTICUM IN COUPLE COUNSELLING (6cr.)

One elective (3 cr.)

c) Spiritual Care

Compulsory courses (36 credits):
IPA5131 METHODOLOGY OF EMPIRICAL RESEARCH (3cr.)
IPA5134 PRACTICAL THEOLOGY (3cr.)
IPA5149 PROFESSIONAL ISSUES AND ETHICS IN SPIRITUAL CARE (3cr.)
IPA6120 THEORIES OF INDIVIDUAL COUNSELLING (3cr.)
IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)
IPA6156 RESEARCH SEMINAR (3cr.)

Professional practice
IPA6221 PRACTICUM IN INDIVIDUAL COUNSELLING I (6cr.)
IPA6160 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM I (4cr.)
IPA6161 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM II (4cr.)
IPA7162 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM III (4cr.)

One elective (3 cr.)

All practica and Clinical Pastoral Education units include supervised work with clients at hospital placements or the Counselling Centre at Saint Paul University. Advanced students may be assigned external practica in community settings.

Thesis Option

To be accepted into the thesis option, students must first be admitted into the MA program and have obtained 9 credits either by completing courses following registration or through advanced standing. They must apply to the faculty research committee, which will reach a decision based on the academic file, the quality of the thesis proposal and the existence of appropriate supervisory arrangements. Students in the thesis option must complete the same program requirements as students in the non-thesis option with two exceptions: they replace IPA 6156 with the thesis and they are exempted from completing the 3 elective credits.

Minimum Standards

The passing grade in all courses is 65% (C+). Students who fail two courses (equivalent to 6 credits), a 6-credit practicum (or equivalent) or the thesis or whose progress is deemed unsatisfactory must withdraw from the program.

Duration of the Program

Full-time students are expected to complete all requirements within two years. Students in the thesis option may need more time. The maximum time permitted is four years from the date of initial registration in the program, whether studying full- or part-time.

Collaborative Program in Women's Studies at the Master's Level

The MA program in Counselling and Spirituality is a participating unit in the collaborative program in Women's Studies at the master's level. This program has been established for students wishing to enrich their training in Counselling and Spirituality by including an interdisciplinary component in Women's studies. The specific requirements of the collaborative program include two compulsory FEM courses and a thesis on a topic related to Women's studies. One of the FEM courses replaces the elective course for students in the non-thesis option. Students in the thesis option must complete the two FEM courses in addition to the 45 credits required for the MA in Counselling and Spirituality.

Courses

IPA5122 BASIC CONCEPTS IN COUNSELLING (3cr.)
IPA5123 PSYCHOLOGY OF LEARNING (3cr.)
IPA5124 SOCIAL PSYCHOLOGY (3cr.)
IPA5127 ABNORMAL BEHAVIOUR (3cr.)
IPA5128 HUMAN SEXUALITY (3cr.)
IPA5131 METHODOLOGY OF EMPIRICAL RESEARCH (3cr.)
IPA5134 PRACTICAL THEOLOGY (3cr.)
This course presents new developments in Practical Theology with its particular interdisciplinary perspectives on faith and practice. The origins and development of Practical Theology are presented as a background to its specific methods and content. Practical Theology is situated within the modern context of theology. The course introduces the pastoral practitioner and the student of theology to theological examination of the components of ministry and of contemporary expressions of faith.
IPA5138 THEORIES OF FAMILY SYSTEMS AND INTERVENTION (3cr.)
This course presents a brief history of the helping professions in relation to family interventions. Theories of family systems are presented; well functioning and dysfunctional families are examined. Different models of the family are treated. Students learn interviewing and evaluation techniques for the family and especially communication and reframing skills.
IPA5142 WORKING WITH TRAUMA AND VIOLENCE IN FAMILIES (3cr.)
The goal of this course is to examine theory, research, and interventions practices related to violence and abuse that occurs in the context of marriage and family relationships. It is designed for couple and family therapists, as well as other professionals who wish to expand their knowledge of violence and abuse, increase their awareness of potentially abusive situations, and improve their intervention skills.
IPA5144 THEOLOGY AND COUNSELLING (3cr.)
This course presents counselling and spirituality in the broad context of human existence and interpersonal relationships in the light of some spiritual and religious traditions. Practical theology, spiritual/religious traditions and the social sciences, particularly psychology, are used to show how counselling and spirituality serve societal needs. It shows how developments in counselling and spirituality are related to new understandings of social and spiritual/religious growth, and presents new models of effective practice. Students learn to assess spiritual/religious needs, to set spiritual/religious goals for growth, and to develop strategies for their implementation.
IPA5146 PROFESSIONAL ISSUES AND ETHICS IN PASTORAL COUNSELLING (3cr.)
IPA5149 PROFESSIONAL ISSUES AND ETHICS IN SPIRITUAL CARE (3cr.)
IPA5152 STUDIES IN PRACTICAL THEOLOGY I (3cr.)
IPA5153 STUDIES IN PRACTICAL THEOLOGY II (3cr.)
IPA5160 STUDIES IN SPIRITUAL SCIENCES (3cr.)
IPA5161 UNDERSTANDING THE TRAUMA OF SEXUAL ABUSE (3cr.)
This course provides an in-depth study of the topic of sexual abuse including theory, research, and treatment approaches. It is intended for those who work with or intend to work with individuals, couples and families who have experienced abuse in their lives. This course will enable students to understand the dynamics of sexual abuse from various theoretical viewpoints, examine one's own personal values and ethics, and develop treatments plans and approaches.
IPA5162 COUNSELLING AND SPIRITUALITY: SELECTED TOPICS II (3cr.)
IPA5163 COUNSELLING AND SPIRITUALITY: SELECTED TOPICS III (3cr.)
IPA5164 COUNSELLING AND SPIRITUALITY: SELECTED TOPICS IV (3cr.)
IPA5517 DYNAMIQUE DE LA MALADIE ET DE SES EFFETS (3cr.)
IPA5522 CONCEPTS DE BASE EN COUNSELLING (3cr.)
IPA5523 PSYCHOLOGIE DE L'APPRENTISSAGE (3cr.)
IPA5524 PSYCHOLOGIE SOCIALE (3cr.)
IPA5527 COMPORTEMENT ANormal (3cr.)
IPA5528 SEXUALITÉ HUMAINE (3cr.)
IPA5531 MÉTHODOLOGIE DE LA RECHERCHE EMPIRIQUE (3cr.)

IPA5534 THÉOLOGIE PRATIQUE (3cr.)
Ce cours présente la théologie pratique comme un lieu privilégié où s’articulent la foi et la pratique. Après avoir exposé la genèse et le développement des théologies pratiques en vue de dégager les aspects majeurs de sa méthode et de son contenu, on situerà, de façon particulière, le discours pastoral à l’intérieur de ce champ théologique. Il y aura donc une initiation aux grandes coordonnées de l’action pastorale en vue de permettre à chacun de mieux préciser son propre projet pastoral.

IPA5538 THÉORÉS DES SYSTÈME FAMILIAL ET DE SES Modes D’INTERVENTION (3cr.)
Le cours trace une brève histoire des professions d’aide dans leur intervention auprès des familles. On présente les théories des systèmes familiaux et on étudie les systèmes fonctionnels et dysfonctionnels des familles, ainsi que les différents modèles de familles. On apprend les techniques d’entrevues, d’évaluation et d’intervention auprès des familles, en particulier les habiletés de communication et de structuration.

IPA5542 LES TRAUMATISMES ET LA VIOLENCE DANS LES FAMILLES (3cr.)
Ce cours se penche sur la théorie, la recherche et les pratiques d’interventions portant sur la violence et l’abus qui surviennent dans le contexte des relations maritales et familiales. Ce cours s’adresse aux conseillers maritiaux et familiaux et à tout professionnel désirant d’accroître ses connaissances sur la violence et l’abus ainsi que sa sensibilité aux situations potentiellement abusives, et de parfaire ses habiletés d’intervention.

IPA5544 THÉOLOGIE ET COUNSELLING (3cr.)
Ce cours présente le counselling et la spiritualité dans le contexte élargi de l’existence humaine et des relations interpersonnelles à la lumière des grands courants spirituels et religieux. Il fait appel à la théologie pratique, aux courants spirituels/religieux, et aux sciences sociales, plus précisément à la psychologie, pour montrer comment le counselling et la spiritualité répondent aux besoins de la société. Il souligne comment les développements dans le champ du counselling et de la spiritualité contribuent à l’acquisition de connaissances nouvelles en ce qui concerne la croissance sociale et spirituelle/religieuse. De nouveaux modèles pour une pratique efficace sont proposés. Les étudiants apprennent à évaluer les besoins spirituels/religieux, à établir des buts spirituels/religieux en vue de la croissance, et à acquérir des stratégies en vue de leur implantation.

IPA5546 ÉTHIQUE PROFESSIONNELLE (3cr.)

IPA5549 QUESTIONS PROFESSIONNELLES ET QUESTIONS D’ÉTHIQUE EN SOINS SPIRITUELS (3cr.)

IPA5552 ÉTUDES DE THÉOLOGIE PRATIQUE I (3cr.)

IPA5553 ÉTUDES DE THÉOLOGIE PRATIQUE II (3cr.)

IPA5560 ÉTUDES EN COUNSELLING ET SPIRITUALITÉ (3cr.)

IPA5561 L’ABUS SEXUEL ET SES TRAUMATISMES (3cr.)
L’abus sexuel fait l’objet d’un examen en profondeur : la théorie, la recherche ainsi que les approches thérapeutiques sont mises de la partie. Ce cours s’adresse aux conseillers appelés à travailler avec des individus, des couples et des familles qui ont fait l’objet d’abus dans leur vie. Il leur permettra de comprendre la dynamique de l’abus sexuel selon différents cadres théoriques, de favoriser la réflexion sur les valeurs et l’éthique et de concevoir des plans et des stratégies de traitement.

IPA5562 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI II (3cr.)

IPA5563 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI III (3cr.)

IPA5564 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI IV (3cr.)

IPA6103 SPIRITUALITY AND HUMAN DEVELOPMENT (3cr.)

IPA6108 PSYCHOPATHOLOGY AND TREATMENT (3cr.)

IPA6114 NORMAL PERSONALITY (3cr.)

IPA6115 PERSONAL DEVELOPMENT SEMINAR

IPA6120 THEORIES OF INDIVIDUAL COUNSELLING (3cr.)

IPA6121 THEORIES OF PERSONALITY (3cr.)

IPA6151 SPIRITUALITY AND ADAPTATION TO ILLNESS (3cr.)

IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)
Enrollment in the seminar courses, GEO5301 and GEO5302, which involve the presentation of a seminar and the regular attendance at the seminars.

Presentation and defense of a thesis (GEO7999) based on original research carried out under the direct supervision of a professor who is a member of the

ECO6581 ASPECTS MACROÉCONOMIQUES DE LA THÉORIE MONÉTAIRE

L’environnement comme capital naturel; techniques d’évaluation environnementale; comptabilité environnementale; théorie et pratique de développement

Éléments d’optimisation dynamique. Théorie microéconomique des ressources naturelles épuisables, à la fois renouvelables et non renouvelables: exploration, performance.

tâtonnement et non-tâtonnement. Économie du bien-être: bien public et révélation des préférences, externalités, mesure du bien-être économique, justice et optimum quantity of money; the welfare aspects of monetary economies; the supply of money and its composition; stabilization policy; money, capital and

control and global environmental issues.

Coverage of one or more areas of current econometric research.

Computable general equilibrium (CGE) modelling: impacts of economic shocks; theoretical foundations; model specification, numerical solutions. Understanding of search theory, applications of discrete time stochastic control to economics.

Geography GEOG 5300 SOIL THERMAL AND HYDROLOGIC REGIMES

GEO5173 (ERTH 5703) STRUCTURAL GEOLOGY

composition of the interior. Geodynamic processes.

Applications of empirical, analytical and quantitative techniques to problems in regional geology and crustal tectonics; orogenic processes; heat and

facilitate change sustainability and continuity.

Microeconomic foundations of macroeconomics. Special topics.

prerequisite: EBC 6219

Computable general equilibrium (CGE) modelling: impacts of economic shocks; theoretical foundations; model specification, numerical solutions. Understanding of search theory, applications of discrete time stochastic control to economics.

IPA7109 SURVEY OF SEXUAL DYSFUNCTION AND TREATMENT (3cr.)
The purpose of this course is to present the dysfunctions of human sexuality and to survey various treatments. Male and female dysfunctions; the biological and psychological determinants; sexual dysfunction and marital interaction. Modes of sexual therapy; when and where to refer clients. The moral and ethical considerations.

IPA7162 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM III (4cr.)
IPA7163 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM IV (3cr.)
IPA7205 PRACTICUM IN COUPLE COUNSELLING (6cr.)
IPA7221 PRACTICUM IN INDIVIDUAL COUNSELLING III (6cr.)
IPA7502 PHÉNOMÉNOLOGIE DES RELATIONS HUMAINES DANS L’AMOUR ET DANS LE MARIAGE
IPA7503 QUESTIONS THÉOLOGIQUE ET VIE DE COUPLE
IPA7505 PROCÉDURES D’ÉVALUATION EN COUNSELLING ET SPIRITUALITÉ (3cr.)
IPA7507 DIAGNOSTIC ET INTERACTIONS DYSONCTIONNELLES DANS LE COUPLE (3cr.)

IPA7508 SÉMINAIRE D’INTÉGRATION
IPA7509 DYSONCTIONNEMENT SEXUEL : ÉTUDE ET TRAITEMENT (3cr.)
Ce cours offre aux étudiants une connaissance du dysfonctionnement de la sexualité humaine et des divers traitements en usage chez les sexologues et les psychologues. Les dysfonctions chez les hommes et chez les femmes; les facteurs biologiques et psychologiques; la dysfonction sexuelle et l’interaction de couple. Quand et où référer un client. Considérations éthiques et morales.

IPA7562 PRACTICUM III EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA7563 PRACTICUM IV EN ÉDUCATION PASTORALE CLINIQUE (3cr.)
IPA7605 PRACTICUM DU COUNSELING DE COUPLE (6cr.)
IPA7621 PRACTICUM DU COUNSELING INDIVIDUEL III (6cr.)
IPA8101 SPIRITUALITY AND COUNSELLING (3cr.)
Study of qualitative and hermeneutical methods as these are used in the social sciences and in theological study of spirituality. Comparative study of one or more Christian spiritual traditions and one or more spiritual traditions within other religions and secular culture to increase understanding and practice of spirituality.
The course is designed to highlight the role of spirituality in the emotional well-being and adjustment of individuals. This course will treat the question of personal and spiritual growth. The importance of spiritual practices and the overall relationship of spirituality to the counselling process will also be considered.

IPA8102 COUNSELLING IN MULTI-FAITH AND CROSS-CULTURAL SETTINGS (3cr.)
This course examines counselling in a culturally pluralistic spiritual and religious context. It examines the possibility of mutuality and dialogue using a comparative religions approach from social science and theological perspectives. The theory and practice proposed focuses on the differing spiritual and secular humanist journeys of the counsellor and the client, and the possibility of meeting in difference. Topics covered include: the impact of enculturation, intercultural identity, inter-religious dialogue, intercultural competence on both parties; the ways in which intercultural competence and intercultural growth contribute to spiritual growth. The course enables counsellors and their clients to assess the extent to which spiritual values, beliefs and practices are an asset or a liability for clients in reaching their counselling goals.

IPA8103 ISSUES IN SPECIAL POPULATIONS (3cr.)
This course treats issues related to the needs and social status of certain special populations. Accumulated data on group characteristics and challenges facing some special populations, such as those who are aged or those who are homeless, are critically reviewed. Membership in some social groups may involve loss of social privileges, as well as diminished access to mental and health care resources. Students explore issues related to the unique spiritual and mental health needs of these groups, their social circumstances, and the implications for service provision. Growing problems concerning assessment, intervention, and the increased barriers to services are examined from the point of view of community approaches to research and intervention. The role of counsellors working with persons with unique needs, individually or at the community level, will be addressed.

IPA8104 EXISTENTIAL ISSUES IN COUNSELLING (3cr.)
This course explores meaning-of-life issues often presented by clients in a variety of contexts, including, but not limited to, the quest for increased well-being, existential crises, life transitions, loss and death, end-of-life, and trauma. Qualitative methods of data collection and analysis are critically reviewed to gain insight into the meaning participants give to their lived experience, the meaning they place on events, processes, perceptions and into the ways in which they connect these meanings to the social world around them. A variety of religious, spiritual and secular humanist sources of and responses to existential issues are treated.

IPA8105 RESEARCH METHODS AND DESIGN PROBLEMS IN COUNSELLING AND SPIRITUALITY (3cr.)
The focus of this course is the critical analysis and discussion of the challenges that counsellors face in choosing and applying qualitative and quantitative methods to spirituality. In-depth study of design pitfalls that arise from the complexity and unpredictability of working with human subjects given the multi-cultural complexity of pluralistic societies. Potential topics include sampling issues, measurement issues, and special analytic techniques.

IPA8106 DOCTORAL SEMINAR (3cr.)
The doctoral seminar helps prepare students for their doctoral thesis. Students will develop their thesis proposals and present drafts in oral and written format for critique. Guest lecturers will select readings and lead seminars related to relevant research topics such as proposal writing, conceptual frameworks, ethics, methods and procedures, and statistical analysis.

IPA8201 INTERNAL CLINICAL PRACTICUM
The internal clinical practicum takes place in the Saint Paul University Counselling Centre. The goal of the practicum is to put into practice the theoretical knowledge of counselling and spirituality. Supervisors will specify the goals, objectives and syllabus of practicum. They will use observation, debriefing, peer review, written and oral feedback, and direct intervention and observation, to instruct and evaluate students. Minimum number of hours: 250. Graded S/NS.

IPA8202 EXTERNAL CLINICAL PRACTICUM
Clinical practice in an external location that must be approved by the program director. Graded S/NS. Students complete a minimum of 1500 hours of supervised training, internal and external practicum combined.

IPA8501 SPIRITUALITÉ ET COUNSELLING (3cr.)
Analyse des méthodes qualitatives et herméneutiques utilisées en sciences sociales et dans l’étude théologique de la spiritualité. Étude comparée d’une ou de plusieurs traditions spirituelles au sein des religions chrétiennes et autres confessions religieuses ainsi que de la culture laïque, afin d’accroître la compréhension et la pratique de la spiritualité. Le cours est conçu de façon à mettre en lumière le rôle de la spiritualité dans le bien-être de l’individu sur le plan affectif. Ce cours traitera de la question de la croissance personnelle et spirituelle. On y abordera également l’importance des pratiques spirituelles et le lien entre spiritualité et processus de counseling dans son ensemble.

IPA8502 LE COUNSELLING DANS UN CONTEXTE MUTICULTUREL ET INTERCONFESIONNEL (3cr.)
Ce cours aborde la pratique du counseling dans un contexte multiculturel et interconfessionnel. Il étudie la possibilité de la réciprocité et du dialogue utilisant une approche comparée des religions à partir des perspectives des sciences sociales et de la théologie. La théorie et la pratique proposées mettent l’accent sur la différence entre le cheminement du conseiller et celui du client dans les contextes spirituels et humanistes laïques, et sur la possibilité de rencontres dans la différence. Les sujets couverts incluent l’impact de l’inculturation, de l’identité interculturelle, du dialogue interconfessionnel et de la compétence interculturelle des deux parties en cause ; la manière selon laquelle la compétence et la croissance interculturelles contribuent au développement spirituel. Le cours permet aux conseillers et à leurs clients d’évaluer dans quelle mesure les valeurs spirituelles, les croyances et les pratiques sont un avantage ou un inconvénient pour les clients dans l’atteinte de leurs objectifs en counseling.

IPA8503 QUESTIONS CONCERNANT DES PERSONNES MARGINALISÉES (3cr.)
Ce cours traite des problèmes reliés aux besoins et au statut social de certains groupes spécifiques et de personnes marginalisées. Des données recueillies sur des caractéristiques de groupes et des défis auxquels font face certains groupes marginalisés (par exemple, les personnes âgées ou les sans-abri) seront analysées. L’appartenance à certains groupes sociaux peut entraîner la perte de privilèges sociaux de même qu’un accès limité aux ressources en soins de santé.
Enrollment in the seminar courses, GEO5301 and GEO5302, which involve the presentation of a seminar and the regular attendance at the seminars on the teaching of French language and history. The seminar topics include the study of French literature, society, and culture, as well as the historical context and developments of the French language. The seminar aims to provide students with a comprehensive understanding of the French language and culture, and to develop their skills in critical thinking and communication.

IPA8504 LES ENJEUX EXISTENTIELS EN COUNSELLING (3cr.)
Ce cours explore les enjeux liés au sens de la vie que présentent souvent les clients dans des contextes divers – incluant, mais non limités à – un bien-être accru, des crises existentielles, des transitions de vie, des pertes, la mort, la fin de la vie et le trauma. Les méthodes qualitatives de la collecte des données et leur analyse seront examinées pour comprendre le sens accordé par les participants à leur expérience de vie, aux événements, processus et perceptions, afin de saisir la manière dont ils relient le sens de ces concepts à leur environnement social. Seront aussi abordées dans ce cours différentes sources et réponses religieuses, spirituelles et humanistes sur des questions existentielles.

IPA8505 MÉTHODES ET MODÈLES DE RECHERCHES EN COUNSELLING ET SPIRITUALITÉ (3cr.)
Ce cours poursuit les objectifs d’analyser de manière critique et de discuter les défis que rencontre le conseiller dans le choix et l’application des méthodes qualitatives et quantitatives au regard des questions de spiritualité. Étude approfondie des défis à relever pour faire des recherches impliquant des sujets humains dans toute leur complexité et imprévisibilité vivant dans une société pluraliste et multiculturelle. Les thèmes possibles incluent l’échantillonnage, la mesure, les techniques spéciales d’analyse.

IPA8601 STAGE CLINIQUE INTERNE
Le stage clinique interne se déroule au Centre de counselling de l’Université Saint-Paul. L’objectif du practicum est de mettre en pratique les connaissances théoriques du counselling et de la spiritualité. Les superviseurs cliniques définiront les buts, les objectifs et le plan du practicum. Ils utiliseront l’observation, le « debriefing », les commentaires des pairs, la rétroaction écrite et orale ainsi que les interventions et observations directes pour aider et évaluer les étudiants. Nombre minimum d’heures : 250. Noté S/NS.

IPA8602 STAGE CLINIQUE EXTERNE
Pratique clinique dans un centre externe qui doit être approuvé au préalable par la direction du programme. Noté S/NS. Les étudiants complètent un minimum de 1500 heures de practicum supervisé dans leurs stages cliniques interne et externe combinés.

IPA9997 PROPOSITION DE THÈSE / THESIS PROPOSAL
Présentation du projet de thèse devant un comité composé du directeur de la thèse, des membres du comité de thèse et d’un ou deux autres professeurs./
Presentation of the thesis proposal to an examining committee composed of the supervisor, the members of the advisory committee and one or two other professors.

IPA9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAM
IPA9999 THÈSE DE DOCTORAT / DOCTORAL THESIS

**Criminology (MCA / MA)**

Criminology is devoted to the scientific analysis of crime, justice and social control. Criminology is also an applied discipline examining various forms of intervention for the resolution of diverse crime- and justice-related problems. It focuses on four broad questions: the social construction of norms and the notion of crime; the criminalization of specific behaviours, individuals and groups; the analysis of the goals and functioning of the criminal justice system; and the examination of contemporary forms of intervention from both theoretical and practical perspectives.

The master's program is divided into two parallel curricula. One focuses on research and provides the groundwork for producing university instructors and researchers. The other focuses on practice and provides professional education for those who wish to make a career in the field of criminal justice. Although the two master's degrees and corresponding programs offer different concentrations, one in criminological theory and research, the other in correctional services, graduates of either program will be able to work effectively in either area. The curriculum is structured to provide a central core of knowledge and understanding, considered to be essential for all criminologists, and a supplementary, specialized quantum of knowledge tailored to suit each student's needs.

Two master's degrees are offered:
1. a master of arts (MA) in criminology for students who choose to specialize in criminological theory and research;
2. a master of criminology (applied) (MCA) for students who choose to specialize in correctional services and the administration of justice.

Students must complete a minimum of 12 months (three sessions) of full-time study in order to fulfil the requirements of either degree.
Admission

The following conditions must be satisfied to be eligible for admission to the MA or MCA programs:

1. The methodology courses at the Masters (MCA and MA) Level require the prior completion of the two courses below or their equivalents, as part of the B.A Honors degree or otherwise:
   a) CRM 4704 Qualitative Research in Criminology (3 cr.). Epistemological and methodological issues in qualitative research in criminology.
   and
   CRM 3734 Quantitative Research in Criminology (3 cr.). Epistemological and methodological issues in quantitative research in criminology.

   Students who have completed all other admission requirements but do not hold one or both of the two courses CRM 4704 and CRM 3734 (or their equivalents) must add these courses in the first session of their registration in the Masters Program.

2. To be eligible for MCA (with field placement and memoire project), students must hold a bachelor's degree with a specialization in Criminology with a field placement or an equivalent with a minimum average of 70% (B). Students who have completed all other admission requirements but have not completed previous field placement training or its equivalent must add this requirement to their courses in the first year of registration. Students who must fulfill other requirements for admission in addition to the field placement course must complete a year of qualifying study.

3. To be eligible for MA (with thesis), students must hold a Bachelor's degree with a major in Criminology or equivalent with a minimum average of 70% (B).

4. The qualifying program: If the student has an Honours degree in a related field (e.g., sociology, psychology, law, social work, political science, history, philosophy) but is considered to have insufficient training in the theoretical and methodological traditions of the criminological discipline, the student may be offered a year of foundational course study in order to render the student's prerequisite skills equivalent to those required to pursue studies in this Masters' program; an average of B+ is required for the qualifying year to be considered satisfactory. In all cases (whether or not the requisite average has been attained), the student must submit a new application for admission to the Masters Program.

Other Information

The program operates within the regulations of the Faculty of Graduate and Postdoctoral Studies. Students should consult the General Regulations which are available on the Website at the following link:

www.etudesup.uottawa.ca/generalregulations

Collaborative Program in Women's Studies at the Master's Level

The Department of Criminology is a participating unit in the collaborative master's program in women's studies. This program has been established for students wishing to enrich their training in criminology by including an interdisciplinary component in Women's Studies. The specific requirements of the collaborative program include two core courses and a thesis or a major research paper on a topic related to women's studies.

Students should normally apply for acceptance in the women's studies collaborative program at the same time as they apply for admission to the master's program in criminology. For further details, please consult the Women's Studies brochure of the Faculty of Graduate and Postdoctoral Studies.

Program Requirements

Master's Degree Requirements

MA (30 CREDITS)

CRM6320 RESEARCH METHODOLOGY IN CRIMINOLOGY I (3cr.)
CRM6325 RESEARCH SEMINAR IN CRIMINOLOGY (3cr.)
CRM6350 CONTEMPORARY CRIMINOLOGICAL THEORIES (3cr.)
Elective courses (9 cr.)
CRM7999 THÈSE / THESIS (12cr.)

MCA (30 CREDITS)

CRM6320 RESEARCH METHODOLOGY IN CRIMINOLOGY I (3cr.)
CRM6325 RESEARCH SEMINAR IN CRIMINOLOGY (3cr.)
CRM6340 THEORIES OF INTERVENTION IN CRIMINOLOGY AND ALTERNATIVE PRACTICES (3cr.)
CRM6400 FIELD WORK IN CRIMINOLOGY II (6cr.)
CRM6345 FIELD PLACEMENT SEMINAR (3cr.)
CRM6999 Mémoire de Recherche / Major Research Paper (6cr.)
Elective courses (6 cr.)

Language of Instruction

In accordance with University of Ottawa policy, students have a right to produce their work and to answer examination questions in French or in English.

Residence

All full-time students must complete a minimum of three sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the initial registration in the program.

Courses

Les cours obligatoires sont offerts en français et en anglais tous les ans. Les cours optionnels sont offerts à l'occasion.

Required courses are offered in English and French every year. Optional courses are offered periodically.

CRM5390 GUIDED READINGS I (3cr.)
Designed to meet the particular needs of one or more students in the qualifying year of the MA or MCA programs. (Students are limited to one guided readings course per year.)

CRM5790 LECTURES DIRIGÉES I (3cr.)
Ce cours répond aux besoins particuliers d'étudiants inscrits à l'année propédeutique du programme de M.A. ou de M.C.A.

CRM6320 RESEARCH METHODOLOGY IN CRIMINOLOGY I (3cr.)
Study of the main epistemological questions regarding research activities in criminology; in-depth analysis of data collection methods with a focus on data treatment and analysis. Prerequisites: CRM 3334 and CRM 4304 or the equivalent.

CRM6325 RESEARCH SEMINAR IN CRIMINOLOGY (3cr.)
Annual seminar (every two weeks) with the following objectives: (a) detailed analysis of the procedures involved in the implementation of a research activity; formulation of a research project (research problem and theoretical framework) at the end of the fall session; presentation of the final research project (research problem, theoretical framework and methodology) at the end of the winter session.

CRM6330 QUANTITATIVE METHODS IN CRIMINOLOGY (3cr.)
Study of various epistemological, methodological and ethical questions regarding the use of quantitative methods of data collection and analysis.

CRM6331 QUALITATIVE METHODS IN CRIMINOLOGY (3cr.)
Study of various epistemological, methodological and ethical questions regarding the use of qualitative methods of data collection and analysis.

CRM6340 THEORIES OF INTERVENTION IN CRIMINOLOGY AND ALTERNATIVE PRACTICES (3cr.)
Examination of the theories and bases of the treatment of the criminalized in our society. Analysis of alternative forms of practice.

CRM6341 COUNSELLING IN CRIMINOLOGY (3cr.)
Nature, analysis and limitations of counselling in criminology.

CRM6342 COMMUNITY INTERVENTION IN CRIMINOLOGY (3cr.)
Community methods of intervention; responsibility and limits. Use of community resources. Participation in correction and social action.

CRM6343 SOCIAL POLICY AND CRIMINOLOGY (3cr.)
Issues underlying social policies with respect to crime and social control. The process of policy formation; critical and comparative aspects.

CRM6345 FIELD PLACEMENT SEMINAR (3cr.)
Restricted to students registered in the field placement (CRM 6400). Critical reflection on the field placement experience. Discussion of issues related to the field placement settings of the students. Oral presentation and written report. Graded S/NS.

CRM6350 CONTEMPORARY CRIMINOLOGICAL THEORIES (3cr.)
Analysis of current problems in criminological theory.

**CRM6353 REPRESENTATIONS AND IDEOLOGIES OF CRIME** (3cr.)
Study of the representations and ideologies of crime and social control.

**CRM6354 SOCIAL HISTORY OF THE CRIMINAL JUSTICE SYSTEM** (3cr.)
Problems of research on the history of penal institutions; analysis of selected cases or situations.

**CRM6355 COMPARATIVE CRIMINOLOGY** (3cr.)
Discussion of the bases of comparative analysis in criminology; analysis of specific situations.

**CRM6359 EVALUATION OF CRIMINAL JUSTICE PROGRAMS, POLICIES AND LEGISLATION** (3cr.)
Evaluation principles, approaches, models and methods; analysis of programs, policies and their theoretical underpinnings; selection of evaluation questions, preparation of a proposal and development of evaluation research tools.

**CRM6360 PHILOSOPHY OF CRIMINAL LAW** (3cr.)
Critical examination of the main theories and ideologies of the role of criminal law; the reform of criminal law.

**CRM6361 CRIME PREVENTION** (3cr.)
The impact and function of prevention research in criminology; prevention programs; evaluation.

**CRM6362 CRIMINAL JUSTICE AND THE VICTIMS OF CRIME** (3cr.)
The impact of the Victims Movement on the aims and operation of the criminal justice system.

**CRM6363 POLICE AND SOCIETY** (3cr.)
The role and functioning of the police in contemporary society; relation to the state and to civil society.

**CRM6364 SENTENCING** (3cr.)
Analysis of the aims and operation of sentencing.

**CRM6365 THE SOCIO-POLITICS OF INCARCERATION** (3cr.)
Analysis of the socio-political aims, functions and consequences of incarceration. The politicization of reform; abolition; prisoners rights movements.

**CRM6367 WOMEN AND CRIMINAL JUSTICE** (3cr.)
Women as criminals and victims; the impact of the operation of the criminal justice system on women.

**CRM6370 CORPORATE CRIME** (3cr.)
Analysis of the differential responses to various forms of corporate crime.

**CRM6371 POLITICAL CRIME** (3cr.)
Analysis of the forms of political crime and of the differential responses to the phenomenon.

**CRM6380 SELECTED TOPICS I** (3cr.)
Various topics will be discussed from year to year.

**CRM6381 SELECTED TOPICS II** (3cr.)
Various topics will be discussed from year to year.

**CRM6400 FIELD WORK IN CRIMINOLOGY II** (6cr.)
Restricted to students registered in the MCA program.

**CRM6720 MÉTHODOLOGIE DE RECHERCHE EN CRIMINOLOGIE I** (3cr.)
Étude des principaux problèmes épistémologiques concernant les activités de recherche en criminologie; approfondissement de certaines techniques de cueillette, et surtout, de traitement et d’analyse de données. **Préalables:** CRM 3734 et CRM 4704 ou leur équivalent.

**CRM6725 SÉMINAIRE DE RECHERCHE EN CRIMINOLOGIE** (3cr.)
Séminaire annuel (rencontres aux deux semaines) poursuivant les trois objectifs suivants : (a) analyse détaillée des différentes étapes de la mise en œuvre d’une activité de recherche; (b) formulation de l’ébauche d’un projet de recherche (objet et cadre théorique) à la fin de la session d’automne; (c) présentation d’un projet définitif de recherche (objet, cadre théorique et méthodologie) à la fin de la session d’hiver.

**CRM6730 MÉTHODOLOGIE QUANTITATIVE EN CRIMINOLOGIE** (3cr.)
Étude des différentes questions d'ordre épistémologique, méthodologique et éthique concernant l'utilisation des techniques quantitatives d'enquête et d'analyse.

**CRM6731 MÉTHODOLOGIE QUALITATIVE EN CRIMINOLOGIE** (3cr.)
Étude des différentes questions d'ordre épistémologique, méthodologique et éthique concernant l'utilisation des techniques qualitatives d'enquête et d'analyse.

**CRM6740 THÉORIE DE L’INTERVENTION EN CRIMINOLOGIE ET PRATIQUES ALTERNATIVES** (3cr.)
Examen des théories et des points d'ancrage du traitement du justiciable dans notre société. Analyse des pratiques alternatives.

**CRM6741 L’ENTRETIEN CLINIQUE EN CRIMINOLOGIE** (3cr.)
Nature, analyse et portée de l'entretien clinique.

**CRM6742 INTERVENTION COMMUNAUTAIRE** (3cr.)
La méthode d'intervention communautaire; implications et limites; l'emploi des ressources communautaires; la participation dans le domaine correctionnel et au niveau de l'action sociale.

**CRM6743 POLITIQUE SOCIALE ET CRIMINOLOGIE** (3cr.)
Questions sous-jacentes aux politiques sociales en rapport aux crimes et au contrôle social; la création de politiques sociales; les aspects critiques et comparatifs.

**CRM6745 SÉMINAIRE DE STAGE** (3cr.)
Réservé aux étudiants inscrits au stage (CRM 6800). Évaluation critique des apprentissages liés à l'expérience de stage. Discussion de thèmes en rapport avec les milieux de stage des étudiants. Rapport écrit.

**CRM6750 THÉORIES CRIMINOLOGIQUES CONTEMPORAINES** (3cr.)
Analyse de certains problèmes d'actualité dans le domaine de la pensée criminologique.

**CRM6753 REPRÉSENTATIONS ET IDÉOLOGIES DE LA CRIMINALITÉ** (3cr.)
Étude des représentations et idéologies sur la criminalité liées au contrôle social.

**CRM6754 L’APPROCHE HISTORIQUE EN CRIMINOLOGIE** (3cr.)
Les problèmes de recherche reliés à l'histoire des institutions pénales; analyse de cas ou situations choisies.

**CRM6755 CRIMINOLOGIE COMPARÉE** (3cr.)
Discussion des bases de l'analyse comparative en criminologie; analyse de situations spécifiques.

**CRM6759 ÉVALUATION DES PROGRAMMES, DES POLITIQUES ET DES LOIS EN MATIÈRE DE JUSTICE CRIMINELLE** (3cr.)
Principes, approches, modèles et méthodes d'évaluation; analyse des interventions et de leurs fondements théoriques, choix des questions évaluatives, préparation d'un projet et élaboration des outils de recherche évaluative.

**CRM6760 PHILOSOPHIE DU DROIT PÉNAL** (3cr.)
Examen critique des principales conceptions et idéologies concernant les finalités du droit pénal.

**CRM6761 LA PRÉVENTION ET LA CRIMINOLOGIE** (3cr.)
L'impact et les fonctions des études de prévention en criminologie; programmes de prévention; évaluation de ces programmes.

**CRM6762 LA QUESTION DES VICTIMES ET LA JUSTICE PÉNALE** (3cr.)
La place de la victime et la signification du mouvement pro-victime relativement au fonctionnement et au but de la justice pénale.

**CRM6763 POLICE ET SOCIÉTÉ** (3cr.)
La fonction et le fonctionnement des organismes policiers dans la société contemporaine; leurs rapports avec l'état et la société civile.

**CRM6764 LA DÉTERMINATION DE LA PEINE** (3cr.)
Analyse des objectifs et des enjeux propres à la détermination de la peine.

**CRM6765 ANALYSE SOCIO-POLITIQUE DE L’EMPRISONNEMENT** (3cr.)
Analyse des buts, des fonctions et des conséquences socio-politiques de l'incarcération. La politisation de la réforme; abolition; mouvements en faveur des droits des prisonniers et des prisonnières.

**CRM6766 LA FEMME ET LA JUSTICE PÉNALE** (3cr.)
La femme comme justiciable et victime; l'impact du fonctionnement de la justice pénale sur les femmes.

**CRM6768 LE JEUNE ET LA JUSTICE PÉNALE** (3cr.)
Analyse des différents aspects de la justice pour mineurs; leurs implications et les problèmes posés.

**CRM6770 DÉLINQUANCE D'AFFAIRES** (3cr.)
Analyse du traitement différentiel de diverses délinquances d'affaires.
E-Business Technologies (MEBT / MSc)

The Faculty of Graduate and Postdoctoral Studies, in collaboration with the Telfer School of Management, the School of Information Technology and Engineering (SITE) and the Faculty of Law, offers two interdisciplinary master’s programs in Electronic Business Technologies. One is a course-based program leading to the Master in Electronic Business Technologies (MEBT), the other includes a thesis and leads to the Master of Science (MSc) in Electronic Business Technologies.

Electronic Business Technologies focuses on the integration of information technologies with business processes and strategies within a dynamic legal and business environment. At the base of Electronic Business Technologies is the fact that the application of Internet and information technology to business processes leads to remarkable new ways of conceiving and organizing businesses. This in turn leads to a myriad of innovative modes of management, new organisational structures and information architectures as well as new laws and legal and corporate strategies. Electronic Business Technologies is composed of two major areas of specialization or streams: Electronic Business and Electronic
Enrollment in the seminar courses, GEO5301 and GEO5302, which involve the presentation of a seminar and the regular attendance at the seminars.

Analyse des problèmes fondamentaux du développement économique international tels que le commerce en ressources primaires et biens manufacturés, les flux.


Personnel economics and contract theory. Topics include the economics of unions, discrimination, the economics of the household, gender and fertility, and growth.

Prerequisite: ECO 5185.

desertification, depletion of natural resources, debt, environment and poverty, sustainable industrial and agricultural development, conservation policies, pollution the development process.

equilibrium model: equilibrium over time, temporary equilibrium and equilibrium over states of nature. Convexity and the size of the economy. Tâtonnement and

Deterministic dynamic optimization methods: economic and managerial applications of the maximum principle of Pontryagin and of dynamic programming.

All full-time students must complete a minimum of three sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is

required.

Geography GEOG 5304 ASPECTS OF CLAY MINERALOGY AND SOIL CHEMISTRY

selected topics in paleobiology of micro- and macro-invertebrates and vertebrates. Topics include extinctions, micro- and macro-evolutionary processes, long-

GEO5124 (ERTH 5204) GEOLOGY AND GEOCHEMISTRY OF ORE DEPOSITS

...appeal.

MBA6262 HIGH-TECH ENTREPRENEURSHIP

Prerequisite: MBA 5320 or ADM 6420 (for students in Electronic Business Technologies).

Research topic and the professor who will direct it must be approved by the program director prior to registration in the third session. The topic can be

Préalable: MPC d’au moins 7 et permission du comité du programme. / Independent study under the supervision of a faculty member in the program.

typiques d’induction. Les réseaux des neurones comme représentation et mécanisme d’apprentissage des concepts. Apprentissage des concepts en présence

Contenu et transactions dans les systèmes de commerce électronique. Architecture de système. Une attention particulière sera portée aux logiciels intégrés, aux

Planning, process development and implementation of Enterprise Resource Planning (ERP) systems. Enterprise modeling. Workflow process management. ERP

EBC6180 ELECTRONIC HUMAN RESOURCES MANAGEMENT

Admission

The basic requirement is an honours bachelor’s degree in a discipline relevant to the stream chosen, either e-business or e-technologies. A minimum average of B+ (75%), calculated in accordance with FGPS guidelines, is required. Candidates whose average falls between 70 and 74% may also be considered for initial admission to one of the graduate certificates, with the possibility of transferring to the master’s provided they have completed the 12 compulsory credits of the certificate with no grade below B+ (75%).

For the e-business stream, disciplines such as business administration, economics, computer science, electrical engineering, and business information are particularly relevant. For the e-technologies stream, disciplines such as computer science, computer engineering, software engineering, electrical engineering, and business information are particularly relevant and, for this stream, the degree program must have included courses in data structures, file management, operating systems, database management systems, and systems programming.

Candidates who have already completed a graduate certificate in e-business or e-commerce with an average of at least B+ (75%) may be admitted into the e-business stream or the e-technologies stream of either one of the two Electronic Business Technologies master’s programs. They will receive credit towards the master’s for courses common to the certificate and the master’s provided the courses have been completed within the preceding seven years.

Articulation between Certificates and Master’s Students have the option of registering either in one of the graduate certificates or in one of the master’s programs. If they choose to register in the certificate, they will be allowed to transfer to the master’s provided they have completed the 12 compulsory certificate credits, with no grade below B+ (75%) in any course. Students initially registered in the Master in Electronic Business Technologies will be allowed to transfer to the MSc under the same conditions (12 compulsory credits, with no grade below B+ (75%) in any course). In addition, to transfer either from one of the certificates or from the Master in Electronic Business Technologies (MEBT) to the MSc, students must have identified a professor who has agreed to supervise their thesis.

Students initially registered in the master’s who do not wish to complete the program are eligible to receive one of the two certificates as long as they have successfully met all the requirements.

Language Proficiency

The programs are offered mainly in English. Candidates whose mother tongue is neither English nor French must submit evidence of proficiency in English by providing any of the documents in the following list (test scores cannot be more than two years old as of September 1 of the year of potential entry into the program):

1. A score of at least 250 on the Test of English as a Foreign Language (TOEFL), with a score of at least 5 on the Test of Written English (TWE) and a score of at least 50 on the Test of Spoken English (TSE). The TOEFL is administered by Educational Testing Service, Box 899, Princeton, New Jersey, USA, 08540; see also www.web1.toefl.org.
2. A score of at least 7 in at least three of the four International English Language Testing System (IELTS) tests (Reading, Listening, Writing, Speaking) and at least 6 in the fourth. The IELTS is administered by the British Council: www.ielts.org.
3. A score of at least 14 on the CANTEST, administered by the University of Ottawa, with no individual test score below 4.0, along with a score of 4.5 on the oral component of the test.
4. Proof of completion within the last five years, of a previous degree program in an English language university.
5. Proof of recent prolonged residence and exercise of a profession in an English speaking country (normally at least four years over the last six years).

Program Requirements

Master's Degree Requirements
The Master of Science in Electronic Business Technologies requires 21 course credits and a thesis, whereas the Master in Electronic Business Technologies requires 27 course credits and a research project. Each program comprises 2 streams: e-business and e-technologies. The choice of courses depends on which stream has been chosen.

**Master of Science in Electronic Business Technologies**

Course requirements (21 credits):

A) Electronic Business Stream

Compulsory courses (18 credits)
- ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)
- ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)
- DCL7301 REGULATION OF INTERNET COMMERCE (3cr.)
- EBC6170 INTERNET SECURITY (1.5cr.)
- EBC6210 ELECTRONIC COMMERCE ARCHITECTURE (1.5cr.)
- EBC6220 DATA MINING FOR BUSINESS APPLICATIONS (1.5cr.)
- EBC6230 ELECTRONIC SUPPLY CHAIN TECHNOLOGIES AND APPLICATIONS (1.5cr.)
- EBC6240 MOBILE COMMERCE (1.5cr.)
- EBC6250 DOCUMENT ENGINEERING FOR E-BUSINESS (1.5cr.)
- EBC7100 RESEARCH METHODS IN ELECTRONIC BUSINESS TECHNOLOGIES (3cr.)

Electives (3 credits)
Three credits selected from the following:
- ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)
- ADM6279 SOCIO-TECHNICAL CHANGE (1.5cr.)
- ADM6420 ELECTRONIC MARKETING (1.5cr.)
- DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
- DCL7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
- EBC6130 WEB SERVICES (1.5cr.)
- EBC6180 ELECTRONIC HUMAN RESOURCES MANAGEMENT (1.5cr.)
- EBC6260 INTEGRATED NETWORKS FOR THE ENTERPRISE (1.5cr.)
- MBA6225 HIGH TECHNOLOGY MARKETING (1.5cr.)
- MBA6262 HIGH-TECH ENTREPRENEURSHIP (1.5cr.)

Thesis Proposal
- EBC7990 PROPOSITION DE THÈSE / THESIS PROPOSAL

Thesis
- EBC7999 THÈSE DE MAÎTRISE / MASTER'S THESIS (12cr.)

B) Electronic Technologies Stream

Compulsory courses (18 credits)
- ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)
- ADM6420 ELECTRONIC MARKETING (1.5cr.)
- DCL7301 REGULATION OF INTERNET COMMERCE (3cr.)
- CSIS175 MOBILE COMMERCE TECHNOLOGIES (3cr.)
- CSIS5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (3cr.)
- CSIS5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
- EBC7100 RESEARCH METHODS IN ELECTRONIC BUSINESS TECHNOLOGIES (3cr.)

Electives (3 credits)
Three credits selected from the following:
- ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)
- ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)
- ADM6279 SOCIO-TECHNICAL CHANGE (1.5cr.)
- CSIS5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
- CSIS5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
- CSIS5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)
- DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
- DCL7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
- EBC6180 ELECTRONIC HUMAN RESOURCES MANAGEMENT (1.5cr.)
- EBC6230 ELECTRONIC SUPPLY CHAIN TECHNOLOGIES AND APPLICATIONS (1.5cr.)
- ELGS5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)
- ELGS5373 (EACJ 5105) DATA ENCRYPTION (3cr.)

Thesis Proposal
Enrollment in the seminar courses, GEO5301 and GEO5302, which involve the presentation of a seminar and the regular attendance at the seminars.

Analyse des concepts et outils utilisés en économétrie des séries chronologiques. Les thèmes pourraient inclure l'analyse de cointégration, les modèles à l'industrie et l'agriculture, les politiques de conservation, le contrôle de la pollution et les problèmes de l'environnement global.

Revue des approches théoriques du développement économique dans la littérature en relation avec les dimensions historiques, économiques, environnementales, sociales et politiques du processus de développement.

General equilibrium and welfare economics, a critical view. Decisions under uncertainty. Search models. Theory of the market. Extensions of the general mathematical and statistical tools needed for graduate work in economics: matrix algebra, static and dynamic optimization, probability distributions, point and
testing.

The role of clay minerals in soils will be considered from a geotechnical or biological perspective.

Dynamical and geological aspects of plate tectonics throughout Earth history.

Types, including hydrothermal and magmatic ore deposits, as well as laboratory and field examination of different ores and their host rocks.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master's thesis. For

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities;
Courses

ADM6260 PROJECT MANAGEMENT I (1.5cr.)

ADM6261 PROJECT MANAGEMENT II (1.5cr.)

ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)

ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)

ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)

ADM6279 SOCIO-TECHNICAL CHANGE (1.5cr.)
This course explores the structural, cultural and process-based organizational change management challenges facing business strategists during new technology implementation initiatives. Toward this, the course draws upon management frameworks, support tools and best practices for the joint optimization of technology and social subsystems within organizations. Adopting a complex adaptive system viewpoint of the organization, the course will highlight issues of technological and social embeddedness, and illustrate the use of configuration modeling and analysis tools for enterprise engineering and strategy models to facilitate change sustainability and continuity.

ADM6420 ELECTRONIC MARKETING (1.5cr.)

CSI5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4305 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decomposition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.
CSI5175 MOBILE COMMERCE TECHNOLOGIES (3cr.)

CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S) (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)

CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5780 (COMP 5405) SYSTÈMES ET ARCHITECTURES DES LOGICIELS POUR LE COMMERCE ÉLECTRONIQUE (3cr.)

CSI5787 (COMP 5706) FOUILLE DES DONNÉES ET APPRENTISSAGE DES CONCEPTS (3cr.)

CSI5789 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE (3cr.)

CSI5903 STAGE EN COMMERCE ÉLECTRONIQUE/ ELECTRONIC COMMERCE WORK TERM (3cr.)
Expérience en milieu de travail. Noté: S (satisfaisant) / NS (non satisfaisant) selon les résultats du rapport écrit et l'évaluation de l'employeur. Préalables : recevoir la permission du Comité du programme. / Practical experience. S (satisfactory) / NS (not satisfactory) grade, to be based on the grades obtained for the written report as well as on the evaluations of the employer. Prerequisites: permission of the Program Committee.

CSI5904 PROJET DE RECHERCHE AVANCÉ EN COMMERCE ÉLECTRONIQUE/ GRADUATE PROJECT IN ELECTRONIC COMMERCE (3cr.)
Projet sur un sujet précis en commerce électronique mené sous la direction d'un professeur. Ne peut être combiné pour crédits avec CSI 5903. / Project on a specific topic in electronic commerce under the supervision of a professor. Exclusion: CSI 5903.

DCL7301 REGULATION OF INTERNET COMMERCE (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the traditional commercial law framework. Topics include intellectual property issues, on-line contracts, digital signatures, taxation, securities regulation, and the provision of online legal services.

DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the rights of free speech and privacy. Topics include online obscenity, hate speech, defamation, as well as national and international approaches to data privacy protection.

DCL7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
Practice-oriented seminar analyzing the legal issues and implications of electronic commerce. Topics include licensing, privacy and acceptable use policies, Web development agreements, and regulatory issues.
DCL7501 RÉGLEMENTATION DU CYBERCOMMERCE (3cr.)
Séminaire consacré à l'étude des défis juridiques que pose l'Internet en matière du droit commercial traditionnel. Les sujets à l'étude sont la propriété intellectuelle, les contrats en ligne, les signatures numériques, les impôts, la réglementation des valeurs mobilières et la prestation de services juridiques en ligne.

EBC5990 ÉTUDE DIRIGÉE / DIRECTED READING (1.5cr.)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le comité du programme. Préalable : MPC d’au moins 7 et permission du comité du programme. / Independent study under the supervision of a faculty member in the program. The topic and requirements must be approved by the program committee. Prerequisite: CGPA of at least 7 and permission of the program committee.

EBC5991 ÉTUDE DIRIGÉE / DIRECTED READING (1.5cr.)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le comité du programme. Préalable : MPC d’au moins 7 et permission du comité du programme. / Independent study under the supervision of a faculty member in the program. The topic and requirements must be approved by the program committee. Prerequisite: CGPA of at least 7 and permission of the program committee.

EBC6130 WEB SERVICES (1.5cr.)
Web services business models. Enterprise Application Integration. Web services technologies. Web services platforms and networks. Security and scalability. Prerequisites: EBC 6250 or equivalent.

EBC6170 INTERNET SECURITY AND E-PAYMENT SYSTEMS (1.5cr.)

EBC6180 ELECTRONIC HUMAN RESOURCES MANAGEMENT (1.5cr.)
The human resource functions needed for technology. Recruitment and selection via the internet. Internet and intranet applications for training personnel and enabling self-management. Measurement and management of employee performance using web-based applications. Using the web to maximize knowledge acquisition and sharing among employees. Knowing when and when not to use technology to effectively manage human resources.

EBC6210 ELECTRONIC COMMERCE ARCHITECTURE (1.5cr.)

EBC6220 DATA MINING AND CUSTOMER RELATIONSHIP MANAGEMENT (1.5cr.)

EBC6230 ELECTRONIC SUPPLY CHAIN TECHNOLOGIES AND APPLICATIONS (1.5cr.)

EBC6240 WIRELESS ELECTRONIC COMMERCE (1.5cr.)

EBC6250 DOCUMENT ENGINEERING FOR E-BUSINESS (1.5cr.)

EBC6260 INTEGRATED NETWORKS FOR THE ENTERPRISE (1.5cr.)

EBC6900 STAGE INTERNATIONAL / INTERNATIONAL WORK TERM (3cr.)
Expérience pratique dans un milieu de travail international. Note S (satisfaisant) / NS (non satisfaisant) selon les résultats de rapport écrit et l'évaluation de l'employeur. Préalables : être accepté au programme de certificat et recevoir la permission du comité du programme. Exclusions : CSI 5903, CSI 5904. / Practical international experience. Grades S (satisfactory) / NS (not satisfactory), based on the written report as well as on the evaluations of the employer. Prerequisites: Acceptance in the Graduate Certificate and permission of the Program Committee. Exclusions: CSI 5903, CSI 5904.

EBC6997 PROJET DE RECHERCHE / RESEARCH PROJECT (6cr.)
Enrollment in the seminar courses, GEO5301 and GEO5302, which involve the presentation of a seminar and the regular attendance at the seminars.

ECO6522 THÉORIE MICROÉCONOMIQUE IV
- Dynamics. Stochastic optimization methods in discrete time: Bayesian and Markovian decision measures, aversion.

Analysis of major domestic problems of economic development. Topics to include employment, income distribution, choice of technology, sectoral allocation of resources.

Computable general equilibrium (CGE) modelling: impacts of economic shocks; theoretical foundations; model specification, numerical solutions. Understanding economic policy aspects.

Analyses of capital accumulation and income distribution; measures of technical progress, general equilibrium theory, and labour markets; growth and institutions: state, future.

ECO5185 (ECON 5005) ECONOMETRICS I
- Analysis of capital accumulation and income distribution; measures of technical progress, general equilibrium theory, and labour markets; growth and institutions: state, future.

AND MINERALOGY
- Examine the composition of the mantle and crust in selected tectonic settings, such as subduction zones and hot spots. Topics may include geochemical processes.

GEO5153 (ERTH 5503) COMPUTER TECHNIQUES IN THE EARTH SCIENCES

GEO5148 (ERTH 5408) THEORY OF FLOW AND CONTAMINANT TRANSPORT IN GEOLOGICAL MATERIALS

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

High-tech business buying behaviour, competitive and environmental analysis. Implications for marketing inside the tornado: target segments, performance measures, technology acquisition and sharing among employees. Knowing when and when not to use technology to effectively manage human resources.

EBC6130 WEB SERVICES

Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, and data acquisition and sharing among employees. Knowing when and when not to use technology to effectively manage human resources.

ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT

EBC6220 DATA MINING FOR BUSINESS APPLICATIONS

DCL7301 REGULATION OF INTERNET COMMERCE

EBC6170 INTERNET SECURITY

The Master of Science in Electronic Business Technologies requires 21 course credits and a thesis, whereas the Master in Electronic Business Technologies requires 30 credits.

Students initially registered in the master's who do not wish to complete the program are eligible to receive one of the two certificates as long as a minimum average of B+ (75%), calculated in accordance with FGPS guidelines, is required. Candidates whose average falls between 70 and 74% will not be eligible.

MBA6662 ENTREPRENEURSHIP ET HAUTE TECHNOLOGIE (1.5cr.)
- Création, croissance, maintien et sortie d'une nouvelle entreprise dans un secteur industriel intensivement technologique. Questions importantes en matière de technologie (la portée et la nature des connaissances technologiques et de la protection de la propriété intellectuelle), de financement (capitaux d'amorçage, capital de risque et placement initial de titres) et de relations interentreprises (entreprises dérivées, alliances et alliances avec participation en capitaux et acquisitions). Le cours est axé sur la pratique et mise sur l'expertise locale pour accroître sa pertinence et son attrait.

Earth Sciences (MSc)

General Information

Established in 1982, the Ottawa-Carleton Geoscience Centre (OCGC) combines the research strengths of the University of Ottawa and Carleton University. The Centre offers graduate programs leading to the master's (MSc) and doctoral (PhD) degrees in Earth sciences.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.
Members of the Institute are engaged in the following main areas of research: environmental geoscience, geochemistry / petrology, geomatics / geomatics, mineral resources studies, sedimentary systems, and tectonics / geophysics.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The Centre is one of the participating units in the collaborative program in chemical and environmental toxicology (at the master's and doctoral levels).

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the General Regulations of the graduate faculty at each of the two universities. The general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate program in earth sciences is governed by the “General Regulations” of the Ottawa-Carleton Geoscience Centre (OCGC) and by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

All applicants must be able to understand speak and write proficiently in either English or French. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a bachelor's degree with a specialization or a major in earth sciences (or equivalent) with a minimum average of 75% (B+) in the last two years and a 70 % (B) average overall;
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Collaborative Program

The Ottawa-Carleton Geoscience Centre is one of the participating units in the collaborative program in chemical and environmental toxicology. For further details, please consult the brochure on chemical and environmental toxicology published by the Faculty of Graduate and Postdoctoral Studies.

Program Requirements

Master's Degree Requirements

The following requirements must be met:

1. 9 credits of graduate courses at the 5000 level or above (3 credits of which may be at the 4000 level) in earth sciences or in related disciplines approved by the Department of Earth Sciences;
2. Enrollment in the seminar courses, GEO5301 and GEO5302, which involve the presentation of a seminar and the regular attendance at the seminars presented by the Department;
3. Presentation and defense of a thesis (GEO7999) based on original research carried out under the direct supervision of a professor who is a member of the Department and the FGPS.

The Department may require students to take additional courses, depending on their backgrounds.

Residence

All students must complete a minimum of three sessions of full-time registration.
Minimum Standards
The passing grade in all courses is 70% (B). Students who fail six credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Duration of the program
The requirements of the program are usually fulfilled within two years. The maximum time permitted is four years from the date of initial registration.

Transfer from Master’s to PhD Program
Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l'Université d'Ottawa correspond à 0.5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

GEO5114 (ERTH 5104) MINERALOGY (3cr.)
An advanced course covering selected topics in mineralogy, such as crystallography, crystal chemistry, crystal structure, mineralogy of rock-forming mineral groups, and instrumental methods in mineralogical research, such as use of electronic optical instruments, spectroscopy, and X-ray crystallography; seminar presentations and practical exercises included.

GEO5122 (ERTH 5202) ADVANCED IGNEOUS PETROLOGY (3cr.)
The course focuses on particular aspects of the discipline and integrates physical and chemical processes with the dynamics of magmatic systems to understand igneous processes.

GEO5124 (ERTH 5204) GEOLOGY AND GEOCHEMISTRY OF ORE DEPOSITS (3cr.)
An advanced course in ore deposits examining aspects of their geology, geochemistry, and exploration. Topics will be selected from a range of different deposit types, including hydrothermal and magmatic ore deposits, as well as laboratory and field examination of different ores and their host rocks.

GEO5131 (ERTH 5301) SILICICLASTIC SEDIMENTOLOGY (3cr.)
Origin and significance of physical and sedimentary processes and structures. Analysis of ancient siliciclastic depositional environments in a facies model and sequence stratigraphic framework. Course involves lectures, seminars and field excursions.

GEO5135 (ERTH 5305) CARBONATE SEDIMENTOLOGY (3cr.)
Lectures and seminars will cover aspects of modern depositional systems, dynamic facies models, sequence stratigraphy, mineralogy, and diagenesis of carbonate sediments. Practical part of the course will consist of a field-laboratory project that integrates various techniques in carbonate sedimentology (mapping, petrography, staining, cathodoluminescence, fluorescence, SEM).

GEO5136 (ERTH 5306) PALEOBIOLOGY (3cr.)
Selected topics in paleobiology of micro- and macro-invertebrates and vertebrates. Topics include extinctions, micro- and macro-evolutionary processes, long-term trends and cycles in the Phanerozoic, and functional morphology, as well as application of invertebrates to biostratigraphy, paleoceanography and paleolimnology.

GEO5139 (GEOL 5309) GLACIAL AND PERIGLACIAL GEOLOGY (3cr.)
An examination of various sedimentary environments associated with glacial and periglacial processes and their significance for mineral exploration and...
environmental geochemistry. Study of cold climate non-glacial conditions and the development of permafrost and permafrost-related features, including the effect of groundwater flow on permafrost distribution.

GEO5142 (GEOL 5402) ENVIRONMENTAL GEOSCIENCE (3cr.)
A study-seminar course in which students will examine, in depth, certain environmental problems, including geological hazards, mineral and energy consumption and environmental degradation. The relation between development and the environment will be considered. Students will prepare a report and present a seminar on a subject of their choice, and will participate in a research project centered in the Ottawa area.

GEO5143 (GEOL 5403) ENVIRONMENTAL ISOTOPES AND GROUNDWATER GEOCHEMISTRY (3cr.)
Stable environmental isotopes (18O, 2H, 13C, 34S, 15N) in studies of groundwater origin and flow, and geothermal studies. Groundwater dating techniques involving tritium and radiocarbon, and exotic radioisotopes (e.g. 36Cl, 39Ar, 85Kr). Low temperature aqueous geochemistry and mineral solubility with emphasis on the carbonate system. Some applications to paleoclimatology will be discussed. Prerequisite: Fourth-year Hydrogeology (67.420 or GEO 4342) or equivalent.

GEO5146 (ERTH 5406) TECHNIQUES OF GROUNDWATER RESOURCES EVALUATION (3cr.)
Governing groundwater flow equations, initial and boundary conditions; simple numerical solutions (spreadsheets); complex numerical solutions (commercial software); and analytical solutions. Applications: aquifer response test analysis, capture zone analysis, groundwater flow modeling, water budgeting, and aquifer vulnerability assessment. Prerequisite: undergraduate hydrogeology.

GEO5147 (ERTH 5407) G如实CHEMISTRY OF NATURAL WATERS (3cr.)
Aqueous speciation, solubility of metals, minerals and gas, reaction kinetics and equilibria. Chemistry and dynamics of groundwaters and hydrothermal fluids.

GEO5148 (ERTH 5408) THEORY OF FLOW AND CONTAMINANT TRANSPORT IN GEOLOGICAL MATERIALS (3cr.)
Development of governing groundwater flow equations and solute transport equations from first principles, and application of principles in case studies. Topics: Forces and potentials, fluids, geological materials, contaminants, case studies. Prerequisite: undergraduate hydrogeology.

GEO5151 (ERTH 5501) PRECAMBRIAN GEOLOGY (3cr.)
Geology and tectonic history of the Canadian Shield, emphasizing modern four-dimensional interpretations (map, depth, time); comparison and correlation with other Precambrian shields; global Precambrian tectonic evolution through review of continental reconstructions; Precambrian mineral deposits; field trips and research projects.

GEO5153 (ERTH 5503) COMPUTER TECHNIQUES IN THE EARTH SCIENCES (3cr.)
A practical course in the application of computer techniques in the acquisition and interpretation of geoscientific data. Topics will be selected from the following: remote sensing and geographic information systems; geostatistical analysis techniques; analysis and modelling of geoscientific data. Prerequisite: Permission of the Institute.

GEO5157 (ERTH 5507) TECTONIC PROCESSES EMPHASIZING GEOCHRONOLOGY AND METAMORPHISM (3cr.)
Applications of empirical, analytical and quantitative techniques to problems in regional geology and crustal tectonics; orogenic processes; heat and metamorphism; isotopic geochronology as applied to thermal history.

GEO5160 (ERTH 5600) CHEMISTRY OF THE EARTH (3cr.)
Examine the composition of the mantle and crust in selected tectonic settings, such as subduction zones and hot spots. Topics may include how geochemical data constrain geodynamic settings of study area.

GEO5163 (ERTH 5603) STABLE ISOTOPE GEOCHEMISTRY (3cr.)

GEO5169 (ERTH 5609) RADIOISOPTOE GEOCHEMISTRY (3cr.)
Nucleosynthesis; chemical differentiation of the Earth. Evolution of large-scale reservoirs. Isotopic tracers (143Nd/144Nd, 87Sr/86Sr, common Pb). Geochronology: fundamentals and application of Sm/Nd, Rb/Sr, U/Pb, K/Ar and Lu/Hf methods. Evolution of the solid Earth from the isotopic perspective.

GEO5171 (ERTH 5701) PHYSICS OF THE EARTH (3cr.)
The physics and dynamics of the solid Earth: seismology; gravitational and magnetic fields; thermal state. Geophysical constraints on the structure and composition of the interior. Geodynamic processes.

GEO5173 (ERTH 5703) STRUCTURAL GEOLGY (3cr.)
Deformation processes and the analysis of geological structures at all scales.

GEO5174 (ERTH 5704) TECTONICS (3cr.)
Dynamical and geological aspects of plate tectonics throughout Earth history.

GEO5177 (ERTH 5707) ENGINEERING SEISMOLOGY (3cr.)

**GEO5178 (ERTH 5708) GEOPHYSICAL SIGNAL PROCESSING** (3cr.)
Practical aspects of earthquake and other geophysical signal processsin; focus on application of Fourier analysis, digital filters, instrument response.

**GEO5193 (ERTH 5903) FIELD STUDIES** (3cr.)
Systematic investigations of geological problems, based on a minimum of 15 days field work plus related library research and laboratory projects. Written report required.

**GEO5301 (ERTH 5001) SEMINARS IN EARTH SCIENCES I** (3cr.)
One-session modular course covering a spectrum of Earth science topics and current research problems, ranging from the geology and geophysics of the solid Earth, to its surface environment and crustal resources. A minimum of 4 modules is offered per session; 3 must be completed to obtain credit for a course. Students may not normally obtain credit for modules that are offered by their supervisors. The choice of modules must be approved by the Director of the Geoscience Centre or a designate. This course complements GEO 5302 (ERTH 5002).

**GEO5302 (ERTH 5002) SEMINARS IN EARTH SCIENCES II** (3cr.)
One-session modular course covering a spectrum of Earth science topics and current research problems, ranging from the geology and geophysics of the solid Earth, to its surface environment and crustal resources. A minimum of 4 modules is offered per session; 3 must be completed to obtain credit for a course. Students may not normally obtain credit for modules that are offered by their supervisors. The choice of modules must be approved by the Director of the Geoscience Centre or a designate. This course complements GEO 5301 (ERTH 5001).

**GEO7999 (ERTH 5909) THÈSE DE MAÎTRISE / MSc THESIS**

**GEO9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAM (PhD)**

**GEO9999 (ERTH 6909) THÈSE DE DOCTORAT / PhD THESIS**

Les cours suivants font partie du programme du Centre :

**Department of Geography, Carleton University**

**Geography GEOG 5300 SOIL THERMAL AND HYDROLOGIC REGIMES**
Characteristics of soil regimes, particularly in freezing soils, role of soil properties; analytical and numerical methods, including computer simulation.

**Geography GEOG 5302 SOIL THERMAL AND HYDROLOGIC PROPERTIES**
Instrumental techniques for investigation of hydrological and thermal processes near the Earth’s surface; laboratory instrumentation and analysis of laboratory and field procedures in geotechnical science.

**Geography GEOG 5303 PERIGLACIAL GEOCRYOLOGY**
Permafrost, its distribution and significance, seasonal ground freezing, ground thermal regime, physical, thermodynamic, and geotechnical properties of freezing and thawing soils, terrain features ascribable to frost action, and solifluction and patterned ground.

**Geography GEOG 5304 ASPECTS OF CLAY MINERALOGY AND SOIL CHEMISTRY**
The role of clay minerals in soils will be considered from a geotechnical or biological perspective.

**Geography GEOG 5803 REMOTE SENSING AND IMAGE ANALYSIS**
Radiometric, geometric and resolution characteristics of remotely sensed data, image processing algorithms, analysis of spectral, textural, and contextual image information, applications to vegetation mapping and environmental analysis.

**Département de géographie, Université d'Ottawa / Department of Geography, University of Ottawa**

**GEG5301 COLD REGIONS HYDROLOGY AND GEOMORPHOLOGY**
Selected topics in the hydrology and geomorphology of cold regions. Emphasis on glacialized, periglacial, or nival environments.

**GEG5701 HYDROLOGIE ET GÉOMORPHOLOGIE DES RÉGIONS FROIDES**
Thèmes en hydrologie et en géomorphologie des régions froides. Exploration approfondie des environnements glaciaires, periglaciaires ou nivaux.
Institut de physique d'Ottawa-Carleton / Ottawa-Carleton Institute for Physics

PHY5130 (PHYJ 5001) EXPERIMENTAL CHARACTERIZATION TECHNIQUES IN MATERIALS SCIENCE, PHYSICS, CHEMISTRY, AND MINERALOGY (3cr.)
Survey of experimental techniques used in materials science, condensed matter physics, solid state chemistry, and mineralogy to characterize materials and solid substances. Diffraction (X-ray diffraction, neutron diffraction...). Spectroscopy (infra-red spectroscopy, Raman spectroscopy, nuclear magnetic resonance, Mössbauer spectroscopy, electron spin resonance...). Microscopy and imaging (scanning electron microscopy, transmission electron microscopy, optical microscopy, magnetic resonance imaging...). Other analytic techniques (thermal analysis, wet chemistry, bulk thermodynamic properties, linear response and dc susceptibility...).

Economics (MA)

Programs Offered

The Department of Economics offers a Master of arts and a PhD in Economics. The PhD program is offered jointly with Carleton University. In addition to this, the Department is one of the participating units in the collaborative program in Canadian Studies at the PhD level offered at the University of Ottawa. For further details on the collaborative program, please consult the Canadian Studies brochure.

Admission

Admission Requirements

An honours bachelor's degree in Economics, or the equivalent, is required for admission to the master's program. An average of at least "B" (70%) is required in the honours undergraduate program.

Applicants may, in some cases, be admitted to a qualifying program designed to bring their knowledge to the level required to pursue a master's in Economics. To proceed to the master's level, a new application must be submitted.

Language Requirements

Proficiency in the English language is required for entry into the doctoral program.

Candidates who have not graduated from a French-speaking or an English-speaking university must pass the computerized Test of English as a Foreign Language (TOEFL), or equivalent, before admission. For additional information, please click on “Apply Now” or visit the website: http://www.etudesup.uottawa.ca/Default.aspx?tabid=16224.

Proficiency in either English or French is required. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS.

Program Requirements

Master's Degree Requirements

The requirements for the MA degree consist of the following:

MA with Thesis
Completion of four graduate courses, three of which are compulsory (Macroeconomic Theory IV, Microeconomic Theory IV and Econometrics I). The remaining courses may be taken outside the Department, subject to the Graduate Officer's approval.

The thesis must be written under the supervision of a full-time member of the Department who is a member of the Faculty of Graduate and Postdoctoral Studies.

MA with Major Paper
Completion of six graduate courses, three of which are compulsory (Macroeconomic Theory IV, Microeconomic Theory IV and Econometrics I). The remaining courses are optional and two of them may be taken outside the Department, subject to the Graduate Officer's approval.

The candidate must write a major paper devoted to a critical review of the literature on a given topic, to a limited-scope empirical research or to a critical
assessment of a theoretical question under the supervision of a full-time member of the Department. The research paper will be evaluated by another professor appointed by the Department Chairperson.

**Transfer from Master's to Doctoral Degree**

Students enrolled in the MA program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

**Residence**

All full-time students must complete a minimum of three sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the initial registration in the program.

**Courses**

ECO5106 COMPARATIVE ECONOMIC SYSTEMS (3cr.)
Analysis of the socialist economic system, collective appropriation of the means of production, fundamental economic role of the State: firms and socialist profit. Planning, capital accumulation and growth; measure of investment efficiency; price determination and the Marxist theory of value; income distribution; money and State banks. International economic relations of the socialist countries within the Comecon, with the other socialist economies, the Third World and the Western countries. Study of selected issues on the Soviet, Chinese or East-European economies. Achievements and future prospects.

ECO5114 ECONOMIC GROWTH (3cr.)
Analyses of capital accumulation and income distribution; measures of technical progress, general equilibrium theory, and labour markets; growth and institutions: the State, firms, financial markets; multisectorial growth.

ECO5116 POST-KEYNESIAN THEORY: VALUE AND PRODUCTION (3cr.)

ECO5129 CANADIAN ECONOMIC HISTORY (3cr.)
The experience of economic growth: case studies in Canadian economic history. The main focus of the course will consist in trying to build bridges between economic theory and the Canadian historical experience of economic growth. To this effect, references will be made to “classics” in general economic history as well as in Canadian economic historiography.

ECO5185 (ECON 5005) ECONOMETRICS I (3cr.)

ECO5506 SYSTÈMES ÉCONOMIQUES COMPARÉS (3cr.)
Analyse du système économique socialiste : appropriation collective des moyens de production, rôle économique fondamental de l'État, entreprises et profits socialistes. Planification, accumulation et croissance; calcul d'efficacité de l'investissement; formation des prix et théorie marxiste de la valeur; détermination des revenus; monnaie et banques d'État. Relations économiques internationales des pays socialistes dans le Comecon et avec les autres économies socialistes, le Tiers Monde, les pays occidentaux. Étude d'exemples choisis dans les économies soviétique, chinoise ou d'Europe de l'Est. Bilan des résultats et perspectives d'avenir.

ECO5514 CROISSANCE ÉCONOMIQUE (3cr.)
Analyses de la croissance et de la répartition; mesures du progrès technique, théorie de l'équilibre général, marchés du travail, croissance et institutions : l'État, les entreprises, le marché financier, croissance multisectorielle.

ECO5516 THÉORIE POST-KEYNÉSIENNE : VALEUR ET PRODUCTION (3cr.)
Historique de la théorie du surplus. Caractéristiques de la méthode post-keynésienne. La contribution de Sraffa. La théorie de la valeur et des prix. La théorie de la production et du capital. La rente. La plus-value. La production jointe. Analyses de la traverse. Applications et implications politiques : commerce international et finances publiques.

ECO5529 HISTOIRE ÉCONOMIQUE CANADIENNE (3cr.)
L'expérience de la croissance économique : étude de cas en histoire économique canadienne. Rapport entre théorie et histoire économique en se basant sur l'étude de «classiques» en histoire économique et en historiographie économique canadienne.

ECO5585 ÉCONOMÉTRIE I (3cr.)
Enrollment in the seminar courses, GEO5301 and GEO5302, which involve the presentation of a seminar and the regular attendance at the seminars.

**ECO6100 MATHEMATICAL AND STATISTICAL TOOLS FOR ECONOMISTS** (3cr.)
Mathematical and statistical tools needed for graduate work in economics: matrix algebra, static and dynamic optimization, probability distributions, point and interval estimation, hypothesis testing.

**ECO6106 (ECON 5209) HISTORY OF ECONOMIC THOUGHT AND METHODOLOGY** (3cr.)
Evolution of economic thought, from the economic doctrines of antiquity to present times; critique and appraisal of scientific methods in economics.

**ECO6108 ECONOMIC SYSTEM DESIGN** (3cr.)
Deterministic dynamic optimization methods: economic and managerial applications of the maximum principle of Pontryagin and of dynamic programming. Discrete time stochastic dynamic optimization methods: Bayesian and Markovian decision theory, measures of risk-aversion and risk, portfolio theory, elements of search theory, applications of discrete time stochastic control to economics.

**ECO6110 INTRODUCTION TO APPLIED GENERAL EQUILIBRIUM MODELLING** (3cr.)
Computable general equilibrium (CGE) modelling: impacts of economic shocks; theoretical foundations; model specification, numerical solutions. Understanding model assumptions and interpretation of results.

**ECO6120 MACROECONOMIC THEORY IV** (3cr.)
Interaction among economic agents, sectors and markets in macroeconomic models, including models of disequilibrium; aggregation problems in macroeconomic models. A detailed study of the components of aggregate demand. Inventory investment as a generator of cycles; theory of capital accumulation and growth; inflation and unemployment. Macroeconometric applications. Latest developments in macroeconomic theory. The approach stresses the study of the original articles in the field.

**ECO6122 MICROECONOMIC THEORY IV** (3cr.)

**ECO6130 (ECON 5401) PUBLIC ECONOMICS: EXPENDITURE** (3cr.)
A discussion of the role of government expenditure both in theory and with reference to the Canadian economy.

**ECO6131 (ECON 5402) PUBLIC ECONOMICS: TAXATION** (3cr.)
An analysis of the effects of various forms of taxation on economic performance.

**ECO6133 (ECON 5403) TOPICS IN THEORY OF PUBLIC ECONOMICS** (3cr.)
This course explores a variety of topics in further depth than permitted in basic courses in public finance. These topics include tax incidence in general equilibrium, the theory and practice of tax reform, normative approaches to income redistribution, and the theory of non-market decision-making.

**ECO6140 (ECON 5301) FIRMS AND MARKETS** (3cr.)
An examination of theories pertaining to industrial organization and their application to particular industries in Canada and elsewhere by way of empirical studies.

**ECO6141 (ECON 5302) COMPETITION POLICY** (3cr.)
An examination of the rationale and application of competition policy with particular attention to the Canadian economy.

**ECO6142 (ECON 5303) REGULATION AND PUBLIC ENTERPRISE** (3cr.)
An examination of regulation and public enterprise as alternative approaches for influencing industry conduct and performance.

**ECO6143 (ECON 5803) ECONOMICS OF NATURAL RESOURCES** (3cr.)

**ECO6151 (ECON 5804) ECONOMICS OF THE ENVIRONMENT** (3cr.)
The environment as natural capital; environmental valuation techniques; elements of environmental income accounting; sustainable development theories and practice; institutional questions and policy issues.

**ECO6160 (ECON 5601) INTERNATIONAL TRADE: THEORY AND POLICY** (3cr.)
International trade theory and its implications for economic policy, with emphasis on topics such as determinants of trade and specialization, gains from trade and commercial policy, international factor mobility, growth, and development.
ECO6161 (ECON 5602) INTERNATIONAL MONETARY THEORY AND POLICY (3cr.)
International monetary theory and policy, with emphasis on topics such as sources of equilibrium and disequilibrium in the balance of payments, balance-of-payments adjustment under fixed versus flexible exchange rates, international capital movements, and recent issues in the international monetary system.

ECO6162 (ECON 5603) TOPICS IN INTERNATIONAL ECONOMICS (3cr.)
An examination of key topics in international economics, including theoretical analysis, quantitative methods and policy formulation, implementation and evaluation.

ECO6170 (ECON 5500) THEORY OF ECONOMIC DEVELOPMENT (3cr.)
Review of theoretical approaches in the economic development literature in relation to the historical, economic, environmental, social and political dimensions of the development process.

ECO6171 (ECON 5504) ECONOMIC DEVELOPMENT: INTERNAL ASPECTS (3cr.)
Analysis of major domestic problems of economic development. Topics to include employment, income distribution, choice of technology, sectoral allocation of resources, human resources development, and domestic environment issues.

ECO6172 (ECON 5505) ECONOMIC DEVELOPMENT: INTERNATIONAL ASPECTS (3cr.)
Analysis of key problems of international economic development such as trade in primary commodities and manufactures, financial flow and debt, the role of multinational corporations, the transfer of technology, and the international dimensions of environmental issues as they relate to the developing countries.

ECO6173 (ECON 5507) ENVIRONMENTAL ASPECTS OF ECONOMIC DEVELOPMENT (3cr.)
Policy aspects of sustainable economic development and environmental quality in developing countries. Topics to include energy use, deforestation, drought and desertification, depletion of natural resources, debt, environment and poverty, sustainable industrial and agricultural development, conservation policies, pollution control and global environmental issues.

ECO6175 (ECON 5712) MICRO ECONOMETRICS (3cr.)
Analysis of the concepts and tools used in micro econometrics. Topics may include discrete choice models, limited dependent variables, panel data, duration models, and program evaluation, together with relevant economic applications. The focus is on empirical applicability with solid econometric foundations. Prerequisite: ECO 5185.

ECO6176 (ECON 5713) TIME SERIES ECONOMETRICS (3cr.)
Analysis of the concepts and tools used in time series econometrics. Topics may include cointegration analysis, error correction models, VAR models, volatility analysis, and non linear time series models, together with relevant economic applications. The focus is on empirical applicability with solid econometric foundations. Prerequisite: ECO 5185.

ECO6177 (ECON 5714) ADVANCED TOPICS IN ECONOMETRICS (3cr.)
Coverage of one or more areas of current econometric research. Prerequisite: ECO 7126.

ECO6180 (ECON 5606) MICROECONOMIC ASPECTS OF MONETARY THEORY (3cr.)
Microeconomic foundations of monetary theory. Alternative theories for the existence of money. Commodity, private and fiat money systems. The integration of monetary theory with the theory of value.

ECO6181 (ECON 5607) MACROECONOMIC ASPECTS OF MONETARY THEORY (3cr.)
A course in monetary theory that deals with the macroeconomic interactions of money. Issues will include such topics as: inflation, money and wealth; the optimum quantity of money; the welfare aspects of monetary economies; the supply of money and its composition; stabilization policy; money, capital and growth.

ECO6182 (ECON 5608) ASPECTS OF FINANCIAL INTERMEDIATION (3cr.)
The evolution of the financial system with special emphasis on the theory of financial institutions and its inter-relationship with the money supply process and the central bank. Contemporary monetary and finance theory applied to institutional problems in both historical and contemporary settings.

ECO6183 (ECON 5609) EXPLORATIONS IN MONETARY ECONOMICS (3cr.)
A course in which explorations in theory, policy recommendations and empirical study are undertaken. The material challenges traditional approaches by examining such topics as the endogeneity of money, the role of credit, the finance motive, the circuit approach, flow of funds analysis and austerity policies.

ECO6191 (ECON 5361) LABOUR ECONOMICS I (3cr.)
The application of microeconomic and macroeconomic theory to the labour market. Topics include labour supply and labour demand, wage determination, human capital and the economics of education, and unemployment.

ECO6192 (ECON 5362) LABOUR ECONOMICS II (3cr.)
Personnel economics and contract theory. Topics include the economics of unions, discrimination, the economics of the household, gender and fertility, and labour mobility.
ECO6193 (ECON 5363) ADVANCED TOPICS IN LABOUR ECONOMICS (3cr.)
Topics may include program evaluation, inequality, labour markets and health, labour markets and crime, and the structural estimation of labour market models.

ECO6304 SELECTED TOPICS IN APPLIED ECONOMICS (3cr.)
Study of selected topics in applied economics; contents may change from year to year.

ECO6500 OUTILS MATHÉMATIQUES ET STATISTIQUES POUR ÉCONOMISTES (3cr.)
Outils mathématiques et statistiques requis pour des études supérieures en science économique : algèbre matricielle, optimisation statique et dynamique, lois de probabilité, estimation de point et d'intervalle, tests d'hypothèses.

ECO6506 HISTOIRE DE LA PENSEÉ ÉCONOMIQUE ET DE LA MÉTHODOLOGIE (3cr.)
Évolution de la pensée économique des doctrines économiques de l'antiquité jusqu'à aujourd'hui; critique et évaluation des méthodes scientifiques en science économique.

ECO6508 ANALYSE ET CONTRÔLE DES SYSTÈMES ÉCONOMIQUES DYNAMIQUES (3cr.)
Méthodes déterministes d'optimisation dynamique : applications économiques et managériales du principe de Pontryagin et de la programmation dynamique. Méthodes stochastiques d'optimisation dynamique en temps discret : théorie de la décision Bayésienne et Markovienne, mesures de l'aversion au risque et du risque, théorie des portefeuilles, éléments de théorie de fouinage, applications économiques de la théorie du contrôle stochastique en temps discret.

ECO6510 MODÉLISATION EN ÉQUILIBRE GÉNÉRAL CALCULABLE (3cr.)
La modélisation en équilibre général calculable (MEGC) : effets distributifs des choix et politiques économiques; fondements théoriques des modèles d'équilibre général, les étapes requises pour la spécification de ces modèles et leur résolution numérique. Compréhension des hypothèses de ces modèles et interprétation des résultats.

ECO6520 THÉORIE MACROÉCONOMIQUE IV (3cr.)
Interaction entre les agents économiques, les secteurs et les marchés dans les modèles macroéconomiques, y compris les modèles de déséquilibre; les problèmes de l'agréation dans les modèles macroéconomiques. Étude détaillée des composantes de la demande globale. L'investissement dans les stocks comme générateur de cycles économiques; théorie de l'accumulation du capital et de la croissance économique; l'inflation et le chômage. Applications macroéconométriques. Développements récents en théorie macroéconomique. L'approche met l'accent sur l'étude des œuvres originales du domaine concerné.

ECO6522 THÉORIE MICROÉCONOMIQUE IV (3cr.)

ECO6530 ÉCONOMIE PUBLIQUE: LES DÉPENSES (3cr.)
Une discussion du rôle des dépenses gouvernementales en théorie et en rapport avec l'économie canadienne.

ECO6531 ÉCONOMIE PUBLIQUE: L'IMPOSITION (3cr.)
Une analyse des effets de différents types de fiscalité sur la performance économique.

ECO6533 THÈMES CHOISIS EN ÉCONOMIE PUBLIQUE (3cr.)
Ce cours explore une variété de sujets de manière plus approfondie que dans les cours de base de finances publiques. Ces questions incluent l'incidence fiscale en équilibre général, la théorie et la pratique de la réforme fiscale, les approches normatives à la redistribution du revenu, et la théorie de la décision non marchandable.

ECO6540 LES ENTREPRISES ET LES MARCHÉS (3cr.)
Un examen des théories pertinentes à l'organisation industrielle et leur application à des industries particulières au Canada et ailleurs au moyen d'études empiriques.

ECO6541 POLITIQUE DE LA CONCURRENCE (3cr.)
Un examen des justifications et de l'application des politiques de concurrence avec une attention particulière consacrée à l'économie canadienne.

ECO6542 RÉGLEMENTATION ET ENTREPRISES PUBLIQUES (3cr.)
Un examen de la réglementation et de l'entreprise publique en tant que formes alternatives d'influence gouvernementale sur le marché de l'industrie et sa performance.

ECO6543 ÉCONOMIE DES RESSOURCES NATURELLES (3cr.)
ECO6551 ÉCONOMIE DE L'ENVIRONNEMENT (3cr.)
L'environnement comme capital naturel; techniques d'évaluation environnementale; comptabilité environnementale; théorie et pratique de développement durable; questions institutionnelles et problèmes de politique publique.

ECO6560 THÉORIE ET POLITIQUE : COMMERCE INTERNATIONAL (3cr.)
La théorie du commerce international et ses implications pour la politique économique sont examinées en mettant l'accent sur des sujets tels que les déterminants du commerce et de la spécialisation interne, les gains du commerce international et de la politique commerciale, la mobilité internationale des facteurs de production, croissance et développement.

ECO6561 ÉCONOMIE MONÉTAIRE INTERNATIONALE: THÉORIE ET POLITIQUE (3cr.)
La théorie monétaire internationale, en mettant l'accent sur des sujets tels que les sources d'équilibre et de déséquilibre dans la balance des paiements, l'ajustement de la balance des paiements aux conditions de taux de change fixes et fluctuants, mouvements internationaux des capitaux et problèmes récents du système monétaire international.

ECO6562 THÈMES CHOISIS EN ÉCONOMIE INTERNATIONALE (3cr.)
Un examen des sujets fondamentaux en commerce international, incluant l'analyse théorique, les méthodes quantitatives et la formulation, la mise en œuvre et l'évaluation des politiques.

ECO6570 THÉORIE DU DÉVELOPPEMENT ÉCONOMIQUE (3cr.)
Revue des approches théoriques du développement économique dans la littérature en relation avec les dimensions historiques, économiques, environnementales, sociales et politiques du processus de développement.

ECO6571 ASPECTS INTERNES DU DÉVELOPPEMENT ÉCONOMIQUE (3cr.)
Analyse des problèmes majeurs du développement économique interne dont le chômage, la distribution des revenus, le choix des techniques, l'allocation sectorielle des ressources, le développement des ressources humaines et les questions environnementales domestiques.

ECO6572 LE DÉVELOPPEMENT ÉCONOMIQUE: ASPECTS INTERNATIONAUX (3cr.)
Analyse des problèmes fondamentaux du développement économique international tels que le commerce en ressources primaires et biens manufacturés, les flux financiers et la dette, le rôle des entreprises multinationales, le transfert de technologie et les dimensions internationales des questions environnementales en relation avec les pays en voie de développement.

ECO6573 ASPECTS ENVIRONNEMENTAUX DU DÉVELOPPEMENT ÉCONOMIQUE (3cr.)
Politiques du développement durable et de la qualité de l'environnement dans les pays en voie de développement. Thèmes étudiés : l'utilisation de l'énergie, la déforestation, la sècheresse et la désertification, l'épuisement des ressources naturelles, la dette, l'environnement et la pauvreté, le développement durable dans l'industrie et l'agriculture, les politiques de conservation, le contrôle de la pollution et les problèmes de l'environnement global.

ECO6575 MICRO-ÉCONOMÉTRIE (3cr.)
Analyse des concepts et outils utilisés en micro-économétrie. Les thèmes pourraient inclure les modèles de choix discrets, les variables dépendantes limitées, les données de panel, les modèles de durée et l'évaluation de programmes, ainsi que des applications économiques pertinentes. L'accent est mis sur l'application empirique avec de solides fondements économétriques. Préalable: ECO5585.

ECO6576 ÉCONOMÉTRIE DES SÉRIES CHRONOLOGIQUES (3cr.)
Analyse des concepts et outils utilisés en économétrie des séries chronologiques. Les thèmes pourraient inclure l'analyse de cointégration, les modèles à correction d'erreur, les modèles VAR, l'analyse de volatilité et les modèles de séries chronologiques non-linéaires, ainsi que des applications économiques pertinentes. L'accent est mis sur l'application empirique avec de solides fondements économétriques. Préalable: ECO5585.

ECO6577 THÈMES CHOISIS EN ÉCONOMÉTRIE (3cr.)
Étude d'un ou plusieurs domaines de recherche courante en économétrie. Préalable: ECO7126.

ECO6580 ASPECTS MICROÉCONOMIQUES DE LA THÉORIE MONÉTAIRE (3cr.)
Fondements microéconomiques de l'existence de la monnaie. Théories alternatives de l'existence de la monnaie. Monnaies de marchandise, monnaies privées et monnaies fiduciaries. Intégration de la monnaie à la théorie de la valeur.

ECO6581 ASPECTS MACROÉCONOMIQUES DE LA THÉORIE MONÉTAIRE (3cr.)
Interactions macroéconomiques de la monnaie : inflation, monnaie et richesse; quantité optimale de monnaie; aspects de bien-être des économies monétaires; offre de monnaie et ses composantes; politique de stabilisation; monnaie, capital et croissance.

ECO6582 INTERMÉDIAIRES FINANCIERS (3cr.)
Évolution du système financier en insistant sur la théorie des institutions financières et ses interrelations avec le processus d'offre de monnaie et avec la banque centrale. Théorie monétaire et financière contemporaine appliquée à l'analyse des problèmes institutionnels dans un contexte à la fois historique et contemporain.

ECO6583 EXPLORATIONS EN ÉCONOMIE MONÉTAIRE (3cr.)
Explorations des aspects théoriques, des recommandations politiques et des études empiriques de la théorie monétaire. Remise en question des approches traditionnelles à travers l'examen de thèmes tels l'endogénéité de la monnaie, le rôle du crédit, le motif financier, l'approche du circuit, l'analyse du flux de fonds...
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

- Their academic performance must be exceptional: they must have successfully completed five MA courses, including EDU 6290, with an average of (A) or

Note: The choice of research supervisor will determine the primary campus location of the student. It will also determine which university

Established in 1983, Ottawa-Carleton Institute for Electrical and Computer Engineering (OCIECE) combines the research strengths of the School of

Analyse de processus cognitifs essentiels à partir de diverses perspectives théoriques; mise en application de théories d'apprentissage dans divers contextes.

EDU8647 THÈMES CHOISIS EN ENSEIGNEMENT ET APPRENTISSAGE DES LANGUES SECONDES

Critical review of fundamental aspects of qualitative research in education: approaches, characteristics and strategies.

EDU6874 STAGE EN COUNSELLING III

Examens des modèles d'évaluation, de la planification du projet d'évaluation, de la rédaction du rapport d'évaluation et de la méta-évaluation.

EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION


EDU5260 INTRODUCTION TO CURRICULUM STUDIES

Study of concepts, models and practices of curriculum development. Theoretical foundations, methods and practices.

EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION

Study of functions and tasks, and the various roles of adult educators as volunteers, as trainers, as teachers of adults, as researchers; examination of the pre

EDU5245 TEACHING ORAL COMMUNICATION AND LITERACY IN A SECOND LANGUAGE

Study of conceptual frameworks and models of second language teaching; historical overview of major developments and current trends; critical analysis of

EDU5234 SUPERVISION AND PERFORMANCE MANAGEMENT IN EDUCATIONAL ORGANIZATIONS

Examination of the social, political and cultural dimensions of learning and teaching an additional language; influences on learners, on opportunities for learning a

EDU5299 ENJEUX ACTUELS EN ÉVALUATION DES APPRENTISSAGES


EDU5206 PROGRAM PLANNING IN ADULT EDUCATION

Study of conceptual frameworks and models of second language teaching; historical overview of major developments and current trends; critical analysis of

EDU5229 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION

Examens des modèles d'évaluation, de la planification du projet d'évaluation, de la rédaction du rapport d'évaluation et de la méta-évaluation.

EDU5226 ÉCONOMÉTRIE II (3cr.)

Thèmes choisis concernant l'estimation et les tests de modèles de régression et d'équations simultanées : estimateur du maximum de vraisemblance, analyse

statistique des résidus, modèles autorégressifs et autres modèles de séries chronologiques, modèles de régressions multivariées, théorie asymptotique dans le

cadre de modèles à équations simultanées.

EDC7922 (ECON 6020) THÉORIE ÉCONOMIQUE : MICROÉCONOMIE / ECONOMIC THEORY: MICROECONOMICS (3cr.)

Examen de certains aspects cruciaux de la théorie microéconomique tirés de l'analyse récente du comportement du consommateur, des coûts et de la

production, des coûts de transaction, de l'incertitude et de l'organisation de l'activité économique. Préalable : ECO 6522. / An examination of critical aspects of

microeconomic theory drawn from recent analysis of consumer behaviour, costs and production, transaction costs, uncertainty and the organization of economic

activity. Prerequisite: ECO 6122.

EDC7923 (ECON 6021) THÉORIE ÉCONOMIQUE : MACROÉCONOMIE / ECONOMIC THEORY: MACROECONOMICS (3cr.)

Examen des aspects cruciaux de la théorie macroéconomique tirés de l'analyse récente des fondements microéconomiques de la macroéconomie, concepts

d'équilibre macroéconomique et impact des chocs monétaires et fiscaux. Divers sujets reliés à la politique macroéconomique sont également examinés. Préalable : 6520. / An examination of critical aspects of macroeconomic theory drawn from recent analysis of the microeconomic foundations of macroeconomics, concepts of macroeconomic equilibrium and the impact of monetary and fiscal disturbances. Attention is also devoted to a variety of topics related to the

current state of macroeconomic policy. Prerequisite: ECO 6120.

EDC7980 (ECON 6904) LECTURES DIRIGÉES / DIRECTED readings (3cr.)
Education (MA / MEd)

Introduction

The Faculty is directed by a council responsible to the Senate of the University. The Council is composed of the dean, the two vice-deans, the secretary of the Faculty, the four program directors, one full-time student per program and six professors.

The executive committee of the Faculty is composed of the dean, the two vice-deans, the secretary of the Faculty and three professors.

The various programs offered by the Faculty are governed by the program council composed of the program director and professors.

Other regular committees of the Faculty are the research and staff development committee, the educational policy committee, the educational equity committee, the graduate studies programs council and the executive committee of graduate studies programs.

General Information

In addition to consulting the information given below, students registered for a graduate degree in education should refer to the general regulations published by the Faculty of Graduate and Postdoctoral Studies (FGPS) for the current year. These regulations apply to all master's and doctoral students at the University of Ottawa and contain additional information on program requirements, registration, supervision of students, examinations and grading, time limits, thesis regulations, fees.

Master in Education (MEd)

The master in education program includes a minimum of ten courses (30 credits) except in educational counselling, which requires a minimum of twelve courses (36 credits); normally a minimum of eight courses must be taken at the Faculty of Education (ten in the case of educational counselling). Courses taken in other faculties/universities must be related to the field of studies, and must have prior approval from the program director.

Master of Arts in Education (MA)

The master of arts in education program is intended for candidates who wish to undertake research in a specific domain of educational study. It is offered in the following six concentrations:

a) Organizational Studies in Education;
b) Teaching, Learning and Evaluation;
c) Second Language Education;
d) Society, Culture and Literacies;
e) Educational Counselling;
f) Health Professions Education.

Admission

It should be emphasized that the requirements for admission listed below are minimum requirements and do not guarantee admission to the program.

1. Candidates holding a baccalaureate with honours in education or equivalent (a general baccalaureate and a teaching certificate obtained after at least one year of teacher education), with a minimum overall undergraduate average of 70 per cent (B), may be admitted directly to the master's program, except for Educational Counselling (see item 3 below).

2. Candidates who hold an honours baccalaureate with at least 70 per cent (B) average but who do not hold an honours baccalaureate degree in education are required to take an Extended Program comprised of three additional courses. These courses are intended to expose candidates to foundational concepts, theories, and research in education. Candidates can request a reduction in the number of required courses.
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

1. SITE (School of Information Technology and Engineering)
2. ELG / EACJ (École d'ingénierie et de technologie de l'information)

Note: Participation in the co-operative master's option is subject to acceptance by a suitable sponsoring organization.

Admission to the graduate program in Electrical and Computer Engineering is governed by the General Regulations of the Ottawa-Carleton Information Technology and Engineering (SITE) at the University of Ottawa and the departments of Electronics and of Systems and Computer Engineering at the University of Ottawa.

In addition to these requirements, candidates must present a written outline of their research interests. Admission will depend on the availability of a thesis supervisor whose research interests are compatible with the student's area of interest.

Requests for admission are examined by an admissions committee.

To find the application deadline, please check the program-specific requirements under "Application Procedures and Information" at the following address: www.grad.uOttawa.ca/apply. Application kits are available on the Faculty of Education Web site at: www.education.uOttawa.ca

The Educational Counselling concentration has admission requirements that are distinct from those of the other concentrations in the Faculty of Education graduate programs. In addition to the regular admission requirements of the other concentrations, applicants must have a background in the social sciences, and in psychology in particular. Social sciences include, for example, psychology, social work, sociology, and criminology.

Application Procedure

Please visit the website www.grad.uOttawa.ca for most current information.

All completed files for admission to graduate studies will be examined by the admissions committee concerned.

To find the application deadline, please check the program-specific requirements under "Application Procedures and Information" at the following address: www.grad.uOttawa.ca/apply.

The Faculty of Education as well as the Faculty of Graduate and Postdoctoral Studies cannot give assurance that a candidate whose application and supporting documents are received after the closing dates will be able to register for the session requested.

Candidates who wish to be admitted to a graduate program in Education must complete the application on-line, print and send a copy to the academic secretariat of the Faculty of Education. Supporting documents not attached to the application form must be sent to the same office.

Documents Required for Admission

a) The application for admission should be duly filled on-line and include payment of application fee;

b) Official transcripts of the applicant's academic record, including a proof of degree, covering all previous university studies;

c) A teaching certificate if the candidate does not hold a baccalaureate degree with honours in education;

d) MA in Educational Counselling: candidates should provide a curriculum vitae and a narrative statements of four pages that explains (a) how previous academic and work experiences (whether paid or volunteer) prepare them for the MEd program in Educational Counselling and (b) how the program will help them realize their career goals and (c) what field of research is of interest to the candidate;

e) MEd in Educational Counselling: candidates should provide a curriculum vitae and a narrative statements of two that explains (a) how previous academic and work experiences (whether paid or volunteer) prepare them for the MEd program in Educational Counselling and (b) how the program will help them realize their career goals;

f) At least two confidential letters of recommendation in a sealed envelope with signatures supplied by professors or employers who have known the applicant and are familiar with the applicant's work. These letters should discuss the applicant's suitability for a professional career in counselling;

g) A request for equivalence of advanced standing, if applicable (see the section "Equivalence and Advanced Standing" under each program).

Evaluation of Applications

When an admission dossier is completed, it will be evaluated by the admissions committee. All candidates will be informed of their status in writing.

Candidates for the MEd in Educational Counselling are selected according to the criteria listed below based on all the relevant information in the
admission file. These criteria are ranked in order of the weight they are given in selection decisions:

1. academic achievement
2. preparation for the MEd program in Educational Counselling
3. personal suitability for a career in counselling

In exceptional cases, an applicant may be asked to attend a selection interview at the Faculty.

**Change of Program**

Students may enrol only in the program for which they have been formally accepted.

A student who wishes to progress from one level of studies to a higher level (master's to doctoral) must make a new application to the faculty and may enroll in the new program only upon receipt of a new offer or admission.

**Language Requirements**

Applicants whose first language is neither French nor English and who wish to be admitted to English-language graduate programs in the Faculty of Education, must provide proof of proficiency in English:

Applicants submitting a TOEFL score as proof of proficiency in English,

1. in the internet-based version must have a minimum score of at least 100 with at least 25 in the writing component or 600 in the pencil and paper version of the TOEFL and a minimum TWE score of at least 5.0 to have their applications considered; and,
2. must also submit other evidence that their proficiency in English is sufficient to pursue graduate work in English. Such evidence may include:
   a) Successful completion of advanced third and fourth year university undergraduate courses in English;
   b) Letters of references assessing their abilities in English; or,
   c) Sample of writing in English (research paper, report or publication).

Applicants who have an overall score of at least 100 but lower than 25 in the written component of the internet-based version or over 600 with less than 5.0 in the TWE in the paper-based version must complete the course ESL2361 Advanced Composition Skills for Second Language Learners during the first session of their program in addition to the courses of their regular or extended program).

For candidates applying to the MEd program, please be advised that under the above circumstances, an additional session may then be necessary to complete the program.

Please contact the Faculty of Education at educprog@uottawa.ca or at 613-562-5804 for information about other language tests accepted.

**Scholarships**

Information on scholarships other than those mentioned below can be obtained by consulting the brochure "Scholarships and Financial Assistance for Students Registered in Full-Time Graduate Studies" or reference books available at the FGPS Awards Office. Information is also available on the Internet at www.grad.uottawa.ca/awards/index.html

**PDK Educational Research Scholarship**

A $500 scholarship awarded annually in the fall by the University of Ottawa Chapter (PDK) “based for the most part on a written description prepared by each applicant showing: (1) how the research project will help fill a pressing, current and practical educational need; and (2) how the award will enrich the quality of the research to be undertaken”. Applications are available from the academic secretariat of the Faculty of Education.

**Fonds commémoratif Marie-Jeanne Rossier (née Roulet)**

This fund serves as a scholarship of $1000 awarded to a Francophone who wishes to study or specialize in the field of learning disabilities. Applications are available from the academic secretariat of the Faculty of Education. Requests should be returned by December 1 to the secretariat.

**Residence**

All students admitted on a full-time basis must complete a minimum of two sessions of full-time registration.

**Language of Instruction**

The Faculty offers courses in English, French and some in both languages. Attention is given to offering a balanced selection of courses each year.

**Equivalence and Advanced Standing**

1. Upon presentation of an official transcript and the course description, the program director may grant equivalence for graduate work done
in another recognized university or as a special student in the Faculty of Education. A maximum of two courses (six credits) may be granted.
2. To take into account differences in university courses, candidates may be asked to write an examination demonstrating competence in their area of study.
3. Three additional credits may be recognized for a candidate who has successfully completed part III of a program of additional qualifications identified by the admissions committee as directly related to the concentration in the MEd in which the student is admitted. Candidates must request in writing an evaluation of additional qualifications for credit at the time of their application for admission.
4. No credits will be given for the following:
   a) courses or work completed six years or more before the date of the request for admission;
   b) coursework with a final grade lower than "B";
   c) courses that have already been credited towards another degree except for University of Ottawa graduate certificate courses in education, when applicable.

The Faculty of Education as well as the Faculty of Graduate and Postdoctoral Studies cannot give assurance that a candidate whose application and supporting documents are received after the closing dates will be able to register for the session requested.

Candidates who wish to be admitted to a graduate program in Education must complete the application on-line, print and send a copy to the academic secretariat of the Faculty of Education. Supporting documents not attached to the application form must be sent to the same office.

Program Requirements

Master in Education (MEd)

1. All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:
   a) Organizational Studies in Education;
   b) Teaching, Learning and Evaluation;
   c) Second Language Education;
   d) Society, Culture and Literacies;
   e) Educational Counselling;
   f) Health Professions Education.

2. Candidates in Organizational Studies in Education, Teaching, Learning and Evaluation and Second-Language Teaching Education are required to take a total of ten courses (30 credits), and a minimum of five of these courses must be within their concentration.

3. Candidates in Educational Counselling are required to take a total of twelve courses (36 credits), and a minimum of seven of these courses must be within their concentration.

4. Candidates in Health Professions Education are required to take ten courses (30 credits). A minimum of four courses must be within their concentration.

5. All candidates in all concentrations, except Health Professions Education, are required to take the following two courses as part of their MEd program:

   EDU5190 INTRODUCTION TO RESEARCH IN EDUCATION (3cr.)
   EDU5199 SYNTHESIS SEMINAR (3cr.)

6. All candidates in Health Professions Education are required to take the following three courses as part of the MEd program:

   EDU5190 INTRODUCTION TO RESEARCH IN EDUCATION (3cr.)
   EDU5301 PRINCIPLES OF EDUCATIONAL PLANNING FOR THE HEALTH PROFESSIONS - Part I (3cr.)
   EDU5302 PRINCIPLES OF EDUCATIONAL PLANNING FOR THE HEALTH PROFESSIONS - PART II (3cr.)

7. Candidates in all concentrations are permitted to choose three optional courses according to their professional interests.

8. Students taking courses at universities which have an agreement with the Faculty of Education may take up to three courses outside the faculty. For other students, the maximum number permitted is two.

Prior approval from the program director must be obtained at least one month before the beginning of any course not taken in the Faculty of Education.

Course Sequence:

EDU5190 INTRODUCTION TO RESEARCH IN EDUCATION (3cr.)
This course must be completed in the first session that it is available to students.

EDU5199 SYNTHESIS SEMINAR (3cr.)
This course must be completed in the last session in which the student is registered in the program.

Extended Program courses can be taken concurrently with regular MEd courses. However, all Extended Program requirements must be completed before
students are permitted to register in EDU5199.

MEd students may include one or more of the compulsory MA courses among their optional courses.

Concentrations

Organizational Studies in Education
In addition to the two compulsory courses, EDU 5190 and EDU 5199, students must select at least five courses from the following.

EDU5222 ETHOGRAPHIES IN EDUCATION (3cr.)
EDU5230 LEADERSHIP IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU5231 (3cr.)
EDU5232 HUMAN RELATIONS IN EDUCATIONAL ADMINISTRATION (3cr.)
EDU5234 SUPERVISION AND PERFORMANCE MANAGEMENT IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU5236 EDUCATION FINANCE (3cr.)
EDU5260 INTRODUCTION TO CURRICULUM STUDIES (3cr.)
EDU5262 CURRICULUM, CULTURE, AND TECHNOLOGIES (3cr.)
EDU5263 INTRODUCTION TO EDUCATIONAL ADMINISTRATION (3cr.)
EDU5265 INTERNATIONALIZATION OF CURRICULUM STUDIES (3cr.)
EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE (3cr.)
EDU5461 MANAGING CHANGE IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES (3cr.)
EDU6422 EDUCATION AND DEMOCRATIC COMMUNITIES (3cr.)
EDU6423 POLITICS AND POLICY IN EDUCATION (3cr.)
EDU6424 ETHICS AND DIVERSITY IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU6426 CITIZENSHIP AND GLOBAL EDUCATION (3cr.)
EDU6427 EDUCATION AND SEXUALITY (3cr.)
EDU6428 SOCIAL CONTEXTS OF EDUCATION (3cr.)
EDU6433 PROGRAM IMPLEMENTATION IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU6460 CURRICULUM, CULTURE, AND LANGUAGE (3cr.)
EDU7130 SEMINAR IN ORGANIZATIONAL STUDIES (3cr.)
EDU7135 RESEARCH LITERACIES AND EDUCATIONAL ADMINISTRATION (3cr.)

Teaching, Learning and Evaluation
In addition to the two compulsory courses, EDU 5190 and EDU 5199, students must select at least five courses from the following list.

EDU5160 MATHEMATICAL THINKING ACROSS THE MATHEMATICS CURRICULUM (3cr.)
EDU5188 INTEGRATION OF TECHNOLOGY IN EDUCATION (3cr.)
EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5203 SOCIAL CONTEXTS OF TEACHING AND LEARNING (3cr.)
EDU5204 FOUNDATIONS OF ADULT EDUCATION (3cr.)
EDU5206 PROGRAM PLANNING IN ADULT EDUCATION (3cr.)
EDU5230 LEADERSHIP IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU5253 THEORIES OF LEARNING APPLIED TO TEACHING (3cr.)
EDU5258 LEARNING DIFFERENCES IN EDUCATION (3cr.)
EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5265 INTERNATIONALIZATION OF CURRICULUM STUDIES (3cr.)
EDU5274 TESTS AND MEASUREMENT IN EDUCATIONAL COUNSELLING (3cr.)
EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5287 EMERGING TECHNOLOGIES AND LEARNING (3cr.)
EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE (3cr.)
EDU5357 CURRENT ISSUES IN MATHEMATICS EDUCATION (3cr.)
EDU5358 TEACHING AND LEARNING IN THE ARTS (3cr.)
EDU5381 CREATIVITY IN EDUCATIONAL SETTINGS (3cr.)
EDU5384 INTEGRATED APPROACHES TO LANGUAGE CURRICULUM (3cr.)
EDU5385 CRITICAL PERSPECTIVES ON CHILDREN'S LITERATURE AND LEARNING (3cr.)
EDU5386 SEMINAR ON LITERACY (3cr.)
EDU5388 SELECTED TOPICS IN THE EDUCATION OF PEOPLE WITH EXCEPTIONALITIES (3cr.)
EDU5391 INTERACTION OF RESEARCH AND PRACTICE (3cr.)
EDU5399 DEVELOPMENT OF ASSESSMENT INSTRUMENTS (3cr.)
EDU5461 MANAGING CHANGE IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU5487 SEMINAR ON ISSUES IN RESEARCH IN SPECIAL EDUCATION (3cr.)
EDU5499 CURRENT METHODS OF STUDENT ASSESSMENT (3cr.)
EDU6193 FOUNDATIONS OF MEASUREMENT AND TESTING (3cr.)
EDU6200 THE ADULT EDUCATOR: ROLES AND BEHAVIOUR (3cr.)
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

- MA candidates in Organizational Studies in Education, Teaching, Learning and Evaluation,
- Second Language Education,
- Society, Culture and Literacies,
- and administrative procedures.

The available graduate courses are listed below, grouped by subject area. Course descriptions are to be found in the departmental section of the appropriate college.

**Admission**

- **EDU8506 ENJEUX ÉPISTÉMOLOGIQUES ET MÉTHODOLOGIQUES DE LA RECHERCHE EN ÉDUCATION**
  - Study of the fundamental aspects of qualitative research in education: approaches, characteristics, and strategies.
  - Topics of current interest will be selected for intensive study.

- **EDU7999 THÈSE DE MAÎTRISE EN ÉDUCATION / MA THESIS IN EDUCATION**
  - Examination of the implications on teaching practice and learning outcomes in the integration of technology studies across the curriculum.

- **EDU6571 SÉMINAIRE EN DÉVELOPPEMENT PROFESSIONNEL ET EN PLANIFICATION DE CARRIÈRE**
  - Examination of common tests and inventories used in guidance and counselling; selection, administration, scoring, and interpretation of tests in educational.

- **EDU6433 PROGRAM IMPLEMENTATION IN EDUCATIONAL ORGANIZATIONS**
  - Analysis of the main theories of learning. Study of the applications of these theories to educational practices.

- **EDU5757 ENJEUX ACTUELS EN ENSEIGNEMENT ET APPRENTISSAGE DES MATHÉMATIQUES**
  - Examination of the uses and applications of these methods. (Reservé aux étudiants de doctorat.)

- **EDU5687 MODÈLES D'INTÉGRATION DES TECHNOLOGIES DE L'INFORMATION ET DE LA COMMUNICATION EN CONTEXTES**
  - Critical examination of current literature on managing change in educational organizations; theories of change, restructuring, organizational reform and reduction, incompletely specified machines, state assignments and series-parallel decomposition. Fundamental

- **EDU5660 THÉORIE ET PRATIQUE DES PROGRAMMES D'ÉTUDES**

- **EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE**

- **EDU5253 THEORIES OF LEARNING APPLIED TO TEACHING**

- **EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION**

- **EDU5210 PHILOSOPHIES OF EDUCATION**

- **EDU5221 HISTORICAL NARRATIVES AND EDUCATION**

- **EDU5222 ETHNOGRAPHIES IN EDUCATION**

- **EDU5386 SEMINAR ON LITERACY**

- **EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRAXIS**

- **EDU6146 SECOND LANGUAGE LEARNING THEORIES**

- **EDU6203 LEARNING AND LITERACIES**

- **EDU6241 SECOND LANGUAGE PROGRAM AND POLICY DEVELOPMENT AND EVALUATION**

- **EDU7141 CURRENT RESEARCH IN SECOND LANGUAGE EDUCATION**

- **EDU8147 SELECTED TOPICS IN SECOND LANGUAGE EDUCATION**

**Second Language Education**

In addition to the two compulsory courses, EDU 5190 and EDU 5199, students must select at least five courses from the following:

- **EDU5146 SOCIAL, POLITICAL AND CULTURAL ISSUES IN SECOND LANGUAGE EDUCATION**

- **EDU5242 TRENDS IN SECOND LANGUAGE TEACHING**

- **EDU5244 BILINGUAL, MULTILINGUAL AND MINORITY CONTEXTS OF LANGUAGE EDUCATION**

- **EDU5245 TEACHING ORAL COMMUNICATION AND LITERACY IN A SECOND LANGUAGE**

- **EDU5386 SEMINAR ON LITERACY**

- **EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRAXIS**

- **EDU6146 SECOND LANGUAGE LEARNING THEORIES**

- **EDU6203 LEARNING AND LITERACIES**

- **EDU6241 SECOND LANGUAGE PROGRAM AND POLICY DEVELOPMENT AND EVALUATION**

- **EDU7141 CURRENT RESEARCH IN SECOND LANGUAGE EDUCATION**

- **EDU8147 SELECTED TOPICS IN SECOND LANGUAGE EDUCATION**

**Society, Culture and Literacies**

- **EDU5210 PHILOSOPHIES OF EDUCATION**

- **EDU5221 HISTORICAL NARRATIVES AND EDUCATION**

- **EDU5222 ETHNOGRAPHIES IN EDUCATION**

- **EDU5386 SEMINAR ON LITERACY**

- **EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRAXIS**

- **EDU5465 GLOBALIZATION AND COMPARATIVE EDUCATION**

- **EDU5466 RACISM AND ANTIRACISM IN EDUCATION**

- **EDU6203 LEARNING AND LITERACIES**

- **EDU6373 EDUCATION OF MARGINALIZED YOUTH**

- **EDU6421 PUBLIC MEMORY, LIVED HISTORIES AND EDUCATION**

- **EDU6422 EDUCATION AND DEMOCRATIC COMMUNITIES**

- **EDU6425 MORAL REGULATION AND EDUCATION**

- **EDU6426 CITIZENSHIP AND GLOBAL EDUCATION**

- **EDU6427 EDUCATION AND SEXUALITY**

- **EDU6428 SOCIAL CONTEXTS OF EDUCATION**

- **EDU6429 PEDAGOGIES OF DIFFERENCE**

- **EDU7133 SELECTED TOPICS IN SOCIETIES, CULTURES AND LANGUAGES**

**Educational Counselling**

In addition to the two compulsory courses, EDU 5190 and EDU 5199, students must take a minimum of seven courses in the concentration, including the following six courses:

- **EDU5270 ETHICAL AND LEGAL DIMENSIONS OF COUNSELLING**

- **EDU5271 COUNSELLING: THEORIES AND PRACTICES I**

- **EDU5471 MICRO-COUNSELLING**

- **EDU5473 THEORIES OF CAREER DEVELOPMENT**

- **EDU6473 INTERNSHIP IN COUNSELLING I**

- **EDU6474 INTERNSHIP IN COUNSELLING II**

Note: Students cannot enrol in more than one internship in any one session.

**Optional courses:**

- **EDU5274 TESTS AND MEASUREMENT IN EDUCATIONAL COUNSELLING**

- **EDU5371 SELECTED TOPICS IN EDUCATIONAL COUNSELLING**

- **EDU5372 MODELS OF CONSULTATION AND CASE MANAGEMENT IN EDUCATIONAL COUNSELLING**

- **EDU5474 MULTICULTURAL COUNSELLING**

- **EDU6271 COUNSELLING: THEORIES AND PRACTICE II**

- **EDU6373 EDUCATION OF MARGINALIZED YOUTH**

- **EDU6472 SEMINAR AND PRACTICUM IN GROUP COUNSELLING**
Health Professions Education
In addition to the three compulsory courses, students must take four courses in their concentration, that is, one in each of the four areas listed below.

Also, students must include at least one of the following (EDU 5202, EDU 5261, EDU 5286 and EDU 5298) among the four courses.

One of the courses from their concentration may be replaced by a course related to one of the core areas below (with the approval of the Director of the Graduate Studies Program).

Teaching and learning
EDU5105 INTER-PROFESSIONAL EDUCATION IN THE HEALTH PROFESSIONS (3cr.)
EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRACTICE (3cr.)
EDU5466 RACISM AND ANTI-RACISM IN EDUCATION (3cr.)
EDU6200 THE ADULT EDUCATOR: ROLES AND BEHAVIOUR (3cr.)
EDU6204 LEARNING IN ADULTHOOD (3cr.)

Curriculum
EDU5206 PROGRAM PLANNING IN ADULT EDUCATION (3cr.)
EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE (3cr.)
EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES (3cr.)

Learning assessment
EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU6193 FOUNDATIONS OF MEASUREMENT AND TESTING (3cr.)
EDU6293 ASSESSMENT FOR LEARNING (3cr.)

Technology and Education
EDU5188 INTEGRATION OF TECHNOLOGY IN EDUCATION (3cr.)
EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5287 EMERGING TECHNOLOGIES AND LEARNING (3cr.)

Interim Report (EDU8999)

Research requirements for admission to the doctoral program

Candidates who have a Master in Education without thesis (MEd), and wish to pursue a PhD, must complete an interim report before requesting admission to the PhD. Candidates should meet initially with the program director. The requirements of the Interim Report are determined by the Faculty of Education. To be granted permission by the Director of Graduate Studies to enroll in EDU 8999 (Interim Report - 6 credits per session),

Candidates must:
- have a master's degree;
- have basic credits in education;
- have research methodology credits related to their chosen research area;
- have a strong academic record, with at least a B+ average;
- submit a three or four page summary of their research interests.

The Graduate Studies Program in Education must identify a professor able to supervise the student.

Duration of the program
The requirements of the program are usually fulfilled within two years. The maximum time permitted is four years from the date of initial registration.

MA(Ed) Program Requirements

1. MA candidates in Organizational Studies in Education, Teaching, Learning and Evaluation, Second Language Education, Society, Culture and Literacies, and Health Professions Education must complete a minimum of six courses (18 credits).

2. MA candidates in Educational Counselling must complete a minimum of eight courses (24 credits).

3. Candidates in all concentrations must complete two compulsory courses:
EDU6290 RESEARCH IN EDUCATION (3cr.)
and one of the following:
EDU6191 QUANTITATIVE RESEARCH (3cr.)
EDU7190 QUALITATIVE RESEARCH I (3cr.)
EDU7396 TECHNIQUES OF DOCUMENT ANALYSIS IN EDUCATIONAL RESEARCH (3cr.)
EDU7397 DATA COLLECTION INSTRUMENTS (3cr.)
a) MA candidates in Organizational Studies in Education, Teaching, Learning and Evaluation, Second Language Education, Society, Culture and Literacies, and Health Professions Education must complete four courses of which at least three must be in their concentration.

b) MA candidates in Educational Counselling must complete the following six compulsory courses:
EDU5270 ETHICAL AND LEGAL DIMENSIONS OF COUNSELLING (3cr.)
EDU5271 COUNSELLING: THEORIES AND PRACTICES I (3cr.)
EDU5471 MICRO-COUNSELLING (3cr.)
EDU5473 THEORIES OF CAREER DEVELOPMENT (3cr.)
EDU6473 INTERNshiP IN COUNSELLING I (3cr.)
EDU6474 Iternship in Counselling II (3cr.)

Note: Students cannot enrol in more than one internship in any one session.

c) Candidates in Health Professions Education must take two of the four courses in their concentration from among the following: EDU 5202, EDU 5261, EDU 5286, EDU 5298, EDU 6101.

The research and thesis requirement includes:
a) submission of a written research proposal that meets with the approval of a thesis committee (EDU 6997);
b) presentation and defence of a thesis (EDU 7999).

All compulsory courses must be taken at the Faculty of Education. Students must obtain approval from the program director at least one month in advance for any course taken outside the faculty.

Taking into account the student's previous studies, the faculty reserves the right to add to the program of studies any courses which are deemed necessary. Normally, these additional requirements are specified at the beginning of the program.

The individual program of studies is prepared by the thesis director and approved by the program director.

Exceptional students registered in the MA program may be permitted to transfer to the PhD program without completing an MA thesis, under certain conditions. For details, see "Transfer from MA to PhD" under "Programs" in "Doctor of Philosophy (Education)".

**Concentrations**

Courses listed under the following concentrations are not the only courses available in the MA program. Courses listed in the MEd course bank are also recognized as MA courses.

**Organizational Studies in Education**
EDU7000 LECTURE DIRIGEE / DIRECTED READING (3cr.)

**Teaching, Learning and Evaluation**
EDU7000 LECTURE DIRIGEE / DIRECTED READING (3cr.)
EDU7163 THEORETICAL PERSPECTIVES IN MATHEMATICS EDUCATION (3cr.)
EDU7193 ADVANCED MEASUREMENT THEORIES (3cr.)
EDU7394 SELECTED TOPICS-MEASUREMENT II (3cr.)
EDU8296 SEMINAR IN MEASUREMENT AND EVALUATION (3cr.)

**Second Language Education**
EDU7000 LECTURE DIRIGEE / DIRECTED READING (3cr.)
EDU7141 CURRENT RESEARCH IN SECOND LANGUAGE EDUCATION (3cr.)
EDU8147 SELECTED TOPICS IN SECOND LANGUAGE EDUCATION (3cr.)

**Society, Culture and Literacies**
EDU7000 LECTURE DIRIGEE / DIRECTED READING (3cr.)

**Educational Counselling**
EDU5270 ETHICAL AND LEGAL DIMENSIONS OF COUNSELLING (3cr.)
EDU5271 COUNSELLING: THEORIES AND PRACTICES I (3cr.)
EDU5471 MICRO-COUNSELLING (3cr.)
EDU5473 THEORIES OF CAREER DEVELOPMENT (3cr.)
EDU6473 INTERNshiP IN COUNSELLING I (3cr.)
EDU6474 Iternship in Counselling II (3cr.)

**Common Courses**
EDU5191 METHODS AND INTERPRETATION IN QUANTITATIVE RESEARCH I (3cr.)
EDU6191 QUANTITATIVE RESEARCH (3cr.)
EDU6290 RESEARCH IN EDUCATION (3cr.)
EDU7190 QUALITATIVE RESEARCH I (3cr.)
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

- Organizational Studies in Education;

1 - Project Option
aided design for electronic circuits; computer and software engineering; digital and wireless communications; microwave and electromagnetics;

EDU8107 SEMINAR IN COUNSELLING AND SUPERVISION
Examen de recherches courantes effectuées en fonction de divers cadres conceptuels sur l'apprentissage et l'enseignement des langues secondes.

EDU6873 STAGE EN COUNSELLING II
EDU6671 LE COUNSELLING : THÉORIES ET PRATIQUE II
EDU6591 MÉTHODES ET INTERPRÉTATION EN RECHERCHE DE TYPE QUANTITATIF II

Seminar and minimum of 200 hours of supervised on-site experiences in an approved counselling setting: critical examination of selected helping techniques;

EDU6433 PROGRAM IMPLEMENTATION IN EDUCATIONAL ORGANIZATIONS
Analysis of current pedagogical models and practices, and of their underlying theoretical constructs; critical examination of traditional and recent perspectives on

EDU5799 ÉLABORATION D'INSTRUMENTS D'ÉVALUATION
rétroaction.
Mise en valeur de la participation de l’apprenant et de sa performance optimale. Étude des rôles des personnes intervenantes. Harmonisation des évaluations à
premier cycle que des études supérieures. Analyse des examens écrits et oraux et d'épreuves portant sur l'accomplissement de tâches.

EDU5105 INTER-PROFESSIONAL EDUCATION IN THE HEALTH PROFESSIONS (3cr.)
EDU5188 INTEGRATION OF TECHNOLOGY IN EDUCATION (3cr.)
EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5206 PROGRAM PLANNING IN ADULT EDUCATION (3cr.)
EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5287 EMERGING TECHNOLOGIES AND LEARNING (3cr.)
EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5301 PRINCIPLES OF EDUCATIONAL PLANNING FOR THE HEALTH PROFESSIONS - Part I (3cr.)
EDU5302 PRINCIPLES OF EDUCATIONAL PLANNING FOR THE HEALTH PROFESSIONS – Part II (3cr.)
EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRACTICE (3cr.)
EDU5466 RACISM AND ANTIRACISM IN EDUCATION (3cr.)
EDU6101 SEMINAR IN HEALTH PROFESSIONS EDUCATION (3cr.)
EDU6193 FOUNDATIONS OF MEASUREMENT AND TESTING (3cr.)
EDU6200 THE ADULT EDUCATOR: ROLES AND BEHAVIOUR (3cr.)
EDU6204 LEARNING IN ADULTHOOD (3cr.)
EDU6293 ASSESSMENT FOR LEARNING (3cr.)
EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES (3cr.)

Duration of the program
The requirements of the program are usually fulfilled within two years. The maximum time permitted is four years from the date of initial registration.

Registration of Thesis Topic
Master's students must register their thesis topic by the end of the second session of studies.

Thesis Supervision and Thesis Submission
The program director ensures that all procedures for thesis supervision and thesis submission specified by the Faculty of Graduate and Postdoctoral Studies and the program council of the faculty are followed.
At the time of admission, the Faculty of Education designates a thesis adviser in consultation with the professor concerned.

Collaborative Program in Women's Studies at the Master's Level
The MA Program in education participates in the collaborative program in women's studies at the master's level. This program has been established for students wishing to enrich their graduate education by including an interdisciplinary component in women's studies. The specific requirements of collaborative program include two core courses in women's studies, four courses in education, one of which is compulsory (EDU 6290), and a thesis on a topic related to women's studies.
Students should normally apply for acceptance in women's studies collaborative program at the same time as they apply for admission to the MA program in education. For further details, please consult the women's studies brochure of the Faculty of Graduate and Postdoctoral Studies.

Transfer from MA to PhD
Exceptional students registered in the MA program may be permitted to transfer to the PhD program without completing an MA thesis, provided they meet the following criteria:

a) their academic performance must be exceptional: they must have successfully completed five MA courses, including EDU 6290, with an average of (A) or (A+);
b) they must demonstrate an aptitude for high quality research;
c) they must be recommended by their thesis supervisor, two professors who are members of the Faculty of Graduate and Postdoctoral Studies and the professor responsible for the course EDU 6290. In the event that the thesis supervisor is the professor in charge of EDU 6290, a recommendation from a third professor and member of the FGPS will be required;
d) the transfer has been approved by the MA and PhD admissions committee and by the Faculty of Graduate and Postdoctoral Studies.
Students who have spent more than six sessions in the MA program will not be allowed to transfer. Transfers normally occur after the third session, but could occur as early as the second session.
Transfer students must pass all the courses required for the doctoral program in addition to the five MA courses already completed. The total number of courses required is thus eleven.

The PhD comprehensive examination must be completed within four sessions of the transfer and no later than within seven sessions following initial enrolment in the master's program. Failure to meet this deadline will lead to a return to the master's level.

Courses

EDU5105 INTER-PROFESSIONAL EDUCATION IN THE HEALTH PROFESSIONS (3cr.)
Examination of educational research, theory and practice related to the professional interdependence of work in the health concentration; study of the impact of interdisciplinary professional principles on teaching and learning strategies, curricular design, and evaluation strategies.

EDU5146 SOCIAL, POLITICAL AND CULTURAL ISSUES IN SECOND LANGUAGE EDUCATION (3cr.)
Examination of the social, political and cultural dimensions of learning and teaching an additional language; influences on learners, on opportunities for learning a language and on curriculum, pedagogical materials, and assessment.

EDU5160 MATHEMATICAL THINKING ACROSS THE MATHEMATICS CURRICULUM (3cr.)
Examination of the development of mathematical thinking with respect to a variety of concepts that appear in school mathematics curricula.

EDU5188 INTEGRATION OF TECHNOLOGY IN EDUCATION (3cr.)
Examination of the implications on teaching practice and learning outcomes in the integration of technology studies across the curriculum.

EDU5190 INTRODUCTION TO RESEARCH IN EDUCATION (3cr.)
Introduces students to understanding and applying research in education: researching a topic, critical reading, overview of various types of applied research.

EDU5191 METHODS AND INTERPRETATION IN QUANTITATIVE RESEARCH I (3cr.)
Introduction to the planning and interpretation of quantitative research. Data analysis of inferential statistics.

EDU5199 SYNTHESIS SEMINAR (3cr.)
A practicum in applied educational research leading to a written report demonstrating an integration of theoretical and practical knowledge and making a contribution to educational practice.

EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
Exploration of the concepts and strategies, methods of instruction in health education; examination of how instruction supports student learning.

EDU5203 SOCIAL CONTEXTS OF TEACHING AND LEARNING (3cr.)
Study of teaching and learning in differing social contexts with an emphasis on Canada; study of inclusive educational practices in response to the diversity of learners and communities.

EDU5204 FOUNDATIONS OF ADULT EDUCATION (3cr.)
Examination of foundational concepts in adult education; study of the extension of adult education to new social groups, the theoretically oriented research on participation, the phenomenon of self directed learning and other contemporary trends in the field.

EDU5206 PROGRAM PLANNING IN ADULT EDUCATION (3cr.)
Exploration of the fundamental concepts necessary to understand program development in adult education; review of conceptual frameworks for planning, recruitment, evaluation and research on program implementation and program building, procedures for making programs more meaningful to adult learners.

EDU5210 PHILOSOPHICAL PERSPECTIVES ON EDUCATION: FROM THE PRE-SOCRATICS TO THE POSTMODERNISTS (3cr.)
Inquiry into selected philosophical perspectives and their effects on contemporary educational thought and practice.

EDU5221 HISTORICAL NARRATIVES AND EDUCATION (3cr.)
Critical examination of educational issues in historical perspective: exploration of the roles of race, class, ethnicity, religion and gender in education; historical narratives and their implications.

EDU5222 ETHOGRAPHIES IN EDUCATION (3cr.)
Ethnographic perspectives on schools and school cultures, and on the relations between education and broader social-cultural forces.

EDU5230 LEADERSHIP IN EDUCATIONAL ORGANIZATIONS (3cr.)
Examination of selected approaches to leadership theory, training, and practice pertinent to the challenges of administration in contemporary educational
organizations.

**EDU5231 THE STRUCTURE OF EDUCATIONAL ORGANIZATIONS** (3cr.)
Overview and critical examination of theories of organization from diverse traditional and contemporary perspectives; relations between institutional structures and educational practices.

**EDU5232 HUMAN RELATIONS IN EDUCATIONAL ADMINISTRATION** (3cr.)
Examination of the working functions of administration in relation to people within and otherwise associated with educational organizations; study of motivation and decision-making within static and dynamic situations and of conflict within organizations.

**EDU5234 SUPERVISION AND PERFORMANCE MANAGEMENT IN EDUCATIONAL ORGANIZATIONS** (3cr.)
Critical examination of approaches to the evaluation and supervision of personnel and their implications for policy and practice in educational organizations.

**EDU5236 EDUCATION FINANCE** (3cr.)
Critical study of current issues in government policy on educational finance; implications for elementary, secondary and post-secondary education.

**EDU5242 TRENDS IN SECOND LANGUAGE TEACHING** (3cr.)
Study of conceptual frameworks and models of second language teaching; historical overview of major developments and current trends; critical analysis of theoretical foundations, methods and practices.

**EDU5244 BILINGUAL, MULTILINGUAL AND MINORITY CONTEXTS OF LANGUAGE EDUCATION** (3cr.)
Examination of models of bilingual and multilingual education in diverse contexts with an emphasis on Canada; analysis of issues related to the educational success of immigrants and members of minority groups and their integration into schools and society.

**EDU5248 TEACHING ORAL COMMUNICATION AND LITERACY IN A SECOND LANGUAGE** (3cr.)
Critical examination of practices for the teaching and assessment of oral communication and literacy in a second language; instructional practices relating to grammar, vocabulary and pronunciation.

**EDU5253 THEORIES OF LEARNING APPLIED TO TEACHING** (3cr.)
Critical survey of theories of learning in historical and contemporary perspectives and their pedagogical implications for classroom practices.

**EDU5258 LEARNING DIFFERENCES IN EDUCATION** (3cr.)
Examination and critical analysis of research and practice related to the teaching and learning of people with learning differences; diverse educational contexts and perspectives; social construction of exceptionalities.

**EDU5260 INTRODUCTION TO CURRICULUM STUDIES** (3cr.)
Overview of recurring curriculum issues in historical and contemporary perspectives; introduction to the practices of curriculum theorizing; investigation of the effects of shifting paradigms within the field of curriculum studies.

**EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION** (3cr.)
Examination of theory for current practices related to curriculum design in health professions.

**EDU5262 CURRICULUM, CULTURE, AND TECHNOLOGIES** (3cr.)
Exploration of the theoretical and practical issues of curriculum and program design in relation to culture and technology; examination of the relationships between curriculum, information culture, and E-learning; investigation of the impact of cyber curriculum on cultural identities of teachers and learners.

**EDU5263 INTRODUCTION TO EDUCATIONAL ADMINISTRATION** (3cr.)
Survey of the theories, research, and practices that have shaped the field of educational administration as both an applied profession and as an area of scholarly inquiry; implications for people, educational structures, and institutional purposes.

**EDU5265 INTERNATIONALIZATION OF CURRICULUM STUDIES** (3cr.)
Investigation of contemporary issues in curriculum studies within an international context; analysis of curriculum reform initiatives in other countries; examination of current trends in international and transnational curriculum movements; exploration of alternative curricular arrangements within global, national, and local contexts.

**EDU5270 ETHICAL AND LEGAL DIMENSIONS OF COUNSELLING** (3cr.)
Examination of professional ethical standards and codes of conduct for counsellors; legal and legislative context of counselling; application of ethical decision making; ethical dimensions of professional relationships.

**EDU5271 COUNSELLING: THEORIES AND PRACTICES I** (3cr.)
Critical examination of major personality and counselling theories.

**EDU5274 TESTS AND MEASUREMENT IN EDUCATIONAL COUNSELLING** (3cr.)
Examination of common tests and inventories used in guidance and counselling; selection, administration, scoring and interpretation of tests in educational
settings.

**EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION (3cr.)**
Study of the impact of computer technology on communication and instructional techniques for health professions education; exploration of distance education, on-line learning, and low and high fidelity simulation.

**EDU5287 EMERGING TECHNOLOGIES AND LEARNING (3cr.)**
Research, theory and practice concerning the use of emerging technologies to facilitate learning; the impact of new media on teaching and learning strategies, on curriculum change, on learner attitudes and motivation, and on higher order learning.

**EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)**
Exploration of the assessment formats used to evaluate the domains of clinical competence in health care professional training at both the undergraduate and postgraduate levels; analysis of written and oral examinations, oral and performance-based testing.

**EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE (3cr.)**
Exploration of principles of effective program evaluation methods; planning; instrument development; data collection, processing and analysis; reporting and follow-up; survey of diverse models of evaluation.

**EDU5301 PRINCIPLES OF EDUCATIONAL PLANNING FOR THE HEALTH PROFESSIONS - Part I (3cr.)**
Exploration of practical approaches to planning, implementing, and evaluating programs in health professions education, examination of learning needs, learning objectives, learning methods and program evaluation.

**EDU5302 PRINCIPLES OF EDUCATIONAL PLANNING FOR THE HEALTH PROFESSIONS – PART II (3cr.)**
Exploration of concepts related to curricular reform, implementation of changes in education, selection of approaches to enable learning, and development of valid methods for evaluation of learning and programs of studies in the health professions. **Prerequisite: EDU 5301**

**EDU5357 CURRENT ISSUES IN MATHEMATICS EDUCATION (3cr.)**
Examination of current issues associated with mathematics education, such as educational equity, inquiry-based learning, classroom diversity, and the role of technology.

**EDU5358 TEACHING AND LEARNING IN THE ARTS (3cr.)**
Examination of the theoretical foundations of arts-based instruction and arts integration; investigation of the current methods of teaching, learning and evaluation in, about, with and through the arts in a variety of program areas.

**EDU5371 SELECTED TOPICS IN EDUCATIONAL COUNSELLING (3cr.)**
An examination of current issues in guidance and counselling.

**EDU5372 MODELS OF CONSULTATION AND CASE MANAGEMENT IN EDUCATIONAL COUNSELLING (3cr.)**
Analysis of roles of counsellor as leader, team member, and integral resource in developing, mobilizing, and/or utilizing school/community resources within a systems approach; personal development of the skills of co-ordination, collaboration, brokering, and consultation.

**EDU5381 CREATIVITY AND THE LEARNING PROCESS (3cr.)**
Analysis of the nature of creativity; concepts of creative thinking and creative behaviours in educational settings; exploration of applications of creativity designed for foster personal expressiveness; investigation of methods appropriate for assessing creative processes and products.

**EDU5384 INTERGRATED APPROACHES TO LANGUAGE CURRICULUM (3cr.)**
Theories and principles underlying the integrated approach to the teaching, learning and assessment of language and literacy (oral and written communication and media literacy); applications of language and literacy practices in specific contexts.

**EDU5385 CRITICAL PERSPECTIVES ON CHILDREN'S LITERATURE AND LEARNING (3cr.)**
Critical investigation of children's literature as a factor in social learning.

**EDU5386 SEMINAR ON LITERACY (3cr.)**
Theoretical perspectives in various areas of the field of literacy.

**EDU5388 SELECTED TOPICS IN THE EDUCATION OF PEOPLE WITH EXCEPTIONALITIES (3cr.)**
Topics of current interest will be selected for intensive study.

**EDU5391 INTERACTION OF RESEARCH AND PRACTICE (3cr.)**
Examination of the strengths, challenges, limitations and possibilities for enhancing research based practice and practitioner relevant research using quantitative and/or qualitative research.

**EDU5399 DEVELOPMENT OF ASSESSMENT AND EVALUATION INSTRUMENTS (3cr.)**
Skill and performance; assessment, strategies for developing assessment instruments; interpretation and communication of evaluation results.
EDU5461 MANAGING CHANGE IN EDUCATIONAL ORGANIZATIONS (3cr.)
Critical examination of current literature on managing change in educational organizations; theories of change, restructuring, organizational reform and improvement.

EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRAXIS (3cr.)
Introduction to the interdisciplinary study of contemporary popular culture including theories of representation, texts, social identities, and their implications for school practices.

EDU5465 GLOBALIZATION AND COMPARATIVE EDUCATION (3cr.)
Examination of the interaction between globalization and education; theories of mass education in developing and industrialized countries; comparative perspectives on issues of educational innovation and reform.

EDU5466 RACISM AND ANTIRACISM IN EDUCATION (3cr.)
Theories of "race", racism and antiracism in education; exploration of the challenges of anti-racist education and change.

EDU5471 MICRO-COUNSELLING (3cr.)
Examination of counselling models, methods and skills; focus on developing personal resources in verbal and non-verbal communication within a counselling model.

EDU5473 THEORIES OF CAREER DEVELOPMENT (3cr.)
Analysis of career development theories with emphasis on issues in career decision making and transition.

EDU5474 MULTICULTURAL COUNSELLING (3cr.)
Exploration of practical and theoretical issues relevant to counselling individuals, groups, and families from diverse cultural backgrounds. Emphasis on development of attitudes, values, and skills that promote effective interpersonal relations and counselling.

EDU5487 SEMINAR ON ISSUES IN RESEARCH IN SPECIAL EDUCATION (3cr.)
Examination and critical analysis of current issues and research in special education; opportunities for individuals to concentrate on special interests.

EDU5499 CURRENT METHODS OF STUDENT ASSESSMENT IN TEACHING AND LEARNING (3cr.)
Essential principles, concepts, skills relative to the selection, construction, critique and use of current student assessment methods in education; emphasis on classroom practices; introduction to evaluation techniques external the classroom.

EDU5504 SÉMINAIRE D'INTÉGRATION EN ÉVALUATION DE PROGRAMMES (3cr.)
Intégration des théories, de la recherche et de la pratique en rapport avec l'évaluation de programmes. Production d'un rapport de recherche sur un thème lié à la théorie et/ou la pratique en évaluation de programmes. Préalables : a) EDU 5299 ou EDU 5699 ou PSY 7503 ou PSY 7505 ou CRM 6739 ou CRM 6339; b) EDU 6299 ou EDU 6699; c) PSY 7102 ou PSY 7502. Il est préférable que l'étudiant ait complété, en plus, un cours facultatif approuvé par la direction du certificat. Exclusion : PSY 5104.

EDU5575 FORMATION INTERPROFESSIONNELLE DANS LE DOMAINE DE LA SANTE (3cr.)

EDU5543 L’ENSEIGNEMENT DE LA COMMUNICATION ORALE ET DE LA LITTÉRATURE EN LANGUE SECONDE (3cr.)
Analyse critique des pratiques d’enseignement de la communication orale et de la littérature en langue seconde. Études des pratiques pédagogiques dans l’enseignement de la prononciation, du vocabulaire et de la grammaire.

EDU5546 ASPECTS SOCIAUX, POLITIQUES ET CULTURELS DE L’APPRENTISSAGE ET DE L’ENSEIGNEMENT D’UNE LANGUE SECONDE (3cr.)
Étude des dimensions sociales, politiques et culturelles dans l'apprentissage et l'enseignement d'une langue seconde. Examen de leur influence sur les apprenants, sur les conditions qui favorisent l'apprentissage d'une langue ainsi que sur le programme d'études, le matériel pédagogique et l'évaluation.

EDU5578 INFORMATION SCOLAIRE ET PROFESSIONNELLE (3cr.)
Aperçu de l'organisation et du fonctionnement des services d'orientation et d'information scolaires et professionnelles. Étude des différents systèmes provinciaux. Analyse, évaluation, classification et utilisation de différents types de documents.Initiation aux banques de données informatisées.

EDU5581 SCIENCES ET DIVERSEITÉS (3cr.)
Analyse des conditions de production du savoir scientifique dans divers contextes socio-culturels. Identification et analyse des principales problématiques reliées à l'enseignement et à l'apprentissage des sciences.

EDU5582 MODÈLES MÉDIATISÉS D’ENSEIGNEMENT (3cr.)
Étude des modèles médiatisés d'enseignement et de leurs applications en présentiel et à distance. Analyse des facteurs individuels et structurels de la réussite de
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

- Candidates in Health Professions Education must take two of the four courses listed below.

**EDU6200 THE ADULT EDUCATOR: ROLES AND BEHAVIOUR (3cr.)**
Examen des théories de l'apprentissage appliquées à l'éducation de l'apprenant adulte. Analyse critique des modèles de mises en pratique de ces théories en situation d'apprentissage.

**EDU6241 SECOND LANGUAGE PROGRAM AND POLICY DEVELOPMENT AND EVALUATION (3cr.)**
Introduction à la planification de la recherche de type quantitatif et à l'interprétation des observations qui en résultent. Analyse des données statistiques et fondements de la statistique inférentielle.

**EDU6259 RESEARCH AND CONTEMPORARY ISSUES IN TEACHING MODELS AND PRACTICES (3cr.)**
Analyse comparative des systèmes éducatifs au Canada et sur le plan international. Analyse des différentes réformes en cours. Étude des tendances en éducation.

**EDU630 LEADERSHIP IN MILIEU ÉDUCATIF (3cr.)**
Examen des thèmes et concepts de base en comportement organisationnel appliquées à l'environnement scolaire. Examen des principaux modèles, rôles et pratiques du leadership.

**EDU631 COMPORTEMENT ORGANISATIONNEL (3cr.)**
Étude des interactions entre la structure organisationnelle des entités scolaires et les comportements des acteurs.

**EDU635 LA POLITIQUE ET L'ÉDUCATION (3cr.)**

**EDU638 PRINCIPES D'ÉLABORATION ET DE GESTION DE PROJETS ÉDUCATIFS (3cr.)**
Étude des processus de conception et d'opérationnalisation de projets éducatifs propres à un établissement scolaire.

**EDU6426 CITIZENSHIP AND GLOBAL EDUCATION (3cr.)**
Exploration de la participation à la planification et à la réalisation des programmes éducatifs au niveau local et international. Étude des interactions entre la participation, la responsabilité sociale et la participation à l'éducation dans une perspective mondiale.

**EDU6474 INTERNSHIP IN COUNSELLING II (3cr.)**
Intervention pratique de counselling pour les individus, les groupes et les familles de diverses cultures. Étude du rôle des théories de la communication dans la pratique du counselling.

**EDU5760 COMPRÉHENSION ET RAISONNEMENT MATHÉMATIQUES EN MILIEU SCOLAIRE (3cr.)**
Étude des théories de l'apprentissage appliquées à l'éducation de l'apprenant adulte. Analyse critique des modèles de mises en pratique de ces théories en situation d'apprentissage.

**EDU5881 LA PÉDAGOGIE DE LA DIVERSITÉ (3cr.)**
Examen des théories de l'apprentissage appliquées à l'éducation de l'apprenant adulte. Analyse critique des modèles de mises en pratique de ces théories en situation d'apprentissage.

**EDU5901 ÉTUDE DES STEPS D'UN PROGRAMME ÉDUCATIF (3cr.)**
Étude de la planification et de la mise en œuvre de projets éducatifs de niveau supérieur. Analyse des stratégies de gestion de projets et de la prise de décision dans les projets éducatifs.

**EDU5911 ÉTUDE DES MODÈLES D'ÉDUCATION ET DE FORMATION (3cr.)**
Analyse des modèles d'éducation et de formation à l'échelle internationale. Étude des tendances et des défis dans le domaine de l'éducation et de la formation.

**EDU5921 ÉTUDES DES STEPS D'ÉTUDES ÉDUCATIVES (3cr.)**
Études des modèles d'éducation et de formation à l'échelle internationale. Étude des tendances et des défis dans le domaine de l'éducation et de la formation.

**EDU5931 ÉTUDES DES STEPS D'ÉTUDES ÉDUCATIVES (3cr.)**
Études des modèles d'éducation et de formation à l'échelle internationale. Étude des tendances et des défis dans le domaine de l'éducation et de la formation.

**EDU5941 ÉTUDES DES STEPS D'ÉTUDES ÉDUCATIVES (3cr.)**
Études des modèles d'éducation et de formation à l'échelle internationale. Étude des tendances et des défis dans le domaine de l'éducation et de la formation.

**EDU5951 ÉTUDES DES STEPS D'ÉTUDES ÉDUCATIVES (3cr.)**
Études des modèles d'éducation et de formation à l'échelle internationale. Étude des tendances et des défis dans le domaine de l'éducation et de la formation.
EDU5653 THÉORIÉS ET MODÈLES DE L’APPRENTISSAGE (3cr.)
Analyse des principales théories de l'apprentissage. Étude des applications de ces théories aux pratiques éducatives.

EDU5655 LE DÉVELOPPEMENT DE LA PERSONNALITÉ EN MILIEU ÉDUCATIF (3cr.)
Examen des théories de la personnalité et leurs applications en milieu éducatif. Analyse des liens interpersonnels dans la relation éducative selon la personnalité de l'élève et celle de son enseignante ou enseignant et de l'interaction enseignant-étudiant.

EDU5658 ÉDUCATION DIFFÉRENCIÉE (3cr.)
Description et analyse critique d'études et de pratiques de différenciation auprès de l'apprenant en difficulté. Dimensions sociales et politiques de la différenciation. La construction sociale de la différence. La prise en charge de l'apprenant en difficulté dans une construction de compétences.

EDU5660 THÉORIE ET PRATIQUE DES PROGRAMMES D’ÉTUDES (3cr.)
Étude des théories des programmes d'études explicites et implicites. Analyse des étapes de la mise en œuvre.

EDU5661 CONCEPTION DE PROGRAMMES EN ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ (3cr.)
Étude des fondements et des pratiques en matière de conception de programmes d'études pour les professionnels de la santé.

EDU5670 DIMENSIONS DÉONTOLOGIQUES ET JURIDIQUES DU COUNSELLING (3cr.)

EDU5671 LE COUNSELLING : THÉORIE ET PRATIQUE I (3cr.)
Étude des théories de la personnalité et du counselling et de leur impact sur la pratique du counselling éducatif.

EDU5672 COUNSELLING ET ORIENTATION AUPRÈS DES GROUPES MINORITAIRES (3cr.)
Études des caractéristiques des groupes minoritaires tels que les femmes, les gais et les lesbiennes, les handicapés, les minorités linguistiques et (ou) ethniques, etc., selon la perspective du counselling et de l'orientation de carrière.

EDU5674 TESTING ÉDUCATIONNEL ET PROFESSIONNEL (3cr.)
Initiation à la sélection, à l'administration et à l'interprétation des principaux tests associés au counselling éducationnel et professionnel (planification de carrière, intérêts, aptitudes, attitudes, valeurs). Accent sur l'utilisation et l'interprétation quantitative et qualitative des tests utilisés.

EDU5686 TECHNOLOGIE EN ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ (3cr.)
Étude de l'impact de la technologie de l'information sur la communication et des stratégies d'enseignement dans la formation des professionnels de la santé. Exploration de l'apprentissage à distance, de l'apprentissage en ligne ainsi que des simulations à basse et haute-fidélité.

EDU5687 MODÈLES D’INTÉGRATION DES TECHNOLOGIES DE L’INFORMATION ET DE LA COMMUNICATION EN CONTEXTES ÉDUCATIFS (3cr.)
Examen des mécanismes d'exploitation des technologies de l'information et de la communication (TIC) et de leurs liens avec les théories d'apprentissage. Analyse des pratiques exemplaires et des modèles émergents.

EDU5688 STRATÉGIES D’ÉVALUATION DES APPRENTISSAGES DANS LE DOMAINE DE LA SANTÉ (3cr.)
Étude des modèles utilisés pour évaluer les domaines de compétence clinique au cours de la formation des professionnels de la santé, tant au niveau des études de premier cycle que des études supérieures. Analyse des examens écrits et oraux et d'épreuves portant sur l'accomplissement de tâches.

EDU5699 ÉVALUATION DE PROGRAMMES (3cr.)

EDU5701 PRINCIPES DE PLANIFICATION SYSTÉMATIQUE EN ENSEIGNEMENT AUX PROFESSIONNELS DE LA SANTÉ, PARTIE I (3cr.)
Extraction d'une démarche méthodique de planification, de mise sur pied et d'évaluation de programmes éducatifs pour les professionnels de la santé; réflexion sur l'analyse des besoins, les objectifs, les stratégies d'enseignement et d'évaluation des apprentissages et de programmes.

EDU5702 PRINCIPES DE PLANIFICATION SYSTÉMATIQUE EN ENSEIGNEMENT AUX PROFESSIONNELS DE LA SANTÉ, PARTIE II (3cr.)
Extraction des concepts rattachés à la mise en œuvre d’un changement dans un milieu éducatif, au choix des méthodes qui favorisent les apprentissages et au développement d’outils valides pour évaluer les apprentissages et les programmes d’études en santé. Préalable : EDU 5701

EDU5752 ENSEIGNEMENT EN MILIEU MINORITAIRE FRANCOPHONE (3cr.)
Examen des enjeux reliés à l'apprentissage et l'enseignement en milieu minoritaire francophone permettant de préciser les démarches éducatives pertinentes.

EDU5757 ENJEUX ACTUELS EN ENSEIGNEMENT ET APPRENTISSAGE DES MATHÉMATIQUES (3cr.)
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

- Society, Culture and Literacies
- ELG5125 (EACJ 5205) QUALITY OF SERVICE MANAGEMENT FOR MULTIMEDIA APPLICATIONS
- EDU8190 QUALITATIVE RESEARCH II
- EDU7696 TECHNIQUES D'ANALYSE DE DOCUMENTS EN RECHERCHE ÉDUCATIONNELLE
- EDU7101 SELECTED TOPICS IN HEALTH PROFESSIONS EDUCATION
- EDU6672 MODÈLES ET STRATÉGIES D'INTERVENTION EN CONTEXTE DE COUNSELLING SCOLAIRE
- EDU6646 CONTEXTES MAJORITAIRES, MINORITAIRES ET PLURIETHNIQUES DE L'ENSEIGNEMENT ET DE L'APPRENTISSAGE
- EDU6472 SEMINAR AND PRACTICUM IN GROUP COUNSELLING

Exploration of principles of effective program implementation in educational settings.
pedagogical responses to particular views of citizenship.
Examination of the social ecology and educational problems and needs of diverse groups of marginalized youth in different contexts in Canada and in other
Analysis of current pedagogical models and practices, and of their underlying theoretical constructs; critical examination of traditional and recent perspectives on
Une analyse du développement professionnel avec insistance sur les problèmes du choix de carrière et d'adaptation.
Comparation de divers schèmes d'interprétation. Étude de divers types de bulletin scolaire. Analyse du processus de prise de décision, du suivi et de la rétroaction.
Évaluation des compétences polyvalentes. Étude des stratégies d'élaboration d'instruments de mesure. Interprétation et diffusion des résultats d'évaluation.
Application des théories et principes en administration éducationnelle à partir de problèmes identifiés par les participants.
Examen de l'importance des relations avec la communauté scolaire. Approfondissement du concept de partenariat, des modèles de répartition des pouvoirs, des techniques de communication efficace, du marketing des produits éducatifs et du concept de client et d'usager.
Étude des théories et pratiques d'organisation en gestion scolaire : élaboration de politiques, traitement et diffusion de l'information, résolution de problèmes, gestion du temps.
Développement des ressources personnelles du conseiller. Exploitation de la communication verbale et non verbale dans une situation de microcounselling.
Une analyse du développement professionnel avec insistance sur les problèmes du choix de carrière et d'adaptation.
Fondements théoriques et enjeux actuels de l'approche inclusive à l'éducation. Perspectives des élèves, du personnel scolaire, des intervenant/es communautaires et associatifs/ves et des parents.
Critical examination of selected topics in health professions education based on research and disciplinary issues. (Open to MEd Students with permission of the
EDU6146 THEORIES OF SECOND LANGUAGE LEARNING APPLIED TO INSTRUCTIONAL CONTEXTS (3cr.)
Study of theories of second language learning from linguistics, cognitive, social and pedagogical perspectives.

EDU6191 METHODS AND INTERPRETATION OF QUANTITATIVE RESEARCH II (3cr.)
Planning, analysis and interpretation of quantitative research within experimental and quasi-experimental frameworks; application of analysis of variance, analysis of covariance and techniques of linear regression (explanation, prediction) to educational contexts. Prerequisite: EDU 5191 or equivalent.

EDU6193 FOUNDATIONS OF MEASUREMENT AND EVALUATION IN EDUCATION (3cr.)
Standardization and normalization of test scores; item types for specific kinds of tests; classical test theory; composite variables; reliability; validity; applications to norm-referenced and criterion-referenced tests.

EDU6200 THE ADULT EDUCATOR: ROLES AND BEHAVIOUR (3cr.)
Study of functions and tasks, and the various roles of adult educators as volunteers, as trainers, as teachers of adults, as researchers; examination of the pre service and on going training of adult educators and professionalization in adult education.

EDU6203 LEARNING AND LITERACIES (3cr.)
Examination of literacy in relation to the construction of ethnicity, gender, social class and racialized difference; exploration of literacy theories from historical, psychological, political and educational perspectives; study of school, family, workplace and community literacy practices.

EDU6204 LEARNING IN ADULTHOOD (3cr.)
Examination of theories and stages of adulthood with emphasis on adult psychological development and implications for education. Critical study of adult characteristics, motivation, gender roles and other concepts related to development.

EDU6241 SECOND LANGUAGE PROGRAM DEVELOPMENT AND EVALUATION (3cr.)
Study of second language program design and implementation; needs analysis, setting goals and objectives, syllabus design, materials development and classroom implementation; learning assessment, program evaluation and revision.

EDU6259 RESEARCH AND CONTEMPORARY ISSUES IN TEACHING MODELS AND PRACTICES (3cr.)
Analysis of current pedagogical models and practices, and of their underlying theoretical constructs; critical examination of traditional and recent perspectives on the context and process of teaching.

EDU6271 COUNSELLING: THEORIES AND PRACTICE II (3cr.)
Extension of advanced counselling theories and practice. Prerequisite: EDU 5271 or its equivalent.

EDU6290 RESEARCH IN EDUCATION (3cr.)
Critical review of approaches, methods and processes in educational research; examination of complementarity of different types of research methodology.

EDU6293 FORMATIVE EVALUATION OF LEARNING (3cr.)
An examination of the nature and role of formative evaluation in instructional settings; design of formative assessment instruments.

EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES (3cr.)
Critical exploration of theoretical orientations to program evaluation and in-depth examination of selected contemporary issues confronting evaluators. Prerequisite: EDU 5299 or PSY 7103 or PSY 7503 or CRM 6359 or CRM 6759 (Certificate in Program Evaluation).

EDU6371 SELECTED TOPICS IN EDUCATIONAL COUNSELLING (3cr.)
An examination of current issues in guidance and counselling.

EDU6372 MODELS OF CONSULTATION AND CASE MANAGEMENT IN EDUCATIONAL COUNSELLING (3cr.)
Analysis of roles of counsellor as leader, team member, and integral resource in developing, mobilizing, and/or utilizing school/community resources within a systems approach; personal development of the skills of co-ordination, collaboration, brokering, and consultation.

EDU6373 EDUCATION OF MARGINALIZED YOUTH (3cr.)
Examination of the social ecology and educational problems and needs of diverse groups of marginalized youth in different contexts in Canada and in other countries; related socio-political issues, policy implications, and intervention strategies.

EDU6421 PUBLIC MEMORY, LIVED HISTORIES AND EDUCATION (3cr.)
Critical examination of the social construction of public memory through schooling; relations between public memory, peoples' lived histories and the making of communities; the roles of public memory in shaping social identities of race, nation and gender.

EDU6422 EDUCATION AND DEMOCRATIC COMMUNITIES (3cr.)
Inquiry into the democratic purposes of schooling and the theory and practices of democratic education; implications for civic engagement, curriculum, school organizations and leadership.
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

**EDU6423 POLITICS AND POLICY IN EDUCATION** (3cr.)
Critical study of the political organization of education; the role of government and bureaucratic controls in shaping education; relations between educational policy and power, authority, influence and conflict in education.

**EDU6424 ETHICS AND DIVERSITY IN EDUCATIONAL ORGANIZATIONS** (3cr.)
Exploration of the moral and ethical implications of administrative work; the role played by personal and professional values in establishing meaning in organizations.

**EDU6425 MORAL REGULATION AND EDUCATION** (3cr.)
Critical study, with a Canadian emphasis, of the historical role of education in inculcating moral values in children; exploration of notions of health, civic responsibility, personal and ethical behaviour; examination of the social construction and experience of deviance.

**EDU6426 CITIZENSHIP AND EDUCATION** (3cr.)
Historical and contemporary perspectives on citizenship and citizenship education in Canada; exploration of theories of citizenship, identity and nation; social and pedagogical responses to particular views of citizenship.

**EDU6427 EDUCATION AND SEXUALITY** (3cr.)
Implications of sexualities for education in relation to sex and gender, ethnicity, age, class, disability and sexual orientation; exploration of how bodies are understood differentially over time and space in formal and informal educational settings.

**EDU6428 SOCIAL CONTEXTS OF EDUCATION** (3cr.)
Examination of education and its role as part of the fabric of society; exploration of changing norms of schooling, school organization, and social environments; the effects of schooling on social stratification, the relationships between schools and other social institutions, and the paradoxes of education in pluralistic societies; inquiry into issues of authority, power, socialization and culture.

**EDU6429 PEDAGOGIES OF DIFFERENCE** (3cr.)
Exploration of diversity and education from cultural, economic, historical and political perspectives including critical pedagogy and pedagogies of transformation.

**EDU6433 PROGRAM IMPLEMENTATION IN EDUCATIONAL ORGANIZATIONS** (3cr.)
Exploration of principles of effective program implementation in educational settings.

**EDU6460 CURRICULUM, CULTURE, AND LANGUAGE** (3cr.)
Examination of the ways in which curriculum works to reproduce and/or suppress certain identities; interdisciplinary inquiries into how current curricular language is situated in relation to identity formations; deconstruction of the marginalization of identities across various curricular contexts.

**EDU6470 MULTICULTURAL COUNSELLING** (3cr.)
Exploration of practical and theoretical issues relevant to counselling individuals, groups, and families from diverse cultural backgrounds. Emphasis on development of attitudes, values, and skills that promote effective interpersonal relations and counselling.

**EDU6472 SEMINAR AND PRACTICUM IN GROUP COUNSELLING** (3cr.)
Examination of group counselling theory and technique; emphasis on dynamics of group behaviour, social-psychological interactions in small groups, and practice in developing and providing group counselling services. **Prerequisite:** EDU 5271 and EDU 5471.

**EDU6473 INTERNSHIP IN COUNSELLING I** (3cr.)
Seminar and minimum of 200 hours of supervised on-site experiences in an approved counselling setting; examination of organizational issues in the delivery of guidance and counselling services; development of professional competence. **Prerequisite:** EDU 5271 and EDU 5471.

**EDU6474 INTERNSHIP IN COUNSELLING II** (3cr.)
Seminar and minimum of 200 hours of supervised on-site experiences in an approved counselling setting; critical examination of selected helping techniques; critical examination of ethical and legal issues in counselling. **Prerequisite:** EDU 6473.

**EDU6501 SÉMINAIRE EN ENSEIGNEMENT AUX PROFESSIONNELS DE LA SANTÉ** (3cr.)
Examen critique des thèmes reliés à l’enseignement aux professionnels de la santé et inspirés de la recherche et des enjeux disciplinaires. (Ouvert aux étudiantes et étudiants du M. Éd. avec la permission du directeur des études supérieures.)

**EDU6529 SÉMINAIRE EN LITTÉRATIES MULTIPLES** (3cr.)
Perspectives théoriques issues des différents champs des littératures.

**EDU6546 THÉORIES DE L’APPRENTISSAGE D’UNE LANGUE SECONDE APPLIQUÉES À UN CONTEXTE INSTITUTIONNEL** (3cr.)
Étude des théories d'apprentissage d'une langue seconde dans les perspectives linguistique, cognitive, sociale et pédagogique.

**EDU6571 SÉMINAIRE EN DéVELOPPEMENT PROFESSIONNEL ET EN PLANIFICATION DE CARRIÈRE** (3cr.)
Approfondissement de certains aspects conceptuels du counselling et de la recherche appliquée au domaine du développement professionnel et de la
planification de carrière.

**EDU6573 SANTÉ MENTALE, TRAVAIL ET ORIENTATION** (3cr.)
Analyse des problèmes de santé mentale provoqués par le travail ou l'absence de travail : perte d'estime de soi, d'identité, de motivation, humiliation, culpabilité, épuisement professionnel, mise en chômage technique, etc. Nature et diagnostic. Mise en contexte de ces troubles dans divers courants de pensée. Étude des effets thérapeutiques du travail.

**EDU6591 MÉTHODES ET INTERPRÉTATION EN RECHERCHE DE TYPE QUANTITATIF II** (3cr.)
Planification, analyse et interprétation de recherches de type quantitatif dans le cadre des plans expérimentaux et quasi-expérimentaux. Application des procédures d'analyse de la variance, d'analyse de la covariance et de la régression linéaire multiple à des problèmes typiques en éducation. **Préalable : EDU 5591 ou l'équivalent.**

**EDU6593 FONDEMENTS DE LA MESURE ET DE L'ÉVALUATION EN ÉDUCATION** (3cr.)
Études des procédures de transformation des scores. Analyse de la nature des tests et différentes catégories d'items. Examen de la théorie classique des tests ; fidélité et validité. Étude de scores composés. Applications des notions précédentes dans le contexte d'une évaluation normative et d'une évaluation centrée sur un critère.

**EDU6600 FORMATEURS D'ADULTES ET CONTEXTES DE FORMATION** (3cr.)

**EDU6604 DÉVELOPPEMENT DE L'ADULTE** (3cr.)

**EDU6634 GESTION DE LA QUALITÉ EN ÉDUCATION** (3cr.)
Analyse critique des principes, des méthodes et des techniques de gestion de la qualité totale appliquées à l’organisation scolaire.

**EDU6637 GESTION ET SUPERVISION DES RESSOURCES PROFESSIONNELLES EN ÉDUCATION** (3cr.)
Étude des modèles de gestion des ressources humaines dans les systèmes scolaires à partir de paramètres comme les conventions collectives, l'équité, la supervision, l'évaluation du rendement, le développement professionnel.

**EDU6641 ÉLABORATION DE PROGRAMMES ET ÉVALUATION EN LANGUE SECONDE** (3cr.)
Étude de la conception, de l'élaboration et de la mise en œuvre de programmes. Analyse des besoins, établissement de buts, d'objectifs et de contenus et élaboration de syllabus et de matériel pédagogique. Étude de l'évaluation des apprentissages et de la révision de programmes.

**EDU6646 CONTEXTES MAJORITAIRES, MINORITAIRES ET PLURIETHNIQUES DE L'ENSEIGNEMENT ET DE L'APPRENTISSAGE D'UNE LANGUE** (3cr.)
Examen des particularités de l'enseignement et de l'apprentissage du français comme langue d'usage et langue seconde en milieux pluriethniques, majoritaires et minoritaires au Canada. Analyse des conditions qui favorisent le développement de la langue et de la littératie.

**EDU6651 ÉDUCATION À LA CITOYENNETÉ DANS UNE PERSPECTIVE PLANÉTAIRE** (3cr.)

**EDU6652 LITTÉRATIE ET DIFFÉRENCES** (3cr.)
Examen des divers concepts de littératie et de leurs liens avec la construction de l'identité ethnique, raciale, sexuelle et sociale. Étude du processus d'apprentissage continu tel que supporté par la littératie.

**EDU6670 COUNSELLING ET ORIENTATION AUPRÈS DES GROUPES MINORITAIRES** (3cr.)
Études des caractéristiques des groupes minoritaires tels que les femmes, les gais et les lesbiennes, les handicapés, les minorités linguistiques et (ou) ethniques, etc., selon la perspective du counselling et de l'orientation de carrière.

**EDU6671 LE COUNSELLING : THÉORIES ET PRATIQUE II** (3cr.)
Théories et techniques portant sur le développement des habiletés, des attitudes et des savoir-faire en counselling. **Préalable : EDU 5671.**

**EDU6672 MODÈLES ET STRATÉGIES D'INTERVENTION EN CONTEXTE DE COUNSELLING SCOLAIRE** (3cr.)
Différents modèles d'intervention associés au développement d'habiletés interpersonnelles et sociales des élèves. Stratégies de solution de problèmes, de gestion de classe, de résolution de conflits et de gestion du temps.

**EDU6690 MÉTHODOLOGIE DE LA RECHERCHE** (3cr.)
Étude des approches, méthodes et étapes de la recherche en éducation. Examen de la complémentarité de divers types de recherche.

**EDU6693 ÉVALUATION FORMATIVE DES APPRENTISSAGES SCOLAIRES** (3cr.)
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

- have research methodology credits related to their chosen research area;
- process improvement and maturity. Management of Agile Programming methodologies such as Extreme Programming. Case studies.

**ELG5100 (EACJ 5200) SOFTWARE ENGINEERING PROJECT MANAGEMENT**

ELEC Department of Electronics

**Admission**

Carleton University.

**EDU8147 SELECTED TOPICS IN SECOND LANGUAGE EDUCATION**

Examination of current issues in education from multiple research traditions; exploration of students' prospective PhD projects in relation to major trends in

**EDU8002 LECTURE DIRIGÉE / DIRECTED STUDIES**

Thèmes variables choisis pour une étude approfondie.

- apprentissage des mathématiques.

Study of the construction of data collection instruments in education and of the validation of interpretations of findings.

**EDU5757 ENJEUX ACTUELS ENENSEIGNEMENT ET APPRENTISSAGE DES MATHÉMATIQUES**

Introduction à la planification de la recherche de type quantitatif et à l'interprétation des observations qui en résultent. Analyse des données statistiques et

**EDU5583 CRÉATIVITÉ ET ÉDUCATION**

Explorer les concepts et les stratégies, méthodes d'instruction en éducation de santé; examen des façons dont l'instruction soutient l'apprentissage.

Master's students must register their thesis topic by the end of the second session of studies.

This course should be taken at the beginning of the program.

In addition to the two compulsory courses, EDU 5190 and EDU 5199, students must select at least five courses from the following.

**Préalable**

- EDU6979 ÉVALUATION DE PROGRAMMES : THÉORIE ET PROBLÈMES ACTUELS (3cr.)
  Analyse critique des aspects théoriques et techniques des différentes approches en évaluation de programmes. Préalable : EDU 5699 ou PSY 7103 ou PSY 7503 ou CRIM 6359 ou CRIM 6739 (Certificat en Évaluation de programmes).

**EDU6871 STAGE EN COUNSELLING I (3cr.)**

Stage clinique supervisé de 200 heures dans un centre offrant des services de counselling éducationnel, personnel et (ou) de carrière. Préalables : EDU 5671, EDU 5871.

**EDU6872 SÉMINAIRE ET PRACTICUM EN COUNSELLING DE GROUPE (3cr.)**

Application des techniques de groupes à divers milieux d'éducation : la communauté, les institutions et organisations, le milieu scolaire. Dynamique du comportement de groupes. Interactions psychologiques et sociales des groupes restreints et leur application aux milieux d'éducation.

**EDU6873 STAGE EN COUNSELLING II (3cr.)**

Stage clinique supervisé de 200 heures dans un centre offrant des services de counselling éducationnel, personnel et (ou) de carrière. Approfondissement de la pratique du counselling. Préalable : EDU 6871.

**EDU6874 STAGE EN COUNSELLING III (3cr.)**

Stage clinique supervisé de 200 heures dans un centre offrant des services de counselling éducationnel, personnel et (ou) de carrière. Consolidation théorique et pratique des apprentissages et des stages en counselling I et II. Utilisation systématique des principaux tests psychométriques requis par les associations et ordres professionnels. Préalable : EDU 6873.

**EDU6997 PROPOSITION DE THÈSE DE MAÎTRISE / MASTER'S THESIS PROPOSAL**

**EDU7000 LECTURE DIRIGÉE / DIRECTED READING (3cr.)**

**EDU7101 SELECTED TOPICS IN HEALTH PROFESSIONS EDUCATION (3cr.)**

Critical analysis of selected topics and their implications for health professions education. (Reserved for PhD students; Open to Med and MA students with permission of the program director.)

**EDU7130 SEMINAR IN ORGANIZATIONAL STUDIES (3cr.)**

Topics of current interest will be selected for intensive study.

**EDU7133 SELECTED TOPICS: SOCIETY, CULTURE AND LITERACIES (3cr.)**

Topics of current interest will be selected for intensive study.

**EDU7135 RESEARCH LITERACIES AND EDUCATIONAL ADMINISTRATION (3cr.)**

Critical study of diverse perspectives on knowing in educational administration; dominant and emergent paradigms for research and theory development in Educational Administration.

**EDU7141 CURRENT RESEARCH IN SECOND LANGUAGE EDUCATION (3cr.)**

Examination of current research in second language education representing diverse issues and conceptual frameworks.

**EDU7150 SELECTED TOPICS IN TEACHING AND LEARNING (3cr.)**

Topics of current interest will be selected for intensive study.

**EDU7151 THEORIES OF MIND (3cr.)**

Critical examination of theories of mind from multiple disciplinary perspectives and of their effects on educational practices.

**EDU7163 THEORETICAL PERSPECTIVES IN MATHEMATICS EDUCATION (3cr.)**

Study of theoretical perspectives in mathematics education, examination of the connection between theory, research and practice in mathematics teaching and learning.

**EDU7190 QUALITATIVE RESEARCH I (3cr.)**

Critical review of fundamental aspects of qualitative research in education: approaches, characteristics and strategies.

**EDU7193 ADVANCED MEASUREMENT THEORIES (3cr.)**

Normative and summative evaluation; diagnostic testing; test equating; cutoff scores; item response models; generalizability theory; multitrait multi-method approach to validity and reliability of norm-referenced and criterion-referenced measurement.

**EDU7394 SELECTED TOPICS-MEASUREMENT II (3cr.)**

Topics of current interest will be selected for intensive study.
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

- Engineering
- Computer Science
- Practical experience in system software design.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the Electrical and Computer Engineering (MASc / MEng).

### Courses

**EDU7395 SELECTED TOPICS IN ADVANCED STATISTICS IN EDUCATION** (3cr.)
Topics of current interest will be selected for intensive study.

**EDU7396 TECHNIQUES OF DOCUMENT ANALYSIS IN EDUCATIONAL RESEARCH** (3cr.)
Study of educational documents and approaches to textual research including historical criticism, discourse analysis and narrative theory.

**EDU7397 DATA COLLECTION INSTRUMENTS IN EDUCATIONAL RESEARCH** (3cr.)
Study of the construction of data collection instruments in education and of the validation of interpretations of findings.

**EDU7501 THÈMES CHOISIS EN ENSEIGNEMENT AUX PROFESSIONNELS DE LA SANTÉ** (3cr.)
Études critiques de thèmes choisis et les implications dans l'éducation aux professionnels de la santé (réservé aux étudiants du Ph.D.; ouvert aux étudiantes et étudiants du M. Éd. et du M.A. avec la permission du directeur de programme.)

**EDU7509 TENDANCES EN SOCIÉTÉ, CULTURE ET LITTÉRATIES** (3cr.)
Études des cadres conceptuels et théoriques ainsi que des pratiques inspirées de la recherche dans ces domaines.

**EDU7531 SÉMINAIRE SUR LES RECHERCHES EN ADMINISTRATION ÉDUCATIONNELLE** (3cr.)
Thèmes variés choisis pour une étude approfondie.

**EDU7541 RECHERCHES EN ENSEIGNEMENT ET APPRENTISSAGE DES LANGUES SECONDES** (3cr.)
Examen de recherches courantes effectuées en fonction de divers cadres conceptuels sur l'apprentissage et l'enseignement des langues secondes.

**EDU7550 SÉMINAIRE EN ENSEIGNEMENT ET APPRENTISSAGE** (3cr.)

**EDU7563 THÉORIES ET PERSPECTIVES EN ENSEIGNEMENT ET APPRENTISSAGE DES MATHÉMATIQUES** (3cr.)
Étude des perspectives théoriques en didactique des mathématiques et liens entre la théorie, la recherche et les pratiques pédagogiques en enseignement et apprentissage des mathématiques.

**EDU7588 THÈMES CHOISIS : L'ENSEIGNEMENT, L'APPRENTISSAGE ET L'ÉVALUATION** (3cr.)
Thèmes variables choisis pour une étude approfondie.

**EDU7590 RECHERCHE QUALITATIVE I** (3cr.)
Étude des aspects fondamentaux de la recherche qualitative en éducation : approches, caractéristiques et stratégies.

**EDU7593 THÉORIES AVANCÉES DE LA MESURE** (3cr.)
Évaluation sommative et évaluation formative; tests diagnostiques; seuils de réussite; théorie de la réponse aux items; théories de la généralisabilité; validité selon la technique « multirait multiméthode »; fidélité et validité des tests critériés.

**EDU7696 TECHNIQUES D'ANALYSE DE DOCUMENTS EN RECHERCHE ÉDUCATIONNELLE** (3cr.)
Étude de documents éducationnels et de procédures d'analyse de textes, incluant la critique historique, l'analyse de discours et la théorie narrative. (Réservé aux étudiants de doctorat.)

**EDU7794 THÈMES CHOISIS : MESURE ET ÉVALUATION** (3cr.)
Thèmes variables choisis pour une étude approfondie.

**EDU7795 THÈMES CHOISIS EN STATISTIQUES AVANCÉES EN ÉDUCATION** (3cr.)
Thèmes variables choisis pour une étude approfondie.

**EDU7797 INSTRUMENTS DE COLLECTE DE DONNÉES POUR LA RECHERCHE EN ÉDUCATION** (3cr.)
Étude des méthodes de construction et de validation d'outils de collecte de données en recherche qualitative et quantitative en éducation. Approfondissement des problématiques soulevées par l'usage de ces méthodes. (Réservé aux étudiants de doctorat.)

**EDU7999 THÈSE DE MAÎTRISE EN ÉDUCATION / MA THESIS IN EDUCATION**

**EDU8002 LECTURE DIRIGÉE / DIRECTED STUDIES** (3cr.)

**EDU8105 CONTEMPORARY ISSUES IN EDUCATION** (3cr.)
Examination of current issues in education from multiple research traditions; exploration of students' prospective PhD projects in relation to major trends in educational research. (Reserved for PhD students.)

**EDU8106 EPISTEMOLOGY OF EDUCATIONAL RESEARCH** (3cr.)
Critical study of the epistemological foundations of the principal research paradigms in education; exploration of the epistemological assumptions underlying candidates’ prospective PhD projects. (Reserved for PhD students.)

**EDU8107 SEMINAR IN COUNSELLING AND SUPERVISION** (3cr.)
Examination and critique of current scholarship from multiple research traditions in counselling and supervision; implications for counselling and supervisory practice.

**EDU8147 SELECTED TOPICS IN SECOND LANGUAGE EDUCATION** (3cr.)
Topics of current interest will be selected for intensive study.

**EDU8190 QUALITATIVE RESEARCH II** (3cr.)
Examination of methodological, organizational, ethical and political issues within qualitative research.

**EDU8253 COGNITIVE PROCESSES IN DIVERSE EDUCATIONAL CONTEXTS** (3cr.)
Analysis of essential cognitive processes from different theoretical perspectives; application of learning theories to various contexts.

**EDU8296 SEMINAR IN MEASUREMENT AND EVALUATION** (3cr.)

**EDU8505 QUESTIONS CONTEMPORAINES EN ÉDUCATION** (3cr.)
Examen critique des questions contemporaines et interdisciplinaires en éducation selon diverses traditions de recherche. Critique des avant-projets doctoraux en fonction des tendances en recherche éducationnelle. (Réservé aux étudiants de doctorat.)

**EDU8506 ENJEUX ÉPISTÉMOLOGIQUES ET MÉTHODOLOGIQUES DE LA RECHERCHE EN ÉDUCATION** (3cr.)
Étude critique de l'épistémologie des paradigms principaux de la recherche en éducation. Exploration des sources épistémologiques des avant-projets des doctorants en éducation. (Réservé aux étudiants de doctorat.)

**EDU8507 SÉMINAIRE EN COUNSELLING ET SUPERVISION** (3cr.)
Étude critique des approches théoriques en counselling et supervision; implications pour les pratiques de counselling et de supervision.

**EDU8510 THÈMES CHOISIS EN SOCIÉTÉ, CULTURE ET LITTÉRATIES** (3cr.)
Thèmes variés choisis pour une étude approfondie.

**EDU8590 RECHERCHE QUALITATIVE II** (3cr.)
Examen des questions méthodologiques, organisationnelles, déontologiques et politiques reliées à la recherche qualitative.

**EDU8647 THÈMES CHOISIS EN ÉSSENCE ET APPRENTISSAGE DES LANGUES SECONDES** (3cr.)
Thèmes variés choisis pour une étude approfondie.

**EDU8653 PROCESSUS COGNITIFS DANS DIVERS CONTEXTES ÉDUCATIFS** (3cr.)
Analyse de processus cognitifs essentiels à partir de diverses perspectives théoriques; mise en application de théories d'apprentissage dans divers contextes.

**EDU8696 SÉMINAIRE EN MESURE ET ÉVALUATION** (3cr.)

**EDU8908 INTERNAT EN COUNSELLING ET EN SUPERVISION / INTERNSHIP IN COUNSELLING AND SUPERVISION**
Internat de 600 heures en counselling et en supervision dans un centre approuvé par la direction du programme; développement des compétences en supervision et application des normes éthiques relatives à la pratique et à la supervision en counselling. Noté S (satisfaisant) / NS (non satisfaisant). / Internship of 600 hours of counselling and counsellor supervision in approved settings; development of advanced counselling and supervisory competence; application of ethical principles to counselling and supervisory practice. Graded S (Satisfactory) / NS (Not satisfactory).

**EDU8999 RAPPORT INTÉRIMAIRE / INTERIM REPORT**

**EDU9997 PROPOSITION DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL**

**EDU9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / PhD COMPREHENSIVE EXAMINATION**

**EDU9999 THÈSE DE DOCTORAT / PhD THESIS**

**Electrical and Computer Engineering (MASc / MEng)**

**Ottawa-Carleton Joint Program**
Established in 1983, Ottawa-Carleton Institute for Electrical and Computer Engineering (OCIECE) combines the research strengths of the School of
Information Technology and Engineering (SITE) at the University of Ottawa and the departments of Electronics and of Systems and Computer Engineering at Carleton University.

The Institute offers graduate programs leading to the degrees of Master of Applied Science (MASc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Electrical and Computer Engineering.

Members of the Institute are involved in ten main research fields: computer communications, multimedia and distributed systems; computer-aided design for electronic circuits; computer and software engineering; digital and wireless communications; microwave and electromagnetics; signal, speech and image processing; integrated circuits and devices; systems and machine intelligence; photonics systems; and, biomedical engineering. Further information is posted on the departmental websites.

Most of the courses in the graduate programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate program in Electrical and Computer Engineering is governed by the General Regulations of the Ottawa-Carleton Institute for Electrical and Computer Engineering (OCIECE) and by the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Be the holder of a bachelor's degree with a specialization, or a major in electrical and computer engineering (or equivalent) with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who are familiar with the applicant's work;
4. Provide a statement of purpose indicating their career goals and interests in the proposed research area;
5. For admission to the MASc, identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

Note: The choice of research supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Program Requirements

A - Master of Applied Science (MASc)

The requirements of the program are as follows:

1. Successful completion of 15 course credits;
2. Presentation and defence of a thesis (ELG7999) based on original research carried out under the direct supervision of a research faculty member in the Department.

Subject to the approval of the advisory committee in the case of the PhD program, and the departmental chairperson in the case of a master's program, a student may take up to half of the course credits in the program in other disciplines (e.g. mathematics, computer science, physics).

B - Master of Engineering (MEng)

1 - Project Option

The requirements of the program are as follows:

1. Successful completion of 27 course credits;
2. Completion of an electrical engineering project (ELG5900).

2 - Course Work Option
The requirement of this option is as follows:

- Successful completion of 30 course credits.

Note: Subject to the approval of the Department, a student may take courses in other disciplines.

3 - COOP option

The requirements are as follows:

1. Successful completion of 24 course credits;
2. Completion of two electrical engineering projects (ELG8000 and ELG8001), each conducted during one session.

Note: Participation in the co-operative master's option is subject to acceptance by a suitable sponsoring organization.

Residence

Students admitted full-time must register full-time for a minimum of three sessions.

Minimum Standards

The passing grade in all courses is 70% (B). Students who fail six credits, or the thesis proposal, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Duration of the program

The requirements of the program are usually fulfilled within two years of the full-time studies. The maximum time permitted is four years.

Courses

Quel que soit le programme, avec l'approbation du directeur ou de la directrice de recherche, de la personne chargée de la coordination du programme ou du Comité consultatif, on peut choisir des cours du programme des études supérieures de l'une ou l'autre université. Les cours de niveau supérieur sont énumérés ci-dessous et sont regroupés par domaines. Les descriptions de cours figurent dans les sections relatives aux départements concernés dans les annuaires appropriés.

Tous les cours durent une session. Pour identifier le département qui offre les cours, il suffit de se référer aux préfixes selon le code donné ci-dessous.

In all programs, the student may choose graduate courses from either university with the approval of the adviser/graduate program co-ordinator or Advisory Committee. The available graduate courses are listed below, grouped by subject area. Course descriptions are to be found in the departmental section of the calendar concerned. All courses are of one session duration.

The Department offering the course is identified by the prefix of the number assigned to the course as follows:

UNIVERSITÉ D'OTTAWA / UNIVERSITY OF OTTAWA:

ELG / EACJ ÉTI (École d'ingénierie et de technologie de l'information)

SITE (School of Information Technology and Engineering)

CARLETON UNIVERSITY:

SYSC Department of Systems and Computer Engineering

ELEC Department of Electronics

Les cours énumérés ne sont pas offerts chaque année. Tous les cours durent une session et ont une valeur de trois crédits à l’Université d’Ottawa (0,5 crédits à Carleton University).

Only a selection of courses listed is given in a particular academic year. All courses extend over one session and are worth three credits at the University of Ottawa (0,5 credit at Carleton University).
All candidates for the Master's degree in education (MEd) must select one of the following concentrations as a focus of their studies:

ELG5124 (EACJ 5204) VIRTUAL ENVIRONMENTS (3cr.)

ELG5125 (EACJ 5205) QUALITY OF SERVICE MANAGEMENT FOR MULTIMEDIA APPLICATIONS (3cr.)
Design principles: layering, protocols, interface; models for open distributed processing; real-time requirement; request-response and stream processing, real-time scheduling, design for performance and scalability; other quality of services issues; user perspective versus system performance parameters, cost/performance trade-off, negotiations; adaptive and mobile applications; examples of multimedia applications and protocols. Prerequisite: ELG 5374 (EACJ 5607) or SYSC 5201 (ELG 6121) or equivalent.

ELG5191 (EACJ 5203) DESIGN OF DISTRIBUTED SYSTEM SOFTWARE (3cr.)
Distributed systems design and programming issues; distributed computing. Basics of object oriented technology for distributed computing. Distributed objects technologies. Object oriented models for distributed programming. Distributed computing architecture design. Component based distributed software design. Scalability, interoperability, portability and distributed services. Distributed applications design. Prerequisites: an undergraduate degree in Computer Engineering, or Computer Science, or practical experience in system software design.

ELG5194 (EACJ 5703) DESIGN AND TESTING OF RELIABLE DIGITAL SYSTEMS (3cr.)

ELG5195 (EACJ 5705) DIGITAL LOGIC DESIGN: PRINCIPLES AND PRACTICES (3cr.)

ELG5197 (EACJ 5102) INTRODUCTION TO EMBEDDED SYSTEMS (3cr.)
Embedded systems' general characteristics, niche, and design alternatives. Simple embedded systems: sequential event response systems and cyclic executives. Prototype based designs, multitasking and multiactivity paradigms. Multitasking system design: elements of real-time operating systems and harmony. Multitactivity system design: process activity language (PAL) and PAL-based design tools. Prerequisite: ELG 4161 or the equivalent.

ELG5198 (EACJ 5103) PARALLEL PROCESSING WITH VLSI (3cr.)

ELG5199 (EACJ 5104) DESIGN OF MULTIMEDIA DISTRIBUTED DATABASE SYSTEMS (3cr.)
Database concepts and architectures. Data modelling. Relational technology and distributed databases. Examples of the new generation of databases for advanced multimedia applications such as multimedia information retrieval, VOD and the limitations of the conventional models for managing multimedia information (graphics, text, image, audio and video).

ELG6103 (SYSC 5003) DISCRETE STOCHASTIC MODELS (3cr.)

ELG6106 (SYSC 5006) DESIGN OF REAL-TIME AND DISTRIBUTED SYSTEMS (3cr.)
Characteristics of real-time and distributed systems. Modern middleware systems, such as CORBA, DCE, RMI for building distributed applications: advantages and disadvantages. Analyzing designs for robustness, modularity, extensibility, portability and performance. Implementation issues. Major course project. Prerequisites: Engineering SYSC 3303 and SYSC 5708 or similar experience.

ELG6111 (SYSC 5101) DESIGN OF HIGH-PERFORMANCE SOFTWARE (3cr.)
Designing software to demanding performance specifications. Design analysis using models of computation, workload, and performance. Principles to govern design improvement for sequential, concurrent and parallel execution, based on resource architecture and quantitative analysis. Prerequisites: Engineering SYSC 5704 and a course in software engineering; or the equivalent.
ELG6112 (SYSC 5102) PERFORMANCE MEASUREMENT AND MODELLING OF DISTRIBUTED APPLICATIONS (3cr.)
Performance measurements, metrics and models of middleware based systems and applications. Benchmarks, workload characterization, and methods for capacity planning and system sizing. Performance monitoring infrastructures for operating systems and applications. Introduction to the design and analysis of experiments and the interpretation of measurements. Prerequisites: SYSC 5101 or the equivalent.

ELG6114 (SYSC 5104) METHODOLOGIES FOR DISCRETE-EVENT MODELLING AND SIMULATION (3cr.)

ELG6118 (SYSC 5108) TOPICS IN INFORMATION SYSTEMS (3cr.)
Recent and advanced topics in the field of Information Systems and its related areas.

ELG6130 (SYSC 5402) HEALTH CARE ENGINEERING (3cr.)
Overview of health care system/participants; biophysical measurements for diagnosis/monitoring; biomedical sensors/technology; telemedicine and applications; safety considerations; managing medical technologies/funding models for clinical engineering departments; considerations for developing countries. Precludes additional credit for ELG 5123. Prerequisite: permission of the program director.

ELG6131 (EACJ 5127 / SYSC 5301) ADVANCED TOPICS IN BIOMEDICAL ENGINEERING (3cr.)
Topics vary from year to year. Prerequisite: Permission of the Institute.

ELG6158 (SYSC 5508) DIGITAL SYSTEMS ARCHITECTURE (3cr.)
New architectural concepts are introduced. Discussion of programmable architectures (micro-controllers, DSPs, GP) and FPGAs. Memory interfacing, scalable, superscalar, RISC, CISC, and VLIW concepts. Parallel structures: SIMD, MISD, and MIMD. Fault tolerant systems and DSP architectures. Examples of current systems are used for discussions. Prerequisite: SYSC 4507 or the equivalent.

ELG6171 (SYSC 5701) OPERATING SYSTEM METHODS FOR REAL-TIME APPLICATIONS (3cr.)
Principles and methods for operating system design with application to real-time, embedded systems. Concurrent programming: mechanisms and languages; design approaches and issues; run-time support (kernel). Methods for hard real-time applications. Methods for distributed systems; I/O handling. Prerequisites: Engineering SYSC 3303 or SYSC 5704 or equivalent and/or experience. Programming experience in high level and assembly languages.

ELG6173 (SYSC 5703) INTEGRATED DATABASE SYSTEMS
Database definitions, applications, and architectures. Conceptual design based on the entity-relationship and object-oriented models. Relational data model: relational algebra and calculus, normal forms, data definition and manipulation languages. Database management systems: transaction management, recovery and concurrency control. Current trends: object-oriented, knowledge-based, multimedia and distributed databases. Prerequisite: SYSC 5704 (ELG 6174) or the equivalent.

ELG6174 (SYSC 5704) ELEMENTS OF COMPUTER SYSTEMS (3cr.)
Concepts in basic computer architecture, assembly languages, high level languages including object orientation, compilers and operating system concepts (including concurrency mechanisms such as processes and threads and computer communication). Designed for graduate students without extensive undergraduate preparation in computer system engineering (or the equivalent experience).

ELG6176 (SYSC 5706) ANALYTICAL PERFORMANCE MODELS OF COMPUTER SYSTEMS (3cr.)
Analytical modelling techniques for performance analysis of computing systems. Theoretical techniques covered include single and multiple class queueing network models, together with a treatment of computational techniques, approximations, and limitations. Applications include scheduling, memory management, peripheral devices, databases, multiprocessing, and distributed computing. Prerequisites: one of SYSC 5003, SYSC 5503, or ELG 5119, or the equivalent.

ELG6178 (SYSC 5708) DEVELOPMENT OF REAL-TIME AND DISTRIBUTED SOFTWARE WITH REUSABLE COMPONENTS (3cr.)
Advanced object-oriented design and programming of real-time and distributed systems using C++ and/or Java. Object-oriented features; inheritance, polymorphism, templates, exception handling. Concurrency issues. Design patterns and frameworks for distributed systems, with examples from communication applications. Design issues for reusable software. Prerequisites: Knowledge of C++ and/or Java, of operating system concepts, and permission of the Department.

ELG6179 (SYSC 5709) ADVANCED TOPICS IN SOFTWARE ENGINEERING (3cr.)

ELG6186 (SYSC 5806) OBJECT ORIENTED DESIGN OF REAL-TIME AND DISTRIBUTED SYSTEMS (3cr.)
Advanced course in software design dealing with design issues at a high level of abstraction. Design models: use case maps for high-level behaviour description; UML for traditional object-oriented concerns. Design patterns. Forward, reverse, and re-engineering. Substantial course project on applications chosen by students. Prerequisite: Permission of the Department.

ELG6187 (SYSC 5807) ADVANCED TOPICS IN COMPUTER SYSTEMS (3cr.)

ELG7186 (EACJ 5807) TOPICS IN COMPUTERS I: FORMAL METHODS FOR THE DEVELOPMENT OF REAL-TIME SYSTEM
APPLICATIONS (3cr.)

ELG7187 (EACJ 5807) TOPICS IN COMPUTERS II (3cr.)

ELG7573 (EACJ 5900) SUJETS CHOISIS SUR LES ORDINATEURS (3cr.)

Systèmes et intelligence machine / Systems and Machine Intelligence

ELG5113 (EACJ 5106) STOCHASTIC SYSTEMS (3cr.)

ELG5123 (EACJ 5303) HEALTH CARE ENGINEERING (3cr.)
Overview of health care system/participants: biophysical measurements for diagnosis/monitoring; biomedical sensors/technology; telemedicine and applications; safety considerations; managing medical technologies/funding models for clinical engineering departments; considerations for developing countries. Precludes credits for ELG6130. Prerequisites: Permission of the Department.

ELG5161 (EACJ 5207) ROBOTICS: CONTROL, SENSING AND INTELLIGENCE (3cr.)

ELG5162 (EACJ 5005) KNOWLEDGE-BASED SYSTEMS: PRINCIPLES AND DESIGN (3cr.)

ELG5163 (EACJ 5105) MACHINE VISION (3cr.)

ELG5196 (EACJ 5709) AUTOMATA AND NEURAL NETWORKS (3cr.)

ELG6101 (SYSC 5001) SIMULATION AND MODELLING

ELG6104 (SYSC 5004) OPTIMIZATION FOR ENGINEERING APPLICATIONS (3cr.)
Introduction to algorithms and computer methods for optimizing complex engineering systems. Includes linear programming, networks, nonlinear programming, integer and mixed-integer programming, genetic algorithms and search methods, and dynamic programming. Emphasizes practical algorithms and computer methods for engineering applications.

ELG6105 (SYSC 5005) OPTIMIZATION THEORY AND METHODS

ELG6107 (SYSC/COMP 5007) EXPERT SYSTEMS
Survey of some landmark expert systems; types of architecture and knowledge representation; inferencing techniques; approximate reasoning; truth maintenance; explanation facilities; knowledge acquisition. A project to implement a small expert system will be assigned. Prerequisite: COMP 4007 or COMP 5001 or permission from the Department.

ELG6141 (SYSC 5401) ADAPTIVE CONTROL (3cr.)
ELG6142 (SYSC 5402) ADVANCED DYNAMICS WITH APPLICATIONS TO ROBOTICS (3cr.)

ELG6152 (SYSC 5502) ADVANCED LINEAR SYSTEMS (3cr.)

ELG6182 (SYSC 5802) INTRODUCTION TO INFORMATION AND SYSTEMS SCIENCE (3cr.)
An introduction to the process of applying computers in problem solving. Emphasis is placed on the design and analysis of efficient computer algorithms for large, complex problems. Applications in a number of areas are presented: data manipulation, databases, computer networks, queueing systems, optimization.

ELG6183 (SYSC 5803) LOGIC PROGRAMMING (3cr.)
Review of relational databases, first order predicate calculus, semantics of first order models, deductive querying. Proof theory, unification and resolution strategies. Introduction to Prolog, and/or parallelism and Concurrent Prolog. Applications in knowledge representation and rule based expert systems.

ELG7113 (EACJ 5209) TOPICS IN SYSTEMS AND CONTROL I (3cr.)
Current topics in the field, including linear semigroup theory and optimal feedback control.

ELG7114 (EACJ 5300) TOPICS IN SYSTEMS AND CONTROL II (3cr.)
Current topics in the field, including linear and nonlinear filtering and optimal control of stochastic systems.

ELG7574 (EACJ 5301) SUJETS CHOISIS EN SYSTÈMES ET RÉGLAGE AUTOMATIQUE (3cr.)
Sujets d'intérêt courant dans le domaine.

Communications numériques et optiques / Digital and Optical Communications

ELG5103 OPTICAL COMMUNICATIONS SYSTEMS (3cr.)
Optical communication system concepts and basic characteristics. Optical Transmitters. Optical detection. Optical noise sources and their mathematical models. Non-coherent (direct) detection: system model, direct detection of intensity modulation, application of photo-multiplication, optimal post-detection processing, and subcarrier systems. Coherent detection: heterodyne receivers, the field matching problem and receiver performance. Optical binary digital system, single-mode binary and heterodyne binary systems. Block coded digital optical communication systems: PPM, PAM, PSK, and FSK signalling. Integration of device technology and system architecture. Selected topics in optical communications and networking. Prerequisites: ELG 5119 and ELG 5375 or the equivalents.

ELG5106 (EACJ 5003) FOURIER OPTICS (3cr.)

ELG5119 (EACJ 5109) STOCHASTIC PROCESSES (3cr.)

ELG5126 (EACJ 5206) SOURCE CODING AND DATA COMPRESSION (3cr.)
Discrete and continuous sources. Discrete sources: Huffman coding and run-length encoding. Continuous sources: waveform construction coding; PCM, SPMC, delta modulation, speech compression by parameter extraction; predictive encoding; image coding by transformation and block quantization. Fourier and Walsh transform coding. Applications to speech, television, facsimile. Prerequisite: SYSC 5503 (ELG 6153) or ELG 5119 (EACJ 5109) or equivalent. Precludes credit for ELG 6167.

ELG5131 (EACJ5131) GRAPHICAL MODELS (3cr.)
Bayesian networks, factor graphs, Markov random fields, maximum a posteriori probability (MAP) and maximum likelihood (ML) principles, elimination algorithm, sum-product algorithm, decomposable and non-decomposable models, junction tree algorithm, completely observed models, iterative proportional fitting algorithm, expectation-maximization (EM) algorithm, iterative conditional modes algorithm, variational methods, applications. Precludes credit for ELG 7177C (EACJ 5605C) Prerequisite: Permission of the Institute.

ELG5132 (EACJ5132) SMART ANTENNAS (3cr.)
ELG5133 (EACJ5133) INTRODUCTION TO MOBILE COMMUNICATIONS (3cr.)
Introduction to mobile and cellular systems. Radio channel characterization: signal strength prediction techniques and coverage; indoor/outdoor models; fading; delay spread; interference models and outage probabilities. Digital modulation and transmission system performance. Signal processing techniques, diversity and beamforming. Multiple-input multiple-output (MIMO) systems. New directions and recent results. Precludes additional credit for ELG 7178A (EACJ 5066A)
Prerequisites: ELG 5119 (EACJ 5109) and ELG 5375 (EACJ 5506), or equivalent.

ELG5170 (EACI 5501) INFORMATION THEORY (3cr.)
Measure of information: entropy, relative entropy, mutual information, asymptotic equipartition property, entropy rates for stochastic processes; Data compression: Huffman code, arithmetic coding; Channel capacity; random coding bound, reliability function, Blahut-Arimoto algorithm, Gaussian channels, colored Gaussian noise and "water-filling"; Rate distortion theory; Network information theory. Prerequisite: ELG 5119 (EACJ 5109) or SYSC 5503 (ELG 5119) or the equivalent.

ELG5179 (EACJ 5503) DETECTION AND ESTIMATION (3cr.)

ELG5180 (EACI 5704) ADVANCED DIGITAL COMMUNICATIONS (3cr.)
Techniques and performance of digital signalling and equalization over linear bandlimited channels with additive Gaussian noise. Fading multipath channels: diversity concepts, modelling and error probability performance evaluation. Synchronization in digital communications. Spread spectrum in digital transmission over multipath fading channels. Precludes additional credit for SYSC 5605. Prerequisite: SYSC 5504 or ELG 5375 or the equivalent.

ELG5360 (EACJ5360) DIGITAL WATERMARKING (3cr.)
Overview of recent advances in watermarking of image, video, audio, and other media. Spatial, spectral, and temporal watermarking algorithms. Perceptual models. Use of cryptography in steganography and watermarking. Robustness, security, imperceptibility, and capacity of watermarking. Content authentication, copy control, intellectual property, and other applications. Prerequisite: ELG 4172 or CEG 4311 or equivalent.

ELG5369 (EACJ5369) INTERNETWORKING TECHNOLOGIES (3cr.)
IP Based Internet Technologies: Internet architecture and its protocols. Software/hardware requirements for quality of service (QoS), Integrated services. Scheduling. Fair queuing. Traffic and admission control algorithms. Differentiated services. Multiprotocol label switching (MPLS) and associated software/hardware design issues. Fast internet protocol (IP), asynchronous transfer mode (ATM), internet protocol (IP) over synchronous optical network (SONET), wavelength division multiplexing (WDM), satellite implementations. Precludes additional credit for ELG 7187B (EACJ 5808B) Prerequisite: CEG/ELG 4183.

ELG5371 (EACI 5500) DIGITAL COMMUNICATION BY SATELLITE (3cr.)

ELG5372 (EACI 5504) ERROR CONTROL CODING (3cr.)

ELG5373 (EACJ 5105) DATA ENCRYPTION (3cr.)

ELG5375 (EACJ 5506) PRINCIPLES OF DIGITAL COMMUNICATION (3cr.)
Elements of communication theory and information theory applied to digital communications systems. Characterization of noise and channel models. Analysis of digital data transmission techniques for additive Gaussian noise channels. Efficient modulation and coding for reliable transmission. Spread spectrum and line coding techniques. Prerequisite: ELG 5119 or SYSC 5503, or the equivalent (may be taken concurrently).

ELG5380 (EACJ 5002) ADVANCED CHANNEL CODING (3cr.)

ELG6110 (SYSC 5506) INFORMATION THEORY (3cr.)
Measure of information: entropy, relative entropy, mutual information, asymptotic equipartition property, entropy rates for stochastic processes; Data compression: Huffman code, arithmetic coding; Channel capacity; random coding bound, reliability function, Blahut-Arimoto algorithm, Gaussian channels, coloured Gaussian noise and "water-filling"; Rate distortion theory; Network information theory. Prerequisite: SYSC 5303 (ELG 6133) or ELG 5119 (BYS 5109) or equivalent. Precludes additional credit for SYSC 5507 (ELG 6157).

ELG6120 (SYSC 5200) ALGEBRAIC CODING THEORY (3cr.)
Review of Algebra, Finite Fields, Linear Block Codes and their Properties, Hamming Codes, Cyclic codes; Hadamard Matrices and Hadamard Codes, Golay Codes, Reed-Muller Codes, BCH and Reed-Solomon Codes, Decoding Algorithms, Coding Bounds. Precludes additional credit for SYSC 5507 (ELG 6157).

ELG6143 (SYSC 5403) NETWORK ACCESS TECHNIQUES (3cr.)
A range of access technologies with emphasis on broadband access. Physical channels and the state-of-the-art of coding, modulation, multiplexing strategies to overcome physical impairments, including high-speed transmission over twisted pair, wireless, fibre and co-axial media. Prerequisites: ELG 6153 (SYSC 5503) and ELG 5375 (SYSC 5504).

ELG6153 (SYSC 5503) STOCHASTIC PROCESSES (3cr.)
Basic concepts of randomness, as applied to communications, signal processing, and queueing systems; probability theory, random variables, stochastic processes; random signals in linear systems; introduction to decision and estimation; Markov chains and elements of queueing theory. Exclusion: ELG 5119.

ELG6154 (SYSC 5504) PRINCIPLES OF DIGITAL COMMUNICATION (3cr.)
Elements of communication theory and information theory applied to digital communications systems. Characterization of noise and channel models. Optimum Receiver Theory. Modulation and coding for reliable transmission: MPSK, MQAM, M-ary orthogonal modulation. Channel coding, trellis coded modulation. Spread spectrum and CDMA communications. Precludes additional credit for EACJ 5506 (ELG 5375). Prerequisite: SYSC 5503 or ELG 5119 or the equivalent (may be taken concurrently).

ELG6165 (SYSC 5605) ADVANCED DIGITAL COMMUNICATIONS (3cr.)

ELG6166 (SYSC 5606) INTRODUCTION TO MOBILE COMMUNICATIONS (3cr.)
Mobile radio channel characterization: signal strength prediction techniques and statistical coverage; fading; delay spread; interference models and outage probabilities. Digital modulation and transmission system performance. Signal processing techniques: diversity and beamforming, adaptive equalization, coding. Applications to TDMA and CDMA cellular systems. Co-requisite: Can be taken concurrently with SYSC 5503 and SYSC 5504.

ELG6167 (SYSC 5607) SOURCE CODING AND DATA COMPRESSION (3cr.)
Discrete and continuous sources. Discrete sources: Huffman coding and run length encoding. Continuous sources: waveform construction coding; PCM, DPCM, delta modulation; speech compression by parameter extraction; predictive encoding; image coding by transformation and block quantization. Fourier and Walsh transform coding. Applications to speech, television, facsimile. Prerequisite: SYSC 5503 or ELG 5119 or the equivalent.

ELG6168 (SYSC 5608) WIRELESS COMMUNICATIONS SYSTEMS ENGINEERING (3cr.)
Multiuser cellular and personal radio communication systems; frequency reuse, traffic engineering, system capacity, mobility and channel resource allocation. Multiple access principles, cellular radio systems, signalling and interworking. Security and authentication. Wireless ATM, satellite systems, mobile location, wireless LANs, wireless local loops, broadband wireless etc. Corequisites: SYSC 5503 or ELG 5119, and SYSC 5504 or ELG 5375, or their equivalents.

ELG6169 (SYSC 5609) DIGITAL TELEVISION (3cr.)

ELG6170 (SYSC 5700) SPREAD SPECTRUM SYSTEMS (3cr.)
Types of spread spectrum systems; FH and DS-SS, TH-SS using radio. Hybrid DS/FH-SS. Pseudo-noise generators: statistical properties of M sequences, Galois field connections, Gold codes, OVSF codes. Code tracking loops, initial synchronization of receiver spreading code. Performance in interference environments and fading channels. CDMA systems. SS applications in UWB communications and Imaging systems. Prerequisite: ELG 6154 (SYSC 5504) or the equivalent.

ELG6184 (SYSC 5804) ADVANCED TOPICS IN COMMUNICATIONS SYSTEMS (3cr.)

ELG6365 (ELEC 5605) OPTICAL FIBRE COMMUNICATIONS (3cr.)
Transmission characteristics of and design considerations for multi-mode and single-mode optical fibre waveguides; materials, structures, and device properties of laser light sources; properties and performance of p-i-n and avalanche photodiodes; types of optical fibre signal formats, preamplifier topologies and noise, receiver sensitivity, transmitter design; link design for digital systems.

ELG6366 (ELEC 5606) PHASE-LOCKED LOOPS AND RECEIVER SYNCHRONIZERS (3cr.)
Phase-locked loops: components, fundamentals, stability, transient response, sinusoidal operation, noise performance, tracking, acquisition and optimization.
Receiver synchronizers: carrier synchronizers including squaring loop, Costas loop, and remodulator for BPSK, QPSK BER performance; clock synchronizers including early late gate, inphase/quadphase, and delay line multiplier; direct sequence spread spectrum code synchronizers including single dwell and multiple dwell serial PN acquisition, matched filter PN acquisition, delay locked loop and Tau-Dither loop PN tracking; frequency hopped spread spectrum time and frequency synchronization.

ELG7572 (EACJ 5702) SUJETS CHOISIS EN TÉLÉCOMMUNICATIONS ET EN TRAITEMENT DE SIGNAUX (3cr.)

Traitement des signaux, de la parole et des images / Signal, Speech and Image Processing

ELG5127 (EACJ 5304) MEDICAL IMAGE PROCESSING (3cr.)
Mathematical models of image formation based on the image modality and tissue properties. Linear models of image degradation and reconstruction. Inverse problems and regularization for image reconstruction. Image formation in Radiology, Computed Tomography, Magnetic Resonance Imaging, Nuclear Medicine, Ultrasound, Positron Emission Tomography, Electrical Impedance Tomography. Also offered as SYSC 5304. Precludes additional credit for EACJ 5601 (ELG 7173) if EACJ 5601 was taken as this topic. Prerequisites: ELG 4172, CEG 4311, SYSC 4405 or permission of the Institute.

ELG5370 (EACJ 5370) MULTITRANSITION SIGNAL DECOMPOSITION: ANALYSIS AND APPLICATIONS (3cr.)
Multirate signal processing: sampling rate conversion, polyphase representation. Bases, filter banks: series expansion of discrete-time signals, series expansion of continuous-time signals, multiresolution concept and analysis, construction of wavelet, wavelet series. Complexity of multirate discrete-time processing, filter banks, and wavelet series computation. Prerequisite: a basic course in Digital Signal Processing such as ELG 5376 or ELG 4172.

ELG5376 (EACJ 5507) DIGITAL SIGNAL PROCESSING (3cr.)

ELG5377 (EACJ 5800) ADAPTIVE SIGNAL PROCESSING (3cr.)
Theory and techniques of adaptive filtering, including Wiener filters, gradient and LMS methods; adaptive transversal and lattice filters; recursive and fast recursive least squares; convergence and tracking performance; implementation. Applications, such as adaptive prediction; channel equalization; echo cancellation; source coding; antenna beamforming; spectral estimation. Precludes additional credit for Engineering ELG 6160. Prerequisite: SYSC 5003 or ELG 5119, or the equivalent; SYSC 5602 or ELG 5376 or the equivalent.

ELG5378 (EACJ 5509) IMAGE PROCESSING AND IMAGE COMMUNICATIONS (3cr.)

ELG5385 (EACJ5385) MATRIX METHODS AND ALGORITHMS FOR SIGNAL PROCESSING (3cr.)
Representation and approximation in vector spaces, matrix factorization, pseudoinverses, application of eigen decomposition methods, Singular Values Decomposition, least squares problems, applications of special matrices, iterative algorithms, expectation maximization algorithm.

ELG5776 (EACJ 5508) TRAITEMENT NUMÉRIQUE DES SIGNAUX (3cr.)

ELG6160 (SYSC 5600) ADAPTIVE SIGNAL PROCESSING (3cr.)
Theory and techniques of adaptive filtering, including Wiener filters, gradient and LMS methods; adaptive transversal and lattice filters; recursive and fast recursive least squares; convergence and tracking performance; implementation. Applications, such as adaptive prediction; channel equalization; echo cancellation; source coding; antenna beamforming, spectral estimation. Prerequisites: SYSC 5503 or ELG 5119, or equivalent; SYSC 5602 or ELG 5376 or equivalent.

ELG6161 (SYSC 5601) NEURAL SIGNAL PROCESSING (3cr.)

ELG6162 (SYSC 5602) DIGITAL SIGNAL PROCESSING (3cr.)
ELG6163 (SYSC 5603) DIGITAL SIGNAL PROCESSING: MICROPROCESSORS, SOFTWARE AND APPLICATIONS (3cr.)
Characteristics of DSP algorithms and architectural features of current DSP chips: TMS320, DSP-56xxx, AD-21xx and SHARC. DSP multiprocessors and fault tolerant systems. Algorithm/software/hardware architecture interaction, program activity analysis, development cycle, and design tools. Case studies: LPC, codecs, FFT, echo cancellation. Viterbi decoding. Prerequisite: SYSC 5602 or ELG 5376 or the equivalent.

ELG6164 (SYSC 5604) ADVANCED TOPICS IN DIGITAL SIGNAL PROCESSING: SPEECH COMMUNICATIONS AND APPLICATIONS (3cr.)
Prerequisites: SYSC 5602 or ELG 5376, or the equivalent, and permission of the Department.

ELG6321 (EACJ 5302 / SYSC 5302) PRINCIPLES AND DESIGN OF ADVANCED BIOMEDICAL INSTRUMENTATION (3cr.)
Principles of physiological measurements and related instrumentation with particular applications to cardiology, lung function, cerebral and muscle signals, surgery and anaesthesiology, ultrasound measurements, and critical care for infants. Prerequisite: Permission of the Institute.

ELG7172 (EACJ 5600) TOPICS IN SIGNAL PROCESSING I (3cr.)

ELG7173 (EACJ 5601) TOPICS IN SIGNAL PROCESSING II (3cr.)

ELG7179 (EACJ 5603) TOPICS IN SIGNAL PROCESSING III (3cr.)

Réseau de communications informatiques, systèmes répartis et RNIS à large bande / Computer Communication Networks, Distributed Systems and BISDN

ELG5120 (EACJ 5200) QUEUEING SYSTEMS (3cr.)
Resource sharing issues: delay, throughput and queue length. Basic queueing theory, Markov chains, birth and death processes. M/M/m/n queues, bulk arrival/service systems. Little's Rule. Intermediate queueing theory: M/G/1, G/M/m queues. Advanced queueing theory: G/G/m queue, priority queue, network of queues, etc. Queueing applications. Precludes additional credit for SYSC 5107 (ELG 6117). Prerequisite: One of ELG 5119, SYSC 5003, SYSC 5503, or the equivalent.

ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

ELG5122 (EACJ 5202) MODELLING, ANALYSIS AND PERFORMANCE EVALUATION IN COMPUTER COMMUNICATIONS (3cr.)
Network performance issues and their mathematical analysis techniques. Intermittently available server model, probing and tree search, delay cycle, switch/network topology and reliability. Analysis of controlled and random access methods, routing allocation/control, topological design. Selected topics from current literature on various network applications. Precludes additional credit for ELG 7186 (EACJ 5606). Prerequisites: ELG 5120 (EACJ 5200), ELG 5374 (EACJ 5607), or SYSC 5201 (ELG 6121), or the equivalents.

ELG5374 (EACJ 5607) COMPUTER COMMUNICATION NETWORKS (3cr.)
Network applications, structures and their design issues. Resource sharing/access methods. Network transmission and switching techniques. OSI model. Error control, flow control and various issues related to the physical, data link and network layers. Local area networks. Performance issues of delay-throughput in various protocols. Precludes additional credit for SYSC 5201. Prerequisite: an undergraduate course in probability and statistics such as MAT 2377.

ELG5381 (EACJ 5004) PHOTONICS NETWORKS (3cr.)

ELG5382 (EACJ 5108) SWITCHING AND TRAFFIC THEORY FOR INTEGRATED BROADBAND NETWORKS (3cr.)
Principles of switching theory. Asynchronous Transfer Mode switching architectures. Principle of teletraffic engineering. Queueing theory and performance evaluation techniques as applied to the study of computer network architectures. Current topics in computer network modelling analysis and traffic control for high-speed multimedia networks. Prerequisite: ELG 5374 (EACJ 5607) or ELG 6121 (SYSC 5201), or the equivalent. Co-requisite: ELG 5119 (EACJ 5109) or ELG 6153 (SYSC 5503) or ELG 6103 (SYSC 5003), or the equivalent.

ELG5383 (EACJ 5009) SURVIVABLE OPTICAL NETWORKS (3cr.)
Optical networks design with emphasis on network survivability. Wavelength division multiplexing (WDM), wavelength conversion, optical switch architectures, routing and wavelength assignment algorithms, IP over WDM, optical network protocols, optical network control architectures, protection and restoration, spare capacity allocation, survivable routing, design and performance evaluation. Prerequisites: ELG 5374 or its equivalent.

ELG5386 (EACJ5386) NEURAL NETWORKS AND FUZZY SYSTEMS (3cr.)

ELG6119 (SYSC 5109) TELETRAFFIC ENGINEERING (3cr.)
Congestion phenomena in telephone systems, and related telecommunications networks and systems, with an emphasis on the problems, notation, terminology, and typical switching systems and networks of the operating telephone companies. Analytical queueing models and applications to these systems. Prerequisite: Engineering SYSC 3503 or ELG 5119, or the equivalent.

ELG6121 (SYSC 5201) COMPUTER COMMUNICATION (3cr.)

ELG6127 (SYSC 5207) DISTRIBUTED SYSTEMS ENGINEERING (3cr.)

ELG6180 (SYSC 5800) NETWORK COMPUTING (3cr.)
Design and Java implementation of distributed applications that use telecommunication networks as their computing platform. Basics of networking: Java networking facilities. Introduction to open distributed processing; CORBA, JavaDL, JavaRMI, CGI/HTTP, DCOM, Componentware; Enterprise JavaBeans, ActiveX. Agents: Java code mobility facilities. Security issues; Java security model.

ELG6181 (SYSC 5801) ADVANCED TOPICS IN COMPUTER COMMUNICATIONS (3cr.)

ELG6188 (SYSC 5808) COMMUNICATIONS NETWORK MANAGEMENT (3cr.)
Network management issues, WANs and LANs. The Internet and ISO models of network management. Network management protocols SNMP, CMIP, CMOT, etc. Events, Managed Objects and MIBs. Fault management techniques. Current diagnostic theory and its limitations. AI and Machine learning approaches. Monitoring and fault management tools. Prerequisites: SYSC 5201 or ELG 5374, or the equivalent.

ELG7177 (EACJ 5605) TOPICS IN COMMUNICATIONS I (3cr.)
Current topics in the field.

ELG7178 TOPICS IN COMMUNICATIONS II (3cr.)

Conception assistée par ordinateur pour les circuits électroniques / Computer-Aided Design for Electronic Circuits

ELG6353 (ELEC 5503) RADIO FREQUENCY INTEGRATED CIRCUIT DESIGN (3cr.)
Integrated radio front-end component design, with emphasis on a bipolar process. Overview of radio systems, discussion of frequency response, gain, noise, linearity, intermodulation, image rejection, impedance matching, stability, and power dissipation. Detailed design of low-noise amplifiers, mixers, oscillators and power amplifiers. Design alternatives through the use of one-chip inductors and baluns. The impact of process variations, parasitics, and packaging. Simulation issues and techniques.

ELG6354 (ELEC 5504) ANALYSIS OF HIGH-SPEED ELECTRONIC PACKAGES AND INTERCONNECTS (3cr.)
Introduction to techniques of modelling, simulation and optimization in designing high-speed VLSI packages and systems; models for IC packages, interconnects and ground/power planes; lumped element models, distributed models and EM-based models for high-speed VLSI interconnects; delay, crosstalk and switching noise analysis; simulation of multiconductor transmission line networks; asymptotic waveform evaluation (AWE) and moment matching techniques; concurrent thermal and electrical analysis of IC packages and boards; optimization of signal integrity in IC packages and printed circuit boards; macromodelling of linear and non-linear components and circuits.

ELG6356 (ELEC 5506) SIMULATION AND OPTIMIZATION OF ELECTRONIC CIRCUITS (3cr.)
Time and frequency-domain formulations for simulation, sensitivity analysis and optimization. Optimization techniques for performance, cost and yield-driven analysis of electronic circuits. Optimization approaches to modelling and parameter extraction of active and passive elements. Advanced techniques include statistical modelling, tolerance and reliability optimization, computer-aided tuning and analog diagnosis, and large-scale optimizations. Examples and case studies include FET modelling, optimization of amplifiers, filters, multiplexers, mixers, high-speed VLSI packages/interconnects, signal-integrity in high-speed ICs, printed circuit boards and multichip modules.

ELG6358 (ELEC 5508) COMPUTER METHODS FOR ANALYSIS AND DESIGN OF VLSI AND COMMUNICATION CIRCUITS (3cr.)
Basic principles of CAD tools used for the analysis and design of VLSI circuits and systems. Formulation of circuit equations. Sparse matrix techniques.
Areas of Research

Program Requirements

General Information

ENG7300 MODERN LITERATURE I

ENG6381 VICTORIAN LITERATURE II

ENG6352 RENAISSANCE LITERATURE IV

seminars available in any year, please consult the department webpage. Information is normally available early in the winter for the next academic year. All

Collaborative Program in Women's Studies at the Master's Level

evaluation techniques as applied to the study of computer network architectures. Current topics in computer network modelling analysis and traffic control for

Review of discrete time signals and systems, A/D and D/A conversions, representation in time, frequency, and Z domain, DFT/FFT transforms, FIR/IIR filter

ELG5162 (EAJC 5005) KNOWLEDGE-BASED SYSTEMS: PRINCIPLES AND DESIGN

Migration strategies.

organisationnels de base et leur influence sur la GRH, le défi de la GRH stratégique, le défi d'attirer et de retenir les ressources humaines, le défi de la

ELG5589 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE

mettra l'accent sur les logiciels répartis.

Definitions, applicatons, challenges, lexicons, thesauri, corpora and other linguistic resources. Morphological analysis; tagging. Selected syntactic theories: phrase

Survey of some landmark expert systems; types of architecture and knowledge representation; inferencing techniques; approximate reasoning; truth

CSI5307 EXPERT SYSTEMS

CSI5181 ARTIFICIAL INTELLIGENCE IN SOFTWARE ENGINEERING

CSI5180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE

MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT

Admission

The Engineering Management Program offers a Master of Engineering Management and a Graduate Certificate in Information Technology

Recent and advanced topics in Very Large Scale Integration (VLSI). The subject material will vary from year to year according to research interests in the

Production testing of digital integrated circuits. Cost and difficulty of testing. Outline of methods of testing used in production. Testing schemes and design for

theory of basic semiconductor device structures and aspects of design: PN junctions and bipolar transistors, field effect devices. Current transport relationships

micromachining techniques will provide fabrication background. Design of a variety of devices including piezoresistive, piezoelectric, electromagnetic, thermal,

ELG6320 (EACJ 5208 / ELEC 5200) ADVANCED TOPICS IN INTEGRATED CIRCUITS AND DEVICES

and ground/power planes; lumped element models, distributed models and EM-based models for high-speed VLSI interconnects; delay, crosstalk and switching

ELG6381 (ELEC5801) HIGH-SPEED AND LOW-POWER VLSI

High-Speed and Low-Power CMOS VLSI Circuit techniques covering the low and high levels of abstraction, including Transistor, Switch, Logic-Gate,

Module, and System Levels. At each level students learn the state-of-the-art techniques to optimize the performance and energy consumption of a circuit. They also use one or more of these techniques in a design project. Prerequisites: ELEC 4708 or ELEC 5804 (VLSI Design) or Equivalent (Permission of the Director).

ELG6383 (ELEC 5803) BEHAVIOURAL SYNTHESIS OF ICs

Various topics related to computer analysis and synthesis of VLSI circuits including: logic synthesis, finite state machine synthesis, design methodologies, design for reuse, testing, common VLSI functions, a review of Verilog. Prerequisite: some IC design knowledge such as given in 4708.

Micro-ondes et électromagnétismes / Microwaves and Electromagnetics

ELG5104 (EACJ 5401) ELECTROMAGNETIC WAVES: THEORY AND APPLICATIONS


ELG5108 (EACJ 5305) ELECTROMAGNETIC COMPATIBILITY AND INTERFERENCE


Electromagnetic pulse as an interference source. Modelling EMI/IC circuit boards and backplanes. Prerequisites: ELG 4104 or equivalent.

ELG5379 (EACJ 5402) NUMERICAL METHODS IN ELECTROMAGNETIC ENGINEERING

Review of electromagnetic and potential theory. Formulation of static and electrodynamic problems. Introduction to numerical and field-theoretical modelling

techniques. Numerical methods considered: FD, MoL, SDA, TLM and BPM. Examples of commonly encountered electromagnetic problems at microwave, millimeterwave and optical frequencies. Prerequisite: ELG 4103 or the equivalent.

ELG5504 (EACJ 5403) ONDES ÉLECTROMAGNÉTIQUES : THÉORIE ET APPLICATIONS

Équation homogène d'onde. Ondes planes uniformes et non uniformes. Équation non homogène d'onde. Fonctions de Green. Théorie des potentiels. Problèmes

ELG5779 (EACJ 5406) MÉTHODES NUMÉRIQUES EN GÉNIE ÉLECTROMAGNÉTIQUE

Une introduction aux méthodes modernes de résolution numérique des problèmes électromagnétiques. Le cours couvre des problèmes déterministes et aux
eaux propres. Les méthodes suivantes seront présentées : différences finies, éléments finis, analyse dans le domaine spectral, analyse par modes hybrides,
méthode L.M. Les méthodes seront appliquées aux problèmes suivants : antennes, guides d'onde section arbitrale, lignes micro-ondes et lignes quasi-planaire,

continuous dans les lignes de transmission, conception par ordinateur de composants hyperfréquences. Préalable : ELG 4103 et ELG 4104 ou équivalents.

ELG6344 (ELEC 5404) NEURAL NETWORKS FOR HIGH-SPEED /HIGH-FREQUENCY CIRCUIT DESIGN

Neural network methodologies for computer-aided design of high-speed/high-frequency circuits, including modeling of passive and active devices/circuits, and

their applications in high-level design and optimization in wired and wireless electronic systems.

ELG6349 (ELEC 5409) MICROWAVE AND MILLIMETERWAVE INTEGRATED CIRCUITS

Design of communications electronics components with emphasis on GaAs MMIC implementation. Overview of MESFET, HEMT, HBT device modeling.

Integrated lumped/ distributed passive element modeling. Broadband impedance matching. Design of direct-coupled amplifiers, distributed amplifiers, power

devices and amplifiers, phase shifters, switches, attenuators, mixers, oscillators.

ELG6351 (ELEC 5501) PASSIVE MICROWAVE CIRCUITS

Characteristics of homogeneous and inhomogeneous transmission lines and waveguides. Planar transmission lines: stripline, microstrip, coplanar lines, slotline.

Coupled transmission lines. Modelling of discontinuities. Ferrite components. Microwave network analysis: parameters, CAD models. Design of impedance-

matching networks, directional couplers, power splitters, filters. Applications in MICs and MMICs.

ELG6355 (ELEC 5505) PASSIVE CIRCUIT THEORY

General description of networks, leading to matrix representation of n-terminal lumped and distributed networks. Elements of matrix algebra as applied to

networks. Properties of network functions; poles and zeros of driving point and transfer functions. Foster and Cauer canonical forms. Synthesis of lossless two-

ports, single- and double-terminated. Modern filter theory; approximation of characteristics by rational functions; Butterworth and Chebyshev approximations.

General parameter filters; graphical design. Elliptic filters, predistortion. Phase response and group delay; all-pass and Bessel filters.

ELG6357 (ELEC 5507) ACTIVE CIRCUIT THEORY (3cr.)
ENG7900 SECOND LANGUAGE REQUIREMENT

ENG6303 PROFESSIONAL DEVELOPMENT


High-tech business buying behaviour, competitive and environmental analysis. Implications for marketing inside the tornado: target segments, performance

Marketing Concept and Marketing Management, and the significance of operating in a technology-intensive global economy. Analyzing market opportunities,

MBA5250 INTRODUCTION TO CORPORATE FINANCE

CSI5581 APPLICATIONS DE L'INTELLIGENCE ARTIFICIELLE DANS LE DEVELOPPEMENT DES SYSTÈMES

Exercises in knowledge acquisition, representation, and processing will be given.

A programming-oriented introduction to selected topics in Artificial Intelligence (A.I.). Topics for consideration include: A.I. programming techniques, pattern

Relationships to decision support systems.


supervisor will oversee the student's work and provide the final grade S (satisfactory) or NS (not satisfactory).

EMP5169 ADVANCED TOPICS IN RELIABILITY ENGINEERING

using modern programming languages.

The concept of maintainability. The organization and management of maintainability. Allocations and predictions, life cycle costing, maintenance analysis.


CSI5114 (COMP 5504) AUTOMATED OFFICE SYSTEMS

Various possibilities exist for pursuing directed studies on topics approved by the Department and which a full-time faculty member has agreed to direct,

amplifiers, sinusoidal oscillators, amplitude modulators, demodulators, frequency modulators, frequency demodulators, mixers and Phase Locked Loop (PLL) is

Various topics related to computer analysis and synthesis of VLSI circuits including: logic synthesis, finite state machine synthesis, design methodologies, design

power amplifiers. Design alternatives through the use of one-chip inductors and baluns. The impact of process variations, parasitics, and packaging. Simulation

CMOT, etc. Events, Managed Objects and MIBs. Fault management techniques. Current diagnostic theory and its limitations. AI and Machine learning

algorithms, simulated annealing, downhill simplex search. Neural Networks: adaptive networks; bidirectional associative memories; supervised and unsupervised

codecs, FFT, echo cancellation. Viterbi decoding.

ELG6376 (ELEC 5607) ANTENNAS AND ARRAYS (3cr.)

Terminology and definitions; radiation patterns, beam width, beam efficiency, gain, effective area, aperture efficiency, polarisation. Basic antenna categories:

pencil, defocused, split, multiple, shaped, scanning beam. Basic antenna types: dipole, horns, paraboloid, offset gridded multi-beam, beam-waveguide


synthesis. Field fundamentals: Maxwell's equation, dipoles, radiation and mutual impedance, duality, slotted waveguide. Reflector antennas: GO, Fermat's

principle, GO synthesis, physical optics. Paraboloids, dual-polarised reflector, shaping, Cassegrarian feed, profile errors, multi-beam reflectors. Phased array

fundamentals; space factor and immersed element pattern, Z-transform, grating lobe diagram, blind spots, thinned arrays, series/corporate/matrix feed, feed

systems and phase shifter design.

ELG6368 (ELEC 5608) FOURIER OPTICS (3cr.)

The theory and applications of diffractive and non-diffractive coherent optics, with emphasis on holograms, tomography and high-speed optical computing.

Mathematical basis: generalized 2-D Fourier transforms, transfer function of an optical system, 2-D sampling theory, Helmholtz equation, Green's theorem, and

the classical diffraction theories. Eikonal equations; the lens as an optical Fourier transformer; optical imaging and filtering. Bragg cells and their application in

optical correlators and spectrum analyzers. Computed axial tomography (CAT scans) with non-diffractive and diffractive sources: Fourier Slice theorem,

Filtered Backprojection, Born and Rytov approximations. Physical and computer-generated holograms, volume holograms, holographic optical elements.

Optical computing: spatial filtering, holographic memory, optical processors, optical pattern recognition.

ELG6369 (ELEC 5609) NONLINEAR MICROWAVE DEVICES AND EFFECTS (3cr.)

The physical basis and mathematical modelling of a variety of microwave/millimetre-wave devices, (some of which exhibit the most extreme nonlinear behaviour

known), how they can be exploited in practical circuits and systems, and how the resulting device/circuit interactions can be analyzed. Devices include two-

terminal nonlinear-resistance elements (varistors) and two two-terminal nonlinear-reactance devices (varactors) based on classical, heterostructure and

superconducting technologies: pn and Schottky-barrier diodes, tunnel and resonant-tunneling diodes, BIN and BNN varactor diodes, single-barrier-varactor
diodes, high-electron-mobility varactor diodes, Josephson-junction diodes, and SIS quasiparticle tunneling junctions. Three-terminal nonlinear devices include

MESFETs, HBTs, and HEMTs and RHETs. Circuit applications encompass direct radiation detectors; frequency mixers; resistive, reactive, and active

frequency multipliers; as well as reactive and regenerative frequency dividers. Emphasis will be placed on analytical approaches that provide global insight into

the nonlinear phenomena.

ELG6372 (ELEC 5702) OPTICAL ELECTRONICS (3cr.)

Generation, manipulation and transmission of optical radiation, with emphasis on fundamental principles. Applications in optical sensing, optical communications

and optical computing. Electromagnetic wave propagation in crystals; review of geometric optics; Gaussian beam propagation; optical fibres; dielectric

waveguides for optical integrated circuits; optical resonators; optical properties of materials; theory of laser oscillation; specific laser systems; electro-optic

modulators; photorefractive materials and applications; holography; optical interconnects.

ELG6379 (ELEC 5709) ADVANCED TOPICS IN ELECTROMAGNETICS (3cr.)

ELG7100 (EACJ 5404) TOPICS IN ELECTROMAGNETICS I (3cr.)

ELG7101 (EACJ 5405) TOPICS IN ELECTROMAGNETICS II

ELG7500 (EACJ 5308) SUJETS CHOISIS EN ÉLECTROMAGNÉTISME (3cr.)
Program Requirements

These courses are considered to provide the minimum background in fluid mechanics, and in physical, chemical, and biochemical treatment of water. ENGR6380 VICTORIAN LITERATURE I ENGR6356 RESTORATION LITERATURE II

Practice of teaching, covering such topics as syllabus construction, teaching 'styles,' classroom management, teaching dossiers, and student evaluation. Graded Internet database searches, both in the discipline of English as well as in related fields (such as history, philosophy, and sociology), and evaluation of Internet requirements of the collaborative program include two core courses in Women's Studies and a thesis on a topic related to women's studies.

than a mark of B will automatically be asked to withdraw from the program. Most graduate courses in the Department of English at the diversity concepts, modelling and error probability performance evaluation. Synchronization in digital communications. Spread spectrum in digital transmission Measure of information: entropy, relative entropy, mutual information, asymptotic equipartition property, entropy rates for stochastic processes; Data knowledge. Demons. Production systems. Solution searching algorithms. Expert system components. Inference engine principle and representation. Knowledge-and inter-project linkages), and inter-firm relationships (technology and capability complementarities, dominant designs).

MBA6263 TECHNOLOGY-BASED LARGE FIRMS

Overview of the Marketing process: key concepts, tools and procedures, in the context of a technology-intensive global economy. Definition of Marketing, the Business processes, organization and ICTs. Information and communication technologies foundations. System development (focus on analysis and design). Accounting and internal reporting are discussed.

is known), how they can be exploited in practical circuits and systems, and how the resulting device/circuit interactions can be analyzed. Devices include two-and conditional; power gain of conjugate and mismatched two-port amplifiers. Amplifier gain sensitivity. Stability, inherent and conditional; power gain of Electromagnetic pulse as an interference source. Modelling EMI/C circuit boards and backplanes. Also use one or more of these techniques in a design project.


wireless LANs, wireless local loops, broadband wireless etc. Corequisites: SYSC 5503 or ELG 5119, and SYSC 5504 or ELG 5375, or their equivalents. Modulation. Turbo codes and iterative decoding. Co-requisite: ELG 4171 or equivalent.

Current topics in the field, including linear semigroup theory and optimal feedback control. System identification. Least squares and recursive identification techniques. Asymptotic and theoretical properties. Model structure selection. Prediction and

and VLSI processors. GaAs technology. Examples of parallel processing architectures.

ADC6111 (ELEC 5401) DIGITAL SIGNAL PROCESSING SYSTEMS

Prerequisites: ELG 4172, CEG 4311, SYSC 4405 or permission of the Institute.

Prerequisite: SYSC 5303 (ELG 6153) or ELG 5119 (ISYS

Prerequisite: ELG 4161 or the equivalent.

Prerequisites: ELG 5006 or ELG 5007 or permission of the Department.

Prerequisite: ELG 6154 or ELG 6164 or permission of the Department.

Prerequisite: ELG 4172, CEG 4311, SYSC 4405 or permission of the Institute.

Prerequisite: ELG 4172, CEG 4311, SYSC 4405 or permission of the Institute.

Prerequisite: ELG 5006 or ELG 5007 or permission of the Department.

Prerequisite: ELG 5006 or ELG 5007 or permission of the Department.

Prerequisite: ELG 5006 or ELG 5007 or permission of the Department.

Prerequisite: ELG 5006 or ELG 5007 or permission of the Department.

Prerequisite: ELG 5006 or ELG 5007 or permission of the Department.
department. Students may be expected to contribute to lectures or seminars on selected topics. **Prerequisite: Permission of the Department.**

**ELG6376 (ELEC 5706) SUBMICRON CMOS AND BICMOS CIRCUITS FOR SAMPLED DATA APPLICATIONS** (3cr.)
The analog aspects of digital CMOS and BiCMOS circuit design in submicron technologies including reliability; sampled analog circuits, including amplifier nonidealities and switch charge injection; CMOS/BiCMOS amplifier design considerations, leading up to standard folded-cascode and two-stage circuits.

**ELG6378 (ELEC 5708) ASICs IN TELECOMMUNICATIONS** (3cr.)
The definition of Application Specific Integrated Circuits is given along with current ASIC technology trends. CMOS and BiCMOS fabrication technologies are compared for their potential use in communications circuits. Circuit building blocks such as amplifiers, switched-capacitor filters and analog to digital converters are overviewed in the context of their communications applications. An overview of vendor technologies is followed by application examples such as line drivers, pulse shaping and equalization circuits, high-speed data transmission over twisted pair copper cables and mobile radio components and implementation issues. Students are required to submit a related literature study and design a communications integrated circuit component using a standard cell library environment.

**ELG6384 (ELEC 5804) VLSI DESIGN** (3cr.)
Integrated circuit design with a strong emphasis on design methodology. Design philosophies considered include Full Custom design, standard cells, gate arrays and sea-of-gates using CMOS and BiCMOS technology. A prelude to ELEC 5805.

**ELG6385 (ELEC 5805) VLSI DESIGN PROJECT** (3cr.)
Using state-of-the-art CMOS and BiCMOS technologies, students will initiate their own design of an integrated circuit using tools in the CAD lab and submit it for fabrication where the design warrants.

**ELG6388 (ELEC 5806) SIGNAL PROCESSING ELECTRONICS** (3cr.)
Signal processing from the viewpoint of analog circuit design. CCDs, BBDS, transversal filters, recursive filters, switched capacitor filters, with particular emphasis on integration of analog signal processing techniques in monolithic MOS ICs. Detailed operational amplifier design in CMOS technology. Implications of nonideal operational amplifier behaviour in filter performance. Basic sampled data concepts, detailed Z transform analysis of switched capacitor filters and more complex circuits. Noise in analog and sampled analog circuits, including calculation of dynamic range and signal-to-noise ratio.

**ELG6389 (ELEC 5809) NONLINEAR ELECTRONIC CIRCUITS** (3cr.)
A unified representation of non-linear circuits used in today’s telecommunications ICs is introduced. Nonlinear representation of circuits based on operational amplifiers, sinusoidal oscillators, amplitude modulators, demodulators, frequency modulators, frequency demodulators, mixers and Phase Locked Loop (PLL) is introduced. Design implications for commonly used Complementary Metal-Oxide Semiconductor (CMOS) and bipolar circuits. Precluded additional credit for this course taken previously as a special topics course ELG 6375 (ELEC 5705) in Fall 1999, Winter 2004 and Winter 2005. **Prerequisite: Permission of the Institute.**

**Cotes de service / Service Codes**

**ELG5900 Projet / Project** (3cr.)

**ELG7199 (EACJ 5101) DIRECTED STUDIES** (3cr.)
Various possibilities exist for pursuing directed studies on topics approved by the Department and which a full-time faculty member has agreed to direct, including any of the courses listed in the Graduate Calendar that are not being offered on a formal basis in the current academic year.

**ELG7999 THÈSE DE M.Sc.A. / MASC THESIS**

**ELG8000 TRAVAIL COOPÉRATIF - 1er STAGE / CO-OP WORK-TERM I**
Pour les étudiants et les étudiantes d'un programme coopératif de maîtrise qui font leur première session de travail. / For students in a co-operative master's program who are on their first work session.

**ELG8001 TRAVAIL COOPÉRATIF - 2e STAGE / CO-OP WORK-TERM II**
Pour les candidats et les candidates à un programme coopératif de maîtrise qui font leur deuxième session de travail. / For students in a co-operative master's program who are on their second work session.

**ELG9997 PROPOSITION DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL**

**ELG9998 EXAMEN DE SYNTHÈSE DU DOCTORAT / PhD COMPREHENSIVE EXAM**

**ELG9999 THÈSE DE DOCTORAT / PhD THESIS**

**Engineering Management (MEng)**
**Engineering Management**

Most of the requirements of this program must be fulfilled in English.

A very good knowledge of the English language is therefore required.

The Engineering Management Program offers a Master of Engineering Management and a Graduate Certificate in Information Technology Project Management.

The objective of the Master of Engineering in Engineering Management program is to develop the knowledge and skills of engineers and scientists in the management of people, projects, resources and organizations in technical environments. The program is supervised by a committee composed of representatives from the Telfer School of Management and of the Faculty of Engineering.

Members of the program are engaged in research in many areas related to engineering management: production and operations management, robotics and manufacturing management, reliability and maintainability engineering, human resource management, industrial and technology marketing, technical project management and control, research and development and innovation management, operation research, forecasting.

**Admission**

Admission to the graduate program in Engineering management (MEng) is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

To be considered for the master's program, applicants must hold a bachelor's degree with a specialization, or a major in engineering or in science (or equivalent) with a minimum average of 70% (B).

Note: Admission to the program is very competitive and preference will be given to candidates who have a few years of full-time work experience in engineering or a related field.

**Language Requirements**

Most of the requirements of these programs must be fulfilled in English. A very good knowledge of this language is therefore required.

Applicants whose first language is not English are required to provide evidence of proficiency in English.

**Program Requirements**

**Master's Degree Requirements**

The program follows the evaluation and promotion regulations of the Faculty of Graduate and Postdoctoral Studies. To receive the Master of Engineering in Engineering Management, a student enrolled in the program must successfully complete 30 credits of academic work: 18 credits of core courses, and 12 elective credits which can include a 6-credit research project. 50% of the core courses should come from engineering, and 50% from management.

Students who register in the graduate Certificate in Information Technology Project Management can apply for admission to the master's and complete the remaining required credits.

The core courses provide the background necessary for the administration of engineering operations in general. Elective courses allow students to develop knowledge and skills in a professional area of their choice. Several courses can be taken either in English or in French. Elective courses are generally offered on a three-year cycle.

**Core Courses (18 credits from the following)**

- EMP5100 INTRODUCTION TO ENGINEERING MANAGEMENT (3cr.)
- EMP5101 INDUSTRIAL ORGANIZATION (3cr.)
- EMP5102 SYSTEMS ENGINEERING AND INTEGRATION (3cr.)
- EMP5103 RELIABILITY, QUALITY AND SAFETY ENGINEERING (3cr.)
- MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
- MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
- MBA5241 MANAGERIAL ACCOUNTING INFORMATION AND DECISIONS (1.5cr.)
- MBA5250 INTRODUCTION TO CORPORATE FINANCE (1.5cr.)
- ADM6260 PROJECT MANAGEMENT I (1.5cr.)
- ADM6261 PROJECT MANAGEMENT II (1.5cr.)

**Electives (12 credits)**
The requirements of the program are as follows:

Ottawa-Carleton Joint Program

Environmental Engineering (MEng / MASc)

ENG7303 MODERN LITERATURE IV
ENG6373 ROMANTIC LITERATURE IV
ENG6361 EIGHTEENTH CENTURY LITERATURE II


 Responsible for the development and delivery of technical content in a course.

Students can select their electives from the list provided below. They can also select other graduate courses offered by the School of Information Technology and Engineering (SITE) (with the CSI course code for Computer Science and ELG course code for Electrical Engineering) and the Telfer School of Management (with the ADM course code) with the approval of the program director and of the academic unit concerned. Course descriptions may be found in the listing of the academic unit concerned. This broad selection of courses allows students to develop knowledge in various areas of interest.

Students can also partially meet the elective requirements by completing the 6-credit Engineering Management project (EMP 6997) plus 6 credits of elective courses, provided they have found a faculty member willing to supervise the project and that the project has been approved by the Director of the program.

EMP5100 INTRODUCTION TO ENGINEERING MANAGEMENT (3cr.)
EMP5101 INDUSTRIAL ORGANIZATION (3cr.)
EMP5102 SYSTEMS ENGINEERING AND INTEGRATION (3cr.)
EMP5103 RELIABILITY, QUALITY AND SAFETY ENGINEERING (3cr.)
EMP5105 MANAGEMENT OF SYSTEMS MAINTAINABILITY (3cr.)
EMP5108 ENGINEERING MANAGEMENT DECISION-MAKING (3cr.)
EMP5109 TOPICS IN ENGINEERING MANAGEMENT (3cr.)
EMP5111 CREATIVITY AND INNOVATION (3cr.)
EMP5112 TECHNOLOGY POLICY AND R & D MANAGEMENT (3cr.)
EMP5113 INTRODUCTION TO MANAGEMENT OF AUTOMATION (ROBOTICS AND NUMERICAL CONTROL) (3cr.)
EMP5115 SIMULATION OF PRODUCTION SYSTEMS (3cr.)
EMP5116 ISSUES IN MANAGEMENT AND OPERATION OF COMMUNICATION NETWORKS (3cr.)
EMP5117 FOUNDATIONS OF SOFTWARE ENGINEERING (3cr.)
EMP5159 ADVANCED PRODUCTION PLANNING AND CONTROL (3cr.)
EMP5169 ADVANCED TOPICS IN RELIABILITY ENGINEERING (3cr.)
EMP5179 MANUFACTURING SYSTEMS ANALYSIS (3cr.)
EMP5910 ÉTUDES DIRIGÉES / DIRECTED STUDIES (3cr.)
EMP5999 PROJET EN GESTION DE LA TECHNOLOGIE / PROJECT IN MANAGEMENT OF TECHNOLOGY (3cr.)
EMP6997 PROJET EN GESTION DE L'INGÉNIERIE / ENGINEERING MANAGEMENT PROJECT (6cr.)

MBA241 MANAGERIAL ACCOUNTING INFORMATION AND DECISIONS (1.5cr.)
MBA250 INTRODUCTION TO CORPORATE FINANCE (1.5cr.)
MBA270 INFORMATION AND COMMUNICATION TECHNOLOGIES FOR MANAGERS (1.5cr.)
MBA320 STRATEGIC MARKETING MANAGEMENT (3cr.)
MBA330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)

MBA6225 HIGH TECHNOLOGY MARKETING (1.5cr.)
MBA6226 NEW PRODUCT DEVELOPMENT (1.5cr.)
MBA6262 HIGH-TECH ENTREPRENEURSHIP (1.5cr.)
MBA6263 TECHNOLOGY-BASED LARGE FIRMS (1.5cr.)

ADM6260 PROJECT MANAGEMENT I (1.5cr.)
ADM6261 PROJECT MANAGEMENT II (1.5cr.)
ADM6271 BUSINESS TELECOMMUNICATIONS SYSTEMS (1.5cr.)
ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)
ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)
ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)
ADM6281 SUPPLY CHAIN MANAGEMENT (1.5cr.)

CSI4106 INTRODUCTION TO ARTIFICIAL INTELLIGENCE (3cr.)
CSI5110 (COMP 5707) PRINCIPLES OF FORMAL SOFTWARE DEVELOPMENT (3cr.)
CSI5111 (COMP 5501) SOFTWARE QUALITY ENGINEERING (3cr.)
CSI5112 (COMP 5207) SOFTWARE ENGINEERING (3cr.)
CSI5114 (COMP 5504) AUTOMATED OFFICE SYSTEMS (3cr.)
CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
CSI5170 (COMP 5800) DISTRIBUTED DATA PROCESSING (3cr.)
CSI5174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)
CSI5180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE (3cr.)
CSI5181 ARTIFICIAL INTELLIGENCE IN SOFTWARE ENGINEERING (3cr.)
CSI5304 (COMP 5602) KNOWLEDGE ENGINEERING (3cr.)
CSI5307 EXPERT SYSTEMS

CSI5386 (COMP 5505) NATURAL LANGUAGE PROCESSING (3cr.)
CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)
ELG5162 (EACJ 5005) KNOWLEDGE-BASED SYSTEMS: PRINCIPLES AND DESIGN (3cr.)
ELG5170 (EACJ 5501) INFORMATION THEORY (3cr.)
ELG5180 (EACJ 5704) ADVANCED DIGITAL COMMUNICATIONS (3cr.)
ELG5374 (EACJ 5607) COMPUTER COMMUNICATION NETWORKS (3cr.)
ELG5375 (EACJ 5506) PRINCIPLES OF DIGITAL COMMUNICATION (3cr.)
ELG5376 (EACJ 5507) DIGITAL SIGNAL PROCESSING (3cr.)
ELG5382 (EACJ 5108) SWITCHING AND TRAFFIC THEORY FOR INTEGRATED BROADBAND NETWORKS (3cr.)

Note on prerequisite courses: It is the student's responsibility to verify that they have the prerequisites for the elective courses that they wish to take and, after consultation with the academic advisor, to obtain permission from the professors teaching theses courses.

Courses

EMP5100 INTRODUCTION TO ENGINEERING MANAGEMENT (3cr.)
Introduction to management. The structure of engineering organizations. Planning and control in engineering management.

EMP5101 INDUSTRIAL ORGANIZATION (3cr.)

EMP5102 SYSTEMS ENGINEERING AND INTEGRATION (3cr.)

EMP5103 RELIABILITY, QUALITY AND SAFETY ENGINEERING (3cr.)

EMP5105 MANAGEMENT OF SYSTEMS MAINTAINABILITY (3cr.)
The concept of maintainability. The organization and management of maintainability. Allocations and predictions, life cycle costing, maintenance analysis.

EMP5106 ENGINEERING MANAGEMENT DECISION-MAKING (3cr.)
Planning, operating, and control decision-making analysis. Quantitative techniques for mono- and multi-criteria, individual and group uncertainty, risky decision-making. Applications in technological systems engineering management.

EMP5107 TOPICS IN ENGINEERING MANAGEMENT (3cr.)
Current topics in industrial practices.

EMP5110 CREATIVITY AND INNOVATION (3cr.)

EMP5112 TECHNOLOGY POLICY AND R & D MANAGEMENT (3cr.)
Relationship between R & D and economic progress. Elements of the Canadian policy on technology; R & D activities in the private and public sectors; government incentives and support programs; comparison with the policies of other industrial countries. Technology planning and R & D management in a Canadian setting; technology forecasting, staffing, structure, strategy and support for R and D. Not accessible to students who have taken ADM 6263 or ADM 6264. Prerequisite: ADM 5330

EMP5113 INTRODUCTION TO MANAGEMENT OF AUTOMATION (ROBOTICS AND NUMERICAL CONTROL) (3cr.)

EMP5115 SIMULATION OF PRODUCTION SYSTEMS (3cr.)

EMP5116 ISSUES IN MANAGEMENT AND OPERATION OF COMMUNICATION NETWORKS (3cr.)
Selected topics and emerging issues in management and operation of public and corporate communication networks: real-time and distributed systems; multimedia communications; integrated services networks.

EMP5117 FOUNDATIONS OF SOFTWARE ENGINEERING (3cr.)
Foundations of software engineering for non-software engineers; basic principles of software engineering; practical laboratories and programming examples using modern programming languages. Prerequisite: Experience with programming in at least one common language over the last decade. Cannot count

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EMP5159 ADVANCED PRODUCTION PLANNING AND CONTROL (3cr.)

EMP5169 ADVANCED TOPICS IN RELIABILITY ENGINEERING (3cr.)

EMP5179 MANUFACTURING SYSTEMS ANALYSIS (3cr.)

EMP5910 ÉTUDES DIRIGÉES / DIRECTED STUDIES (3cr.)
Étude approfondie dans un domaine de la gestion en ingénierie sous la direction d'un professeur et donnant lieu à rapport écrit. Préalable: Permission de la direction du programme. Exclusion: EMP 6997 / Advanced study in an area of engineering management under the supervision of a professor and leading to a written report. Prerequisite: Permission of program director. Exclusion: EMP 6997.

EMP5999 PROJET EN GESTION DE LA TECHNOLOGIE / PROJECT IN MANAGEMENT OF TECHNOLOGY (3cr.)
Analyse d'un projet complété en gestion de la technologie : entrevues de départ, étude de la documentation accumulée, présentation d'un sommaire des leçons retenues, conférence sur les résultats de l'analyse. Le projet, à choisir par l'étudiant, doit être approuvé par un superviseur nommé par le directeur du programme. Le superviseur dirigera les travaux de l'étudiant et soumettra la note finale S (satisfaisant) ou NS (non satisfaisant). / Post-mortem analysis of a completed technology management project. Requirements to consist of exit interviews, a review of extant documentation, presenting a lesson-learned summary and giving a lecture on the findings. The project, to be chosen by the student, will have to be approved by a supervisor appointed by the program director. The supervisor will oversee the student's work and provide the final grade S (satisfactory) or NS (not satisfactory).

EMP6997 PROJET EN GESTION DE L’INGÉNÉRIE / ENGINEERING MANAGEMENT PROJECT (6cr.)
Projet en gestion de l'ingénierie dirigé par un professeur et donnant lieu à la rédaction d'un rapport approfondi. Le choix d'un professeur doit être approuvé par la direction du programme. L'inscription à ce projet est également sujette à l'approbation par la direction d'une proposition de projet détaillée. Noté S (satisfaisant) ou NS (non satisfaisant) par le directeur du projet et un autre professeur nommé par la direction du programme. Préalable: MPC de 8.0/A- ou l'équivalent dans les études antérieures. Exclusion: EMP 5910 / Project in engineering management supervised by a professor approved by the program director and leading to the writing of a major report. Registration in this project is subject to the approval of a detailed project proposal by the program director. Graded S (satisfactory) or NS (not satisfactory) by the supervisor and by another professor appointed by the program director. Prerequisite: CGPS of 8.0/A- or equivalent in previous studies. Exclusion: EMP 5910.

ADM6260 PROJECT MANAGEMENT I (1.5cr.)

ADM6261 PROJECT MANAGEMENT II (1.5cr.)

ADM6271 BUSINESS TELECOMMUNICATIONS SYSTEMS (1.5cr.)
Concepts of voice, data, image and video communications and their integration into local and long distance networks. Business communication systems examples.

ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)

ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)

ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)
Planning, process development and implementation of Enterprise Resource Planning (ERP) systems. Enterprise modeling. Workflow process management. ERP

ADM6281 SUPPLY CHAIN MANAGEMENT (1.5cr.)
Introduction to supply chain management; overview of its role in the organization as an operational, a strategic, and a competitive tool; role of information systems and technology in supply chain management; managing the flow of materials, and inventory management across the supply chain; developing and maintaining supply chain relationships; future challenges including sharing risks in inter-organizational relationships, managing the global supply chain and design for supply chain management. Prerequisite: MBA 5380 or equivalent for MBA students or EMP 5101 for EMP students.

CSI4106 INTRODUCTION TO ARTIFICIAL INTELLIGENCE (3cr.)

CSI4506 INTRODUCTION À L'INTELLIGENCE ARTIFICIELLE (3cr.)

CSI5110 (COMP 5707) PRINCIPLES OF FORMAL SOFTWARE DEVELOPMENT (3cr.)
Methodologies in formal software specification, development, and verification. The use of theorem provers, automated deduction, and other related formal methods for software correctness. Applications in program verification, mobile code safety, and protocol verification.

CSI5111 (COMP 5501) SOFTWARE QUALITY ENGINEERING (3cr.)

CSI5112 (COMP 5207) SOFTWARE ENGINEERING (3cr.)
Topics of current interest in Software Engineering, such as software development systems, structured systems analysis and design, management of software, software tools, validation and verification, programming environments.

CSI5114 (COMP 5504) AUTOMATED OFFICE SYSTEMS (3cr.)
Study of office automation and its extension into commerce and marketing. Tools for collaboration, information transformation, data gathering, storage and retrieval, office agents and CSCW, funds transfer, electronic mail systems and messaging, use of WWW. Ergonomic, legal and regulatory aspects, social and economic factors.

CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decomposition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.

CSI5170 (COMP 5800) DISTRIBUTED DATA PROCESSING (3cr.)
Graph- and non-graph-related algorithms in a distributed environment, such as breadth-first-search, selection in a ring, distributed file sorting, etc. Approaches to distributed database management design: distributed query and update processing, concurrency control, optimal allocation of resources and users, etc. Modelling techniques for distributed systems, such as Petri-nets, etc. Security in a distributed environment.

CSI5174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CSI5180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE (3cr.)
A programming-oriented introduction to selected topics in Artificial Intelligence (A.I.). Topics for consideration include: A.I. programming techniques, pattern matching systems, natural language systems rule-based systems, constraint systems, learning systems, and cognitive systems. Assignments will be both (a) programming-oriented, requiring implementation and/or extensions of prototypes in Lisp and/or Prolog and (b) research-oriented, requiring readings of special topics in current A.I. journals.

CSI5181 ARTIFICIAL INTELLIGENCE IN SOFTWARE ENGINEERING (3cr.)

CSI5304 (COMP 5602) KNOWLEDGE ENGINEERING (3cr.)
Review of basic concepts from artificial intelligence for knowledge engineering. Types of knowledge and knowledge representations. The importance of logic and natural language. Expert systems and other knowledge-based software. Knowledge acquisition tools and techniques. The relation to software engineering. Exercises in knowledge acquisition, representation, and processing will be given.
CSI5307 EXPERT SYSTEMS
Survey of some landmark expert systems; types of architecture and knowledge representation; inferencing techniques; approximate reasoning; truth maintenance; explanation facilities; knowledge acquisition. A project to implement a small expert system will be assigned.

CSI5386 (COMP 5505) NATURAL LANGUAGE PROCESSING (3cr.)
Definitions, applications, challenges, lexicons, thesauri, corpora and other linguistic resources. Morphological analysis; tagging. Selected syntactic theories: phrase structure grammars, unification-based grammars. Parsing techniques: chart, deterministic parsing, logic grammars. Selected semantic representations: logic, logical forms, conceptual graphs. Element of semantic and pragmatic analysis: reference, scope, focus. Elements of statistical language processing and text mining. Introduction to corpus linguistics. Term projects, one on syntax and one on semantics, will be done in Prolog and logic grammars. Prerequisite: CSI 4106 or permission of the program director.

CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)

CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5510 (COMP 5707) PRINCIPES DE DÉVELOPPEMENT FORMEL DE LOGICIENS (3cr.)

CSI5514 (COMP 5504) BUREAUTIQUE (3cr.)
Une étude de la bureautique. Les systèmes de bureautique, réseaux locaux, systèmes de traitement de texte, transferts de fonds, messageries et échanges de documents. La politique économique, sociale et légale des systèmes bureautiques.

CSI5580 (COMP 5100) SUJETS EN INTELLIGENCE ARTIFICIELLE (3cr.)

CSI5581 APPLICATIONS DE L'INTELLIGENCE ARTIFICIELLE DANS LE DÉVELOPPEMENT DES SYSTÈMES (3cr.)

CSI5789 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE (3cr.)

MBA5241 MANAGERIAL ACCOUNTING INFORMATION AND DECISIONS (1.5cr.)
This course focuses on the role of the accounting function internal to the organization. It takes a broad view of managerial accounting, introducing students to various costing systems, cost behaviour patterns and cost structures. It introduces students to the use of accounting for the evaluation of product, managerial and divisional performance. The orientation will help students to understand what accounting can do for decision makers and how accounting choices affect decisions. The course emphasizes the strategic importance of aligning accounting systems with firm technologies and goals. Current issues in management accounting and internal reporting are discussed.

MBA5250 INTRODUCTION TO CORPORATE FINANCE (1.5cr.)

MBA5270 INFORMATION AND COMMUNICATION TECHNOLOGIES FOR MANAGERS (1.5cr.)
Business processes, organization and ICTs. Information and communication technologies foundations. System development (focus on analysis and design). Databases systems. Enterprise resource planning, customer relationship management, decision support systems IT management, social issues, learning and knowledge management, IT and globalization.

MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
Overview of the Marketing process: key concepts, tools and procedures, in the context of a technology-intensive global economy. Definition of Marketing, the
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
The strategic advantage of understanding and integrating organizational behaviour (OB) frameworks in designing and implementing effective human resource (HR) activities (namely attraction, development, maintenance and retention of employees), in measuring performance and in achieving high-performance outcomes in various global organizational contexts. OB topics covered include motivation, rewards, leadership, group dynamics, organizational politics, job and organization design, and culture. Prerequisite: MBA 5235 for MBA students only.

MBA5641 COMPTABILITÉ ET STRATÉGIE (1.5cr.)
Le cours permet aux étudiants de comprendre le rôle de la comptabilité dans les processus de création de richesse au sein de l'entreprise. Il met l'accent sur la gestion des activités et des processus dans la détermination et l'implantation de la stratégie de l'entreprise.

MBA6550 INTRODUCTION À LA GESTION FINANCIÈRE (1.5cr.)
Rôle des marchés financiers. Introduction à la notion de rendement-risque. Calcul actuariel. Modèles d'évaluation des actions ordinaires et privilégiées, des obligations. Sources de financement des entreprises. Cours concomitant: MBA 5740

MBA6760 TECHNOLOGIES DE L’INFORMATION ET DES COMMUNICATIONS POUR GESTIONNAIRES (1.5cr.)

MBA5720 GESTION STRATÉGIQUE DE MARKETING (3cr.)

MBA5730 COMPORTEMENTS ORGANISATIONNELS ET GESTION DES RESSOURCES HUMAINES (3cr.)

MBA6225 HIGH TECHNOLOGY MARKETING (1.5cr.)
High-tech business buying behaviour, competitive and environmental analysis. Implications for marketing inside the tornado: target segments, performance objectives, positioning, product, place, price and promotion. Implementation and profitability analysis. Case studies drawn from several high-tech sectors. Prerequisite: MBA 5320 or ADM 6420 (for students in Electronic Business Technologies).

MBA6226 NEW PRODUCT DEVELOPMENT (1.5cr.)
How to develop new products for high-tech applications in an environment of global competition and shrinking cycle times. Topics include creating the climate, generating ideas, screening ideas, product portfolio selection, team building, managing the formal gating process, testing, killing. New product launch. Product migration strategies. Prerequisite: MBA 6225.

MBA6262 HIGH-TECH ENTREPRENEURSHIP (1.5cr.)
Creating, growing, and sustaining or exiting a new firm in a technology-intensive industry. Issues important to the technology (the scope and nature of technological knowledge and intellectual property protection), financing (seed capital, venture capital, and initial public offerings), and inter-firm relationships (spin-offs, alliances and equity alliances, and acquisitions). The course is practically oriented and will draw upon local expertise to enhance its pertinence and appeal.

MBA6263 TECHNOLOGY-BASED LARGE FIRMS (1.5cr.)
Managing for growth through innovation in large established firms operating in technology-intensive industries. Issues important to the technology (the scope and nature of technological knowledge and its relation to product design), organization design (product-development team, development and adoption processes, and inter-project linkages), and inter-firm relationships (technology and capability complementarities, dominant designs).

ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

ELG5162 (EACJ 5005) KNOWLEDGE-BASED SYSTEMS: PRINCIPLES AND DESIGN (3cr.)
Introduction to Lisp and Objective C. Knowledge representation using rules, semantic nets and frames. State space representation. Procedural and declarative

**ELG5170 (EACJ 5501) INFORMATION THEORY** (3cr.)
Measure of information: entropy, relative entropy, mutual information, asymptotic equipartition property, entropy rates for stochastic processes; Data compression: Huffman code, arithmetic coding; Channel capacity: random coding bound, reliability function, Blahut-Arimoto algorithm, Gaussian channels, colored Gaussian noise and “water-filling”; Rate distortion theory; Network information theory. **Prerequisite:** ELG 5119 (EACJ 5109) or SYSC 5503 (ELG 5119) or the equivalent.

**ELG5180 (EACJ 5704) ADVANCED DIGITAL COMMUNICATIONS** (3cr.)
Techniques and performance of digital signalling and equalization over linear bandlimited channels with additive Gaussian noise. Fading multipath channels: diversity concepts, modelling and error probability performance evaluation. Synchronization in digital communications. Spread spectrum in digital transmission over multipath fading channels. Precludes additional credit for SYSC 5605. **Prerequisite:** SYSC 5504 or ELG 5375 or the equivalent.

**ELG5374 (EACJ 5607) COMPUTER COMMUNICATION NETWORKS** (3cr.)
Network applications, structures and their design issues. Resource sharing/access methods. Network transmission and switching techniques. OSI model. Error control, flow control and various issues related to the physical, data link and network layers. Local area networks. Performance issues of delay-throughput in various protocols. Precludes additional credit for SYSC 5201. **Prerequisites:** an undergraduate course in probability and statistics such as MAT 2377.

**ELG5375 (EACJ 5506) PRINCIPLES OF DIGITAL COMMUNICATION** (3cr.)
Elements of communication theory and information theory applied to digital communications systems. Characterization of noise and channel models. Analysis of digital data transmission techniques for additive Gaussian noise channels. Efficient modulation and coding for reliable transmission. Spread spectrum and line coding techniques. **Prerequisite:** ELG 5119 or SYSC 5503, or the equivalent (may be taken concurrently).

**ELG5376 (EACJ 5507) DIGITAL SIGNAL PROCESSING** (3cr.)

**ELG5382 (EACJ 5108) SWITCHING AND TRAFFIC THEORY FOR INTEGRATED BROADBAND NETWORKS** (3cr.)
Principles of switching theory. Asynchronous Transfer Mode switching architectures. Principle of teletraffic engineering. Queueing theory and performance evaluation techniques as applied to the study of computer network architectures. Current topics in computer network modelling analysis and traffic control for high-speed multimedia networks. **Prerequisite:** ELG 5374 (EACJ 5607) or ELG 6121 (SYSC 5201), or the equivalent. **Co-requisite:** ELG 5119 (EACJ 5109) or ELG 6153 (SYSC 5503) or ELG 6103 (SYSC 5003), or the equivalent.

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**English (MA)**

**Academic Information**

The Department of English offers the degrees of Master of Arts (with or without thesis) and Doctor of Philosophy in English. Both programs equip students to pursue advanced studies in British, Canadian, or American literature informed by a broad knowledge of literary history and by recent developments in literary criticism and cultural theory. The department is well known for its annual Canadian Literature Symposium, and its faculty is distinguished and well-published. The Ontario Council on Graduate Studies (OCGS) has consistently awarded the department the council's highest rating.

The department offers collaborative programs in Women's Studies and in Medieval and Renaissance Studies at the M.A. level, and in Canadian Studies at the PhD level. For more information on these programs, see "Admission Requirements" for the appropriate level of study.

General regulations are to be found in the Faculty of Graduate and Postdoctoral Studies calendar. Please note, however, that any course fulfilling a graduate degree requirement in English must be completed with a mark of B or higher. A student whose record shows any two grades lower than a mark of B will automatically be asked to withdraw from the program. Most graduate courses in the Department of English at the University of Ottawa carry three credits. Requirements are stated in number of credits.

**Admission**

1. The MA program is intended to refine the critical and scholarly skills of high achievement graduates from undergraduate honours programs. An honours BA in English literature with a minimum high second class standing of B+ is normally required. A 500-word statement of interest in the program is required with the application. Students applying for the MA with thesis option should submit a sample of their academic writing, such as an essay written for an undergraduate English course.

2. Students who have completed a BA or equivalent degree with a minimum of six full courses in English with an average of 75 per cent (B+)
may be admitted to a qualifying year which normally comprises 30 credits selected to ensure coverage of the major fields of English literature. These courses must be successfully completed in each case with a mark of B+ or higher. By special permission one or two graduate courses may be substituted for the equivalent number of undergraduate courses. After the requirements of the qualifying year have been satisfactorily fulfilled, students may apply for admission to the regular MA program. Such admission will depend on the quality of their overall record.

Collaborative Program in Women's Studies at the Master's Level

The Department of English is a participating unit in the collaborative program in Women's Studies at the Master's level. This program has been established for students wishing to enrich their training in English by including an interdisciplinary component in Women's Studies. The specific requirements of the collaborative program include two core courses in Women's Studies and a thesis on a topic related to women's studies.

Students should normally apply for acceptance in the Women's Studies collaborative program at the same time as they apply for admission to the Master's program in English.

Collaborative Program in Medieval and Renaissance Studies at the Master’s Level

The Department of English is a participating unit in the collaborative program in Medieval and Renaissance Studies at the Master's level. This program has been established for students wishing to enrich their training in English by including an interdisciplinary component in Medieval and Renaissance Studies. The specific requirements of the collaborative program include two core courses in medieval studies and a thesis on a topic related to Medieval and Renaissance Studies.

Students should normally apply for acceptance in the Medieval and Renaissance Studies collaborative program at the same time as they apply for admission to the Master's program in English.

Program Requirements

Master's Degree Requirements

1. A two year program in which students complete twelve credits of course work and a thesis, of about ninety pages in length, defended in an oral examination;
2. A one year program in which students complete twenty-four credits of course work.

The completion times above are for full-time students. Part-time students may take up to four years to complete MA program, but are not eligible for scholarship support. The residence requirement for students admitted on a full-time basis is three sessions.

In keeping with the bilingual character of the University, the program has a French language requirement. Student may satisfy this requirement by passing FLS 1000, the test administered by the Official Languages and Bilingualism Institute, or its equivalent as determined by the Department of English. A pass on the Department's test leads to an S on the transcript. Students may also satisfy the language requirement by passing six credits of second-year university-level language course(s). These courses are additional to the English courses required for the degree.

Courses

Every year the department usually offers at least three credits in each of the following areas: medieval, renaissance, restoration and 18th century, romanticism, victorian, modern British, American, Canadian, and theory.

The titles below refer to general subject areas, whereas the actual seminars will consist of specific studies in the subject areas. For a detailed description of the seminars available in any year, please consult the department webpage. Information is normally available early in the winter for the next academic year. All courses are three credits.

ENG6300 OLD ENGLISH I (3cr.)

ENG6301 OLD ENGLISH II (3cr.)

ENG6302 RESEARCH METHODOLOGY (1.5cr.)

Preparation of students for the professional study of English. Review and analysis of the expanding number of electronic and print research tools and methods. Internet database searches, both in the discipline of English as well as in related fields (such as history, philosophy, and sociology), and evaluation of Internet
The requirements of the program are as follows:

Program Requirements

ENG6303 PROFESSIONAL DEVELOPMENT (1.5cr.)
Preparation of students for the professional study of English. Introduction to professional concerns and activities: writing and publishing scholarly articles, presenting conference papers, membership in professional organizations, and career opportunities (including the interview). Sessions to be devoted to the practice of teaching, covering such topics as syllabus construction, teaching "styles," classroom management, teaching dossiers, and student evaluation. Graded S/NS. Offered in the fall session.

ENG6310 MIDDLE ENGLISH LITERATURE I (3cr.)
ENG6320 MIDDLE ENGLISH LITERATURE (3cr.)
ENG6321 MIDDLE ENGLISH LITERATURE III (3cr.)
ENG6322 MIDDLE ENGLISH LITERATURE IV (3cr.)
ENG6341 SHAKESPEARE I (3cr.)
ENG6342 SHAKESPEARE II (3cr.)
ENG6343 SHAKESPEARE III (3cr.)
ENG6344 SHAKESPEARE IV (3cr.)
ENG6330 RENAISSANCE LITERATURE I (3cr.)
ENG6350 RENAISSANCE LITERATURE II (3cr.)
ENG6351 RENAISSANCE LITERATURE III (3cr.)
ENG6352 RENAISSANCE LITERATURE IV (3cr.)
ENG6355 RESTORATION LITERATURE I (3cr.)
ENG6356 RESTORATION LITERATURE II (3cr.)
ENG6357 RESTORATION LITERATURE III (3cr.)
ENG6360 EIGHTEENTH CENTURY LITERATURE I (3cr.)
ENG6361 EIGHTEENTH CENTURY LITERATURE II (3cr.)
ENG6362 EIGHTEENTH-CENTURY LITERATURE III (3cr.)
ENG6363 EIGHTEENTH-CENTURY LITERATURE IV (3cr.)
ENG6370 ROMANTIC LITERATURE I (3cr.)
ENG6371 ROMANTIC LITERATURE II (3cr.)
ENG6372 ROMANTIC LITERATURE III (3cr.)
ENG6373 ROMANTIC LITERATURE IV (3cr.)
ENG6380 VICTORIAN LITERATURE I (3cr.)
ENG6381 VICTORIAN LITERATURE II (3cr.)
ENG6382 VICTORIAN LITERATURE III (3cr.)
ENG6383 VICTORIAN LITERATURE IV (3cr.)
ENG6900 SECOND LANGUAGE REQUIREMENT
In keeping with the bilingual character of the University, the program has French language requirement. Students may satisfy this requirement by passing the FLS1000, the test administered by the Official Languages and Bilingualism Institute, or the departmental language test. The departmental tests are one-hour examinations which require the candidate to translate, with the aid of a dictionary, a passage of literary criticism or another appropriate selection of similar difficulty approximately one page in length. Students may also satisfy the language requirement by passing six credits of second-year university-level language course(s). These courses are additional to the English courses required for the degree. In all cases, the minimum passing grade is 50 percent and leads to an "S" (Satisfactory) on the transcript for ENG6900.

ENG7300 MODERN LITERATURE I (3cr.)
ENG7301 MODERN LITERATURE II (3cr.)
ENG7302 MODERN LITERATURE III (3cr.)
ENG7303 MODERN LITERATURE IV (3cr.)
ENG7310 AMERICAN LITERATURE I (3cr.)
ENG7311 AMERICAN LITERATURE II (3cr.)
ENG7312 AMERICAN LITERATURE III (3cr.)
ENG7313 AMERICAN LITERATURE IV (3cr.)
ENG7320 CANADIAN LITERATURE I (3cr.)
ENG7321 CANADIAN LITERATURE II (3cr.)
ENG7322 CANADIAN LITERATURE III (3cr.)
ENG7323 CANADIAN LITERATURE IV (3cr.)
ENG7330 ANGLO IRISH LITERATURE (3cr.)
ENG7331 ANGLO-IRISH LITERATURE II (3cr.)
ENG7332 ANGLO-IRISH LITERATURE III (3cr.)
ENG7370 HISTORY OF ENGLISH LANGUAGE (3cr.)
ENG7375 COMMONWEALTH LITERATURE (3cr.)
ENG7376 COMMONWEALTH LITERATURE II (3cr.)
ENG7377 COMMONWEALTH LITERATURE III (3cr.)
ENG7380 HISTORY OF CRITICISM I (3cr.)
ENG7381 THEORY OF CRITICISM I (3cr.)
ENG7382 HISTORY OF CRITICISM II (3cr.)
ENG7383 HISTORY OF CRITICISM III (3cr.)
ENG7384 THEORY OF CRITICISM II (3cr.)
ENG7385 THEORY OF CRITICISM III (3cr.)

ENG7900 SECOND LANGUAGE REQUIREMENT
In keeping with the bilingual character of the University, the program has a French language requirement. Students may satisfy this requirement by passing FLS1000, the test administered by the Official Languages and Bilingualism Institute, or the departmental language test. The departmental tests are one-hour examinations which require the candidate to translate, with the aid of a dictionary, a passage of literary criticism or another appropriate selection of similar difficulty approximately one page in length. Language testing of languages other than French is normally administered by the Department. Students may also satisfy the language requirement by passing six credits of second-year university-level language course(s). These courses are additional to the 18 credits required for the degree. In all cases, the minimum passing grade is 66 percent and leads to an "S" (Satisfactory) on the transcript for ENG7900. NOTE: Students who
achieve 66% or higher at the MA level will not be required to retake the test if they continue on to the PhD.

Readings and Research

ENG6101 DIRECTED RESEARCH (THESIS PROPOSAL) (3cr.)

ENG6111 DIRECTED READINGS I (3cr.)

Only in the most exceptional of circumstances and subject to the approval of the graduate committee will a directed reading be accepted.

ENG6112 DIRECTED READINGS II (3cr.)

Only in the most exceptional of circumstances and subject to the approval of the graduate committee will a directed reading be accepted.

ENG6313 DIRECTED READING (3cr.)

ENG7999 MA THESIS RESEARCH

ENG9998 COMPREHENSIVE EXAM (PhD)

ENG9999 PhD THESIS RESEARCH

Environmental Engineering (MEng / MASc)

Ottawa-Carleton Joint Program

General Information

Established in 2000, the Ottawa-Carleton Institute of Environmental Engineering (OCIEE) combines the teaching and research strengths of the Department of Civil Engineering and the Department of Chemical Engineering at the University of Ottawa with that of the Departments of Civil and Environmental Engineering at Carleton University. The Institute offers graduate programs leading to the degrees of Master of Applied Science (MASc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Environmental Engineering.

The objective of these programs is to prepare candidates for careers in teaching and/or in research, in a private or a public setting. Graduates will acquire autonomy in conducting research and in preparing scholarly publications.

Members of the Institute are involved in four main research fields: water and waste processing or treatment; management of solid and hazardous waste; air pollution; water resources and groundwater management. Further information is posted on the departmental website.

Most of the courses in the graduate programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate programs in Environmental Engineering is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold an honours bachelor’s degree with specialization or a major in environmental engineering or in related engineering disciplines (civil, chemical, mechanical, etc.), or an honours bachelor’s degree with specialization or a major in environmental science disciplines with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who are familiar with the applicant’s work;
4. Provide a statement of purpose indicating their career goals and interests in the proposed research area;
5. For admission to the MASc, identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

Note: All students entering the program are required to have courses in mathematics, probability and statistics equivalent to courses required in undergraduate engineering programs. The Department may require students to take additional courses depending on their backgrounds.

All students entering the program are also required to have taken undergraduate courses equivalent to the following University of Ottawa courses:

- CHG 3312 Fluid Flow
- CVG 3111 Unit Operations
- CHG 3127 Chemical Reactions Engineering
- CVG 2111 Introduction to Fluid Mechanics
- CVG 2131 Introduction to Environmental Engineering
- CVG 3132 Physical/Chemical Unit Operations of Water and Wastewater Treatment

These courses are considered to provide the minimum background in fluid mechanics, and in physical, chemical, and biochemical treatment principles, necessary to adequately follow environmental engineering courses at the graduate level. Depending on their background, students may have been exposed to these principles through a different combination of courses in their undergraduate curriculum. Students entering the program without an equivalent background in these topics are expected to take these courses early in their studies and they are considered additional to those normally required for the degree. The undergraduate courses required are specified in the certificate of admission.

Program Requirements

A- Master of Applied Science (MASc)

The requirements of the program are as follows:

1. Successful completion of 18 credits, with a minimum of 3 credits from each of at least three of the areas of study listed below;

2. Presentation of a seminar EVG5800, which also involves the regular attendance to the departmental seminar series;

3. Presentation and defense of a thesis (EVG7999) based on original research carried out under the direct supervision of a research faculty member in the Department.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Residence

All students must complete a minimum of three sessions of full-time registration.

Minimum Standards

The passing grade in all courses is 70% (B). Students who fail six credits, or the thesis proposal, or whose research progress report is deemed unsatisfactory are required to withdraw from the program.

Duration of the program

The requirements of the program are usually fulfilled within two years of full-time studies.

B- Master of Engineering (MEng)

1- Project Option

The requirements of the program are as follows:

1. Completion of a minimum of 24 course credits, with a minimum of 3 credits from each of at least three of the areas of study listed below;

2. Presentation of a seminar EVG5800, which also involves the regular attendance to the departmental seminar series;

3. Completion of an environmental engineering project (EVG6001).

2- Course Work Option

The requirements of the program are as follows:

1. Completion of a minimum of 30 course credits, with a minimum of 3 credits from each of at least three of the areas of study listed below;

2. Presentation of a seminar EVG5800, which also involves the regular attendance to the departmental seminar series.

Note: Candidates transferring from another university must take at least half their credits at the institute.

Areas of Research
In keeping with the objective of ensuring a breadth of knowledge for graduates of the program, students in the master's program are expected to take at least one graduate level course from each of at least three of the following areas of study:

- Air pollution
- Water resources management, groundwater management and contaminant transport
- Water and waste water treatment
- Management of solid, hazardous, and radioactive waste and pollution prevention
- Environmental impact assessment

**Courses**

Le choix de cours doit être approuvé par le directeur de recherche ou le Comité consultatif. L'étudiant peut choisir des cours des deux universités dans la liste suivante.

Les cours énumérés ci-dessous sont regroupés par domaine. Les étudiants doivent suivre au moins un cours dans au moins trois des cinq domaines. Le directeur de l'Institut décidera si un cours offert en tant que thème spécial ou études dirigées coincide avec l'un des domaines. Les descriptions de cours figurent dans les sections consacrées aux départements concernés dans les annuaires des deux universités.

Les cotizations entre parenthèses sont celles de Carleton University. Les cours énumérés ici ne sont pas nécessairement offerts chaque année.

Course selection is subject to the approval of the advisor or the advisory committee. Students may choose courses offered at either university from among those listed below.

The courses listed below are grouped by area of study. Students must complete at least one course in three of the five areas. The director will decide when a course offered under a special topic or directed studies heading can be considered to meet the requirements of a given area. Course descriptions may be found in the departmental sections of the calendars concerned.

Course codes in parentheses are for Carleton University. Only a selection of courses given in a particular academic year.

**Pollution atmosphérique / Air Pollution**

CVG7161 (ENVE 5102) TRAFFIC RELATED AIR POLLUTION (3cr.)

CVG7162 (ENVE 5103) AMBIENT AIR QUALITY AND POLLUTION MODELLING (3cr.)

CHG8132 (ENVE 5105) ADSORPTION SEPARATION PROCESSES (3cr.)


EVI5101 (ENVE 5101) AIR POLLUTION CONTROL (3cr.)

EVI7104 (ENVE 5104) INDOOR AIR QUALITY (3cr.)

**Gestion des ressources en eau, gestion des eaux souterraines et transport des agents contaminants / Water Resources Management, Groundwater Management, and Contaminant Transport**

CVG5124 (CIVJ 5605) COASTAL ENGINEERING (3cr.)

Key concepts in coastal engineering. Wave mechanics and coastal hydrodynamics, (2) sediment transport and coastal morphodynamics and (3) coastal structures and coastal zone management. Wave mechanics and coastal hydrodynamics to include small-amplitude wave theory, finite amplitude wave theories (Stokes, Cnoidal and solitary wave), wave generation, wave transformations, development and prediction, hydrodynamics of coastal circulation. Sediment transport and coastal morphodynamics to include: wave and current-induced sediment transport, coastal sediment processes, longshore and cross-shore beach morphologic transformations, etc. Coastal structures and coastal zone management to include: beach erosion control, coastal structures (dikes, breakwaters, groins, seawalls), beach nourishment, coastal pollution and control, nearshore area development.

CVG5125 (CIVJ 5601) STATISTICAL METHODS IN HYDROLOGY (3cr.)
Concepts of probability and random variables applied to hydrology. Statistical distributions, their approximation and analysis. Statistical inference, including tests of significance and estimation theory. Linear and multivariate correlation and regression techniques. Data generation and simulation techniques for design of water-resource systems. Introduction to hydrologic and meteorologic time series.

**CVG5126 (CIVJ 5602) STOCHASTIC HYDROLOGY**

**CVG5131 (CIVJ 5606) RIVER ENGINEERING**
Introduction to fluvial processes and flow regimes: modes of sediment transportation; suspended and bedload transport theories; sediment measuring techniques and their limitations; secondary circulation and the meander process; hydraulics of bridge waterways and pipeline crossings; local scour at bridge piers; erosion protection.

**CVG5154 (CIVJ 5308) RANDOM VIBRATION (3cr.)**

**CVG5160 (CIVJ 5503) SEDIMENT TRANSPORT (3cr.)**
An introduction to particle transport, with special emphasis on river engineering applications, including natural channel design. Sediment properties, initiation of motion, bed load, suspended load, fluvial hydraulics, alluvial channels, bank erosion and protection, natural channel design. Special topics include contaminated sediments, local scour, morphodynamic modelling, fluvial habitat.

**CVG5162 (CIVJ 5504) RIVER HYDRAULICS (3cr.)**
Advanced concepts of river hydraulics, with an emphasis on field measurement techniques and application of numerical models. Navier-Stokes equations, turbulence, flow resistance, numerical modelling of simplified momentum and continuity equations, field-based measurement and statistical analysis of velocity fields. Special topics include contaminant transport, morphodynamic modelling.

**CVG7108 (CIVE 5504) SEEPAGE AND WATER FLOW THROUGH SOILS (3cr.)**

**CVG7163 (ENVE 5302) CASE STUDIES IN HYDROGEOLOGY (3cr.)**

**CHG8158 (ENVJ5304) POROUS MEDIA (3cr.)**

**GEO5143 (GEOL 5403) ENVIRONMENTAL ISOTOPES AND GROUNDWATER GECHEMISTRY (3cr.)**
Stable environmental isotopes (18O, 2H, 13C, 34S, 15N) in studies of groundwater origin and flow, and geothermal studies. Groundwater dating techniques involving tritium and radiocarbon, and exotic radioisotopes (e.g. 36Cl, 39Ar, 85Kr). Low temperature aqueous geochemistry and mineral solubility with emphasis on the carbonate system. Some applications to paleoclimatology will be discussed. Prerequisite: Fourth-year Hydrogeology (67.420 or GEO 4342) or equivalent.

**GEO5144 (ERTH 5404) GROUNDWATER RESOURCES**
Advanced topics in the exploration and development of groundwater resources, including detailed aquifer response analysis. Examination of hydrogeology in arid and undeveloped regions will also be included.

**GEO5146 (ERTH 5406) TECHNIQUES OF GROUNDWATER RESOURCES EVALUATION (3cr.)**
Governing groundwater flow equations, initial and boundary conditions; simple numerical solutions (spreadsheets); complex numerical solutions (commercial software); and analytical solutions. Applications: aquifer response test analysis, capture zone analysis, groundwater flow modeling, water budgeting, and aquifer vulnerability assessment. Prerequisite: undergraduate hydrogeology.

**GEO5147 (ERTH 5407) GECHEMISTRY OF NATURAL WATERS (3cr.)**
Aqueous speciation, solubility of metals, minerals and gas, reaction kinetics and equilibria. Chemistry and dynamics of groundwaters and hydrothermal fluids.

**GEO5148 (ERTH 5408) THEORY OF FLOW AND CONTAMINANT TRANSPORT IN GEOLOGICAL MATERIALS (3cr.)**
Development of governing groundwater flow equations and solute transport equations from first principles, and application of principles in case studies. Topics: Forces and potentials, fluids, geological materials, contaminants, case studies. Prerequisite: undergraduate hydrogeology.

**EVI7301 (ENVE 5301) CONTAMINANT HYDROLOGY (3cr.)**

**EVI7303 (ENVE 5303) MULTIPHASE FLOW IN SOILS (3cr.)**
Gestion des déchets solides, dangereux et radioactifs et prévention de la pollution / Management of Solid, Hazardous, and Radioactive Waste and Pollution Prevention

CVG5133 (ENVJ 5906) SOLID WASTE DISPOSAL (3cr.)
Collection and disposal of solid wastes. Sanitary landfill, composting, incineration and other methods of disposal. Material and energy recovery.

CVG5179 (ENVJ 5908) ANAEROBIC DIGESTION (3cr.)
Advanced theoretical, biological, and practical aspects of anaerobic digestion processes. Principles to be applied to the design and application of conventional and advanced anaerobic processes used for treatment of municipal and industrial wastewaters. Topics to include microbiology and biochemistry fundamentals, techniques for monitoring anaerobic digestion performance, municipal sludge stabilization, anaerobic composting, anoxic/anaerobic bioremediation, Andrew's dynamic model. Design of the following: two-phase digestion; Downflow Stationary Fixed Film (DSFF) reactors; Upflow Anaerobic Sludge Blanket (UASB); Upflow Blanket Filter (UBF) reactors; and Anaerobic Sequencing Batch Reactors (ASBR).

CVG5331 (ENVJ 5902) SLUDGE UTILIZATION AND DISPOSAL (3cr.)
Introduction to sludge processing technology and procedures to be used in the planning and design of sludge treatment processes. Evaluate the economics and performance of sludge unit process operations. Selection of methods for final disposition of sludge.

EVI5203 (ENVE 5203) HAZARDOUS AND RADIOACTIVE WASTE MANAGEMENT (3cr.)

EVI7201 (ENVE 5201) GEO-ENVIRONMENTAL ENGINEERING (3cr.)

EVI7202 (ENVE 5202) CONTAMINANT FATE MECHANISMS (3cr.)

Traitement de l’eau et des eaux usées / Water and Wastewater Treatment

CVG5130 (ENVJ 5900) WASTEWATER TREATMENT PROCESS DESIGN (3cr.)
The physical, chemical and biological processes involved in the treatment of domestic and industrial wastes. Waste characteristics, stream assimilation, biological oxidation, aeration, sedimentation, anaerobic digestion, sludge disposal.

CVG5132 (ENVJ 5901) UNIT OPERATIONS OF WATER TREATMENT (3cr.)
Unit operations and unit processes involved in the treatment of a water supply for various uses. Topics included are: water quality, water microbiology, sedimentation, chemical treatment, disinfection, water chemistry, flocculation.

CVG5134 (ENVJ 5907) CHEMICAL ANALYSIS FOR ENVIRONMENTAL ENGINEERING (3cr.)

CVG5135 (CIVJ 5608) WATER SUPPLY AND SANITATION IN DEVELOPING COUNTRIES (3cr.)

CVG5137 (ENVJ 5905) WATER AND WASTEWATER TREATMENT PROCESS ANALYSIS (3cr.)
Mass balancing in complex systems. Reaction kinetics and kinetic data analysis: classical and computer based methods. Reactor design: ideal reactors and real reactors. Analysis of tracer tests. Interfacial mass transfer: common theories. Mass transfer models. Prerequisite: CVG 3132 or equivalent. Students with a Chemical Engineering background may not take this course for credit.

CVG5138 (ENVJ 5902) ADVANCED WATER TREATMENT (3cr.)
Scope, limitations and design procedures for water treatment processes for the removal of toxic and non-standard contaminants. Current water treatment problems and regulations, activated carbon treatment, ion exchange, disinfection practices and oxidation via advanced oxidation processes (ozonation and UV oxidation), iron and manganese removal, recent developments in coagulation, membranes, air stripping. Prerequisite: CVG 3132 or equivalent.

CVG7160 (ENVE 5001) BIOFILM PROCESSES IN WASTEWATER TREATMENT (3cr.)
Advanced theoretical, biological, and practical aspects of biological nutrient removal (BNR) (nitrification, denitrification and excess biological phosphorus) processes. Principles to be applied to the design and application of conventional and advanced BNR processes used for treatment of municipal and industrial wastewaters. Topics as follows: microbiology and biochemistry fundamentals of BNR, nitrification process design of suspended growth and fixed film growth systems, denitrification process design of suspended growth and fixed film growth systems, excess biological phosphorus removal design including prefermentation. Design of 2,3,4 and 5 stage BNR systems. General activated sludge model and Simworks for BNR systems. Retrofit of exiting plants and pilot plant testing for BNR.
CVG5232 (ENVJ 5911) UNIT OPERATIONS OF WATER TREATMENT LAB (1.5cr.)
Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physicochemical processes for particular applications, and b) design a full-scale facility. Conventional analytical techniques used in water treatment (pH, alkalinity, hardness, turbidity, color, spectrophotometric analysis). Process analysis techniques for process evaluation and scale-up including: zone sedimentation, batch flux settling tests, coagulation with iron and aluminum salts, flocculent sedimentation, filtration and fluidization, flotation. Prerequisite: CVG 3132 or equivalent. Co-requisite: CVG 5132.

CVG5238 (ENVJ 5912) ADVANCED WATER TREATMENT PROCESSES LAB (1.5cr.)
Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physicochemical processes for the removal of toxic and non-standard contaminants, and b) design a full-scale facility. Tracer tests and none-ideal reactor behaviour, activated carbon adsorption equilibria and kinetics, aeration. Total organic carbon analysis, spectrophotometry. Process analysis, techniques for process evaluation and scale-up including: aeration, analysis of non-ideal flow conditions. Tracer study of three basins, adsorption isotherm tests, activated carbon mini-column tests, oxidation kinetic tests. Prerequisite: CVG 3132 or equivalent. Co-requisite: CVG 5138.

CHG8181 (ENVJ5501) BIOCHEMICAL ENGINEERING (3cr.)

CHG8192 (ENVJ5502) MEMBRANE APPLICATIONS IN ENVIRONMENTAL ENGINEERING (3cr.)
Course emphasizing the applications of membrane separation processes in the resolution of various environmental problems. Applications of reverse osmosis, ultrafiltration and pervaporation to the treatment of industrial waste waters. Applications of membrane gas and vapor permeation to the removal of pollutants from air. Discussion of fundamentals underlying each separation process.

CHG8198 (ENVJ5503) REVERSE OSMOSIS (3cr.)

Évaluation de l'impact sur l'environnement / Environmental Impact Assessment

EVG7401 (ENVE 5401) ENVIRONMENTAL IMPACT ASSESSMENT OF MAJOR PROJECTS (3cr.)

CVG5139 (ENVJ 5700) ENVIRONMENTAL ASSESSMENT OF CIVIL ENGINEERING PROJECTS (3cr.)
Procedures and methods for systematic evaluation of the environmental impact of civil engineering projects including wastewater disposal systems, solid waste disposal systems, and water resource development systems.

Autres cours / Other Courses

Pour remplir les exigences au-delà des neuf crédits de cours dans le domaine, les étudiants peuvent choisir de prendre certains des cours suivants :

To fulfill the requirements beyond the nine credits of area courses, students may choose from the following:

EVG7402 (ENVE 5402) FINITE ELEMENTS IN FIELD PROBLEMS (3cr.)

CHG8153 (ENVJ5500) STATISTICAL MODELLING AND CONTROL OF DYNAMIC PROCESSES (3cr.)

Dynamic Processes

CHG8186 (ENVJ5506) MODELLING OF STEADY-STATE PROCESSES (3cr.)
A comprehensive examination of techniques for building and analyzing process models is made. Topics include: linear least squares estimation, non-linear least squares estimation, multiphase response parameter estimation, error in variables estimation, heteroscedasticity, design of experiments for precise parameter estimation and model discrimination.

CHG8194 (ENVJ5504) MEMBRANE SEPARATION PROCESSES (3cr.)
Advanced topics of membrane separations including reverse osmosis, ultrafiltration, gas separation, non-aqueous liquid separation, and membrane applications in biotechnology. The course involves problem solving in membrane transport, membrane design, and membrane process design.

CHG8195 (ENVJ5505) ADVANCED NUMERICAL METHODS IN TRANSPORT PHENOMENA (3cr.)
Survey course of numerical methods for solving linear and non-linear ordinary and partial differential equations. Techniques reviewed include Runge-Kutta and predictor-corrector methods, shooting techniques, control volume discretization methods and finite elements. Example problems from the field of transport.
Transport Phenomena
CHG8196 (ENVJ5507) INTERFACIAL PHENOMENA IN ENGINEERING (3cr.)
Interfacial tension and interfacial free energy; contact angles; spreading of liquids; wetting of surfaces; experimental techniques. Interfacial tension of mixtures; Gibbs equation; absorbed and insoluble monolayers; properties of monolayers and films. Electrical phenomena at interfaces; the electrical double layer; zeta-potential; electrokinetic phenomena (electrophoresis, electro-osmosis, streaming potential); surface conductance. Dispersed systems; formation and practical uses of emulsions; spontaneous emulsification; flocculation.

CVG5128 (ENVJ 5604) WATER RESOURCES PLANNING AND POLICY
Examination of engineering and non-engineering aspects of arrangements which affect Federal and Provincial water resources policy. Application of basic concepts of engineering hydrology, economic projections and water law to current problems of water resources planning and policy.

CVG7140 (CIVE 5601) STATISTICS, PROBABILITIES AND DECISION-MAKING (3cr.)

CVG7150 (CIVE 5304) INTERCITY TRANSPORTATION, PLANNING AND MANAGEMENT (3cr.)

CVG7151 (CIVE 5305) TRAFFIC ENGINEERING (3cr.)

CVG7153 (CIVE 5307) URBAN TRANSPORTATION AND MANAGEMENT (3cr.)
Les étudiants peuvent également, sous réserve d'approbation, choisir des cours dans les programmes de deuxième ou troisième cycle de génie mécanique, biologie, chimie, sciences de la Terre, informatique, géographie et administration publique, et ce dans les deux universités.

Students may also, subject to approval, select courses from the graduate programs in mechanical engineering, biology, chemistry, earth sciences, computer sciences, geography and public administration at both universities.

Séminaires, études dirigées et thèmes spéciaux / Seminars, Directed Studies and Special Topics
EVG5800 (ENVE 5800) SEMINAR FOR MASTER'S CANDIDATES IN ENVIRONMENTAL ENGINEERING (1cr.)
EVG5801 (ENVE 7800) SEMINAR FOR DOCTORAL CANDIDATES IN ENVIRONMENTAL ENGINEERING (3cr.)
EVG6108 (ENVE 5906) DIRECTED STUDIES I (3cr.)
EVG6109 (ENVE 5907) DIRECTED STUDIES II (3cr.)
EVG6300 SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING I (3cr.)
EVG6301 SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING II (3cr.)
EVG6302 SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING III (3cr.)

Projet et thèses / Project and Theses
EVG6001 PROJET EN GÉNIE DE L'ENVIRONNEMENT / ENVIRONMENTAL ENGINEERING PROJECT (6cr.)
EVG7999 THÈSE DE M.Sc.A. / MASc THESIS
EVG9998 EXAMEN DE SYNTHÈSE/ COMPREHENSIVE EXAMINATION
EVG9999 THÈSE DE DOCTORAT / PhD THESIS

(ENVE 5900) ENVIRONMENTAL ENGINEERING PROJECT
(ENVE 5909) MASTER'S THESIS

(ENVE 6909) PhD THESIS

**Epidemiology (MSc)**

The Department of Epidemiology and Community Medicine is located in the Faculty of Medicine and offers a graduate program leading to the Master of Science (MSc) degree in Epidemiology.

The purpose of the program is to provide a scholarly environment for the health sciences community that will stimulate and enhance learning and expand knowledge by conducting research. Graduates are professional experts or consultants who can advise persons and agencies in other fields.

The faculty members of the Department come from a wide variety of academic backgrounds and interests. The Department has an active research program, involving extensive collaborations with other groups, which includes three broad areas:

1. Etiological Epidemiology;
2. Social Epidemiology;
3. Clinical Epidemiology & Health Services Research.

The Department is a participating unit in the following collaborative programs: the biostatistics program (at the master's level) and the graduate diploma in health services and policy research.

The programs operate within the general framework of the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**

**Admission Requirements**

Admission to the graduate program in epidemiology is governed by the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applications are evaluated based on the following criteria:

a) Hold an honours Bachelor of Science with specialization or major in a discipline relevant to epidemiology (life science or behavioural science) or a four-year degree in a health profession (medicine, nursing, rehabilitation therapy etc.) with a minimum average of 75% (B+);

b) Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;

c) Provide a statement of purpose demonstrating ability to write reports, and indicating the career goals and the interests in the proposed research area;

d) Possess competence in a defined list of statistical topics (a self-assessment tool and a non credit self-study course will be available for those who need it, prior to the beginning of courses).

**Collaborative Program in Biostatistics at the Master's Level**

The Department of Epidemiology and Community Medicine is one of the participating academic units in the collaborative program in biostatistics at the master's level. For further details, please consult the Biostatistics program.

The Department is also involved in other graduate interdisciplinary programs in medicine and health.

**Program Requirements**

**Master's Degree Requirements**

The two-year program requires a minimum of 21 credits (9 compulsory, 6 optional, and 6 elective) and a thesis, according to the following rules:
1. 9 credits are compulsory: EPI 5240 (3cr), EPI5242 (3cr) and EPI 6178 (3cr);

2. 6 optional credits must be selected among the following:
   - EPI5340 (1.5cr), EPI5341 (1.5cr), EPI5342 (1.5cr), EPI5343 (1.5cr), EPI5344 (1.5cr), EPI5345 (1.5cr), EPI5346 (1.5cr), EPI5241 (3cr), EPI6188 (3cr), EPI6189 (3cr), EPI6276 (3cr), EPI6278 (3cr) and EPI7184 (3cr).

3. The remaining 6 elective credits may be taken from graduate courses offered in this department, or in other departments with the approval of the graduate studies committee of the department;

4. Thesis (EPI7999);

5. At least three sessions must be spent in full-time study.

Participation in departmental seminars (bi-weekly community medicine rounds, weekly clinical epidemiology rounds or other seminars organized by the department) is compulsory.

**Language Requirements**

All applicants must be able to understand speak and write proficiently in either English or French. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the “General Regulations” of the FGPS.

Most of the requirements of these programs must be fulfilled in English. A very good knowledge of this language is therefore required.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

**Residence**

All full-time students must complete a minimum of three sessions of full-time registration.

**Minimum Standards**

The passing grade in all courses is C+. Students who fail 6 credits, the thesis proposal, or the comprehensive exam or whose research progress is deemed unsatisfactory are required to withdraw from the program.

**Duration of the program**

Students are expected to fulfill all requirements, including the submission of the thesis, within a maximum time of two years from the date of initial registration in the program.

**Courses**

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

**EDU5699 Évaluation de Programmes** (3cr.)


**EPI5126 Introduction to Healthcare Epidemiology** (3cr.)

Applications of epidemiologic and statistical methods within the healthcare setting; issues specific to infection control; roles and administration of infection control, risk management and quality assurance within healthcare facilities; surveillance mechanisms for nosocomial infections; outbreak investigation methods; infection risks in special populations and settings; prevention and risk management of adverse outcomes; regulatory guidelines and accreditation; emerging issues in infection control.

**EPI5142 Health Services Evaluation** (3cr.)

The theory and practice of health services evaluation, including specification of objectives, research designs, measures of process and outcome, and practical problems in conducting evaluations. The focus is on scientific (research) evaluation, but other evaluation strategies and techniques are discussed. Lectures and student presentations. Prerequisite: EPI 5240 or equivalent and permission of the program director.

**EPI5143 Epidemiological Research Using Large Databases** (3cr.)

A practical approach to using administrative and other large databases for epidemiological research. Basic and advanced statistical techniques to manipulate,
link, and examine datasets; large health surveys; coding systems; data warehouses; data mining; birth and death registries; use of census data; linking postal codes to geographical files; geographical information systems. Extensive use of SAS as the primary application package. Prerequisite: Permission of the program director.

**EPI5180 INTERNATIONAL HEALTH AND DEVELOPMENT** (3cr.)
Presentations and seminars on philosophy of international development, international health and demographics, determinants of health, international health and human rights and humanitarian emergencies, tropical diseases and emerging pathogens, aboriginal health issues, impact of new health technologies on international health, cross cultural communication, management methods for international health. Seminar presentation required. Prerequisite: Permission of the program director.

**EPI5181 POPULATION HEALTH RISK ASSESSMENT I** (3cr.)
National and international policy frameworks for health risk assessment and management, including determinants of population health; epidemiological, clinical, and toxicological methods for identifying health hazards; population health surveillance; methods of population health risk assessment; regulatory, economic, advisory, and technological approaches to population health risk management; community action and social marketing; selection of risk management strategies; risk perception and risk communication. Lectures and case studies. Preparation of term paper on a current issue in population health risk assessment. Co-requisites: EPI 5240 and EPI 5242 or equivalents. Exclusion: PHR 5181. Prerequisite: Permission of the program director.

**EPI5182 SAMPLE SURVEY RESEARCH METHODS** (3cr.)

**EPI5183 APPROACHES TO COMMUNITY/PUBLIC HEALTH PROGRAM EVALUATION** (3cr.)
Critical review and practical application, in collaboration with a health care community partner, of approaches to community and public health program evaluation. Community partners include representatives of the community agencies whose mandate or remit includes evaluation of their community/public health program(s). Evaluation based on student’s ability to (a) identify most appropriate approaches to evaluation, (b) critically review strengths and limitations of chosen approaches, (c) apply the selected approach appropriately to examine and quantify impact of the program(s).

**EPI5188 HEALTH TECHNOLOGY ASSESSMENT** (3cr.)
Definition and scope of health technology assessment; needs assessment; practice variations; use of administrative databases; evaluation of diagnostic tests; development and use of practice guidelines and clinical prediction rules; health technology assessment in the developing world. Lectures, seminars and case studies. Prerequisite: Permission of the program director.

**EPI5189 HEALTH ECONOMIC EVALUATION** (3cr.)
Brief overview of economics and health economics; examination of analyses used in epidemiologic and clinical research: cost-effectiveness analysis, cost-minimization analysis, cost-utility analysis (including determination of utilities), cost-benefit analysis, cost of illness studies and use of economic methods in priority-setting. Lectures and seminars. Written report required, presenting an economic evaluation or a detailed review of the economic literature in a particular area. Prerequisite: Permission of the program director.

**EPI5210 PUBLIC HEALTH ADMINISTRATION** (3cr.)
Introduction to practical aspects of managing a health unit from the viewpoint of a Medical Officer of Health. The organization of public health services, relationships with the Board, leadership and management, budgeting and human resource issues including labour relations. Problem-based approach in a seminar format. Prerequisite: Permission of the program director.

**EPI5212 COMMUNICABLE DISEASE EPIDEMIOLOGY** (3cr.)
Consideration of the specialized methods used in the investigation and control of communicable disease. Detailed review of the epidemiology of the major communicable diseases. Lectures, presentations by invited experts, and student presentations. Prerequisite: A basic knowledge of epidemiologic methods and permission of the program director.

**EPI5213 CHRONIC DISEASE EPIDEMIOLOGY** (3cr.)
Review of the descriptive epidemiology (distribution, trends, risk factors) of the major chronic diseases, with emphasis on circulatory diseases, cancer, injuries, and mental health problems. Approaches to primary and secondary prevention. Lectures, presentations by invited experts, and student presentations. Prerequisite: Permission of the program director.

**EPI5240 EPIDEMIOLOGY I - INTRODUCTORY EPIDEMIOLOGY** (3cr.)
An overview of epidemiology - uses, methods, and data sources. Descriptive and analytical epidemiology. Lectures and assignments in which students will work with data and will gain experience in critically reviewing epidemiologic literature. Prerequisites: EPI 5242 (Biostatistics I) or equivalent; may be taken concurrently with the permission of the program director.

**EPI5241 EPIDEMIOLOGY II - ADVANCED EPIDEMIOLOGY** (3cr.)
This second level epidemiology course covers major principles of design, analysis, and interpretation of epidemiologic research. Material presented in a quantitative manner. Prerequisites: EPI 5240 (Epidemiology I) and EPI 6276 (Quantitative Methods in Epidemiology); EPI 6276 may be taken concurrently with the permission of the program director.
EPI5242 BIOSTATISTICS I (3cr.)
Building on the students' prior background in statistics, this course explores the use of mathematical models in statistical data analysis. Topics include analysis of categorical data, choice of linear vs non-linear models, estimation of parameters, testing of hypotheses by parametric and non-parametric methods, analysis of variance, linear and logistic regression models, introduction to survival analysis. This course may also be offered in French: EPI 5642. Prerequisite: Basic course in Statistics and permission of the program director.

EPI5243 GUIDED RESEARCH PROJECTS (3cr.)
Practical experience of the application of epidemiologic methods. The student will participate in one or more research projects under way in the Department, and will gain experience in the day-to-day management of the project, in data collection, in data analysis and report preparation.

EPI5244 SPECIAL TOPICS IN EPIDEMIOLOGY (3cr.)
The content of this seminar course is flexible, covering issues of current debate in communicable and non-communicable disease epidemiology. Presentations by participants and invited experts and seminar discussion. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI5251 MEASUREMENT IN HEALTH (3cr.)
An overview of measurement theory as applied to health measurement; a review of existing measurements of health status in clinical and research applications, plus practical experience of how to develop and test new measurement methods. Prerequisite: Permission of the program director.

EPI5271 HEALTH PROMOTION (3cr.)
Origins, theories and techniques of health promotion at the individual and community levels. Examination of current health promotion activities in Canada and elsewhere. Prerequisite: Permission of the program director.

EPI5281 DEVELOPMENTS IN EPIDEMIOLOGY (3cr.)
Major new developments in epidemiology, conceptualization of research topics and objectives for the thesis. Critical appraisal of current and classical literature in epidemiology. Seminars on current topics. Prerequisite: Permission of the program director.

EPI5330 VITAL AND HEALTH STATISTICS AND DEMOGRAPHY (3cr.)
An introduction to the techniques of demography, health and vital statistics with particular reference to health care and epidemiologic research. The Canadian demographic structure and trends, vital registration procedures, calculation and interpretation of vital rates, life table analysis and record linkage. Lectures and exercises. Prerequisite: Permission of the program director.

EPI5340 EPIDEMIOLOGICAL METHODS (1.5cr.)
Major principles of study design and analysis: Validity in epidemiologic studies; Precision and statistics in epidemiology studies; Confounding; Additive and multiplicative interaction; Stratified analysis; Introduction to regression models; Introduction to regression modeling; Bias analysis; Analytical strategy. Prerequisites: EPI 5240 and EPI 5242

EPI5341 EPIDEMIOLOGICAL APPLICATIONS (1.5cr.)
Interpretation of epidemiologic research and some specific topics: Complex survey data analysis; Attributable risk, odds ratio and relative risk estimation in multivariate analysis; Combined effect of multiple exposures and interaction measures; Chronic disease screening and surveillance; Environmental epidemiology. Prerequisite: EPI5340

EPI5342 GENETIC EPIDEMIOLOGY (1.5cr.)
Basic scope of genetic epidemiology, including an overview of types of human genetic variation, approaches to gene discovery vs. gene characterization. Specific issues include: Assessment of effect of family history on disease risk; Measurement of genetic variation, genotyping errors and factors affecting these; Study designs especially adapted to genetic epidemiology – family based designs (e.g. case-parent trio, case-sib designs), case-only designs; Candidate gene and genome-wide association approaches to genetic association; Gene-environment and gene-gene interaction; Integration of evidence; Evaluation of potential value of genetic information in screening (e.g. newborn screening), family history tools and genetic testing. Prerequisite: EPI5340

EPI5343 OUTCOME MEASURES IN HEALTH RESEARCH (1.5cr.)
Technical review of the design requirements for outcome measures in health research and clinical trials; a historical review of the evolution of such measures and a survey of the quality of existing instruments in various fields of health research (disability, quality of life, mental health, pain, etc.). This course is designed for students who will need to use and interpret health measures in their research. Prerequisite: EPI5340

EPI5344 SURVIVAL ANALYSIS IN THE HEALTH SCIENCES (1.5cr.)
Exploration of methods for the analysis of data which includes information about the time when an event occurred. Non-regression methods of analyzing survival data, including actuarial life tables, the Kaplan-Meier method, the log-rank test, and person-time. The hazard curve will be introduced and linked to incidence rate/density. Proportional hazards regression modelling (Cox modelling) including interpretation of model parameters, model building strategies and assessing the fit of the model. Methods to handle time varying covariates and non-proportional hazards will be discussed. Classes will include hands on modeling examples using SAS statistical software. Prerequisite: EPI5340

EPI5345 APPLIED LOGISTIC REGRESSION (1.5cr.)
Foundation of model estimation: maximum likelihood; Modeling dichotomous outcome (dependent) variables: logistic regression; Logistic models with several independent variables; Interpretation of model parameters; Model building strategies; Assessing the fit of the model; Regression diagnostics. Classes will include hands on modeling examples using SAS statistical software. Prerequisite: EPI5340
EPI5346 APPLIED LONGITUDINAL AND CLUSTERED DATA ANALYSIS (1.5cr.)
Introduction to longitudinal (repeated measures) and clustered data and overview of regression models for correlated data; Linear Mixed Effects Models; Modelling the mean; Modelling the Covariance structure; Generalized Estimating Equations and Generalized Linear Mixed Effects Models; Regression diagnostics; Missing data and drop-out; Case studies. Classes will include hands on modeling examples using SAS statistical software. Prerequisite: EPI5340

EPI5642 BIOSTATISTIQUE I (3cr.)
En mettant sur les connaissances préalables en statistique des étudiants, ce cours examine l'application des modèles mathématiques dans l'analyse de données statistiques. Parmi les sujets à traiter : analyse de données catégoriques, choix de modèles linéaires ou non linéaires, estimation des paramètres, tests d'hypothèses par méthodes paramétriques ou non paramétriques, analyse de la variance, modèles de régression linéaire et logistique, et introduction à l'analyse de survie. Également offert en anglais : EPI 5242. Préalable: Cours de base en statistiques et permission du responsable du programme.

EPI6126 ADVANCED HEALTHCARE EPIDEMIOLOGY (3cr.)
Exploration of advanced healthcare epidemiology topics including pandemic planning, emergency preparedness, environmental considerations, healthcare surveillance techniques, quality improvement and patient safety initiatives, antimicrobial control programs, blood safety, developing and delivering educational programs, healthcare organization and administration, healthcare epidemiology research design. Lectures, presentations by invited experts, workshops and student presentations. Pre-requisites: EPI 5240, EPI 5126.

EPI6178 INTERVENTION STUDIES IN HEALTH RESEARCH (3cr.)
Practical introduction to intervention studies in the health field, including experimental and quasi-experimental studies and clinical and community trials. Question formulation; conduct of literature reviews; design issues (choice of research design and study population, implications for validity of results); ethical issues; instrument development; data collection and management; approach to data analysis; report writing and presentation. Examples drawn from both population and clinical research. Development and presentation of proposal for an intervention study. Prerequisite: Permission of the program director.

EPI6179 COMPUTER APPLICATIONS IN MEDICINE (3cr.)
A laboratory course introducing health researchers to packaged computer programs for data analysis. The course will address applications to the participants' own research, the organization of large data files and the choice between different types of computers. Prerequisite: Permission of the program director.

EPI6181 SOCIAL ASPECTS OF EPIDEMIOLOGY (3cr.)
This course will analyze the way in which behavioural, social and emotional forces influence patterns of disease. The links between these processes and physiological changes; inferences on how best to intervene to modify "lifestyle" risk factors; recent prevention and health promotion trials will be reviewed. May also be offered in French: EPI 6581. Prerequisite: Permission of the program director.

EPI6182 POPULATION HEALTH RISK ASSESSMENT II (3cr.)
Scientific methods for population health risk assessment; characterization of population health risks, and attendant uncertainties; risk modeling; combining risk information from different sources; risk acceptability; principles of risk management decision making; evidence-based risk management policy development; audit and evaluation of risk interventions; priority setting; case studies on current population health risk assessment issues. Term paper on a current methodological issue in population health risk assessment required. Exclusion: PHR 6182. Prerequisites: EPI 5240, EPI 5242, and EPI 5181, or equivalents and permission of the program director.

EPI6188 SYSTEMATIC REVIEWS AND META-ANALYSIS (3cr.)
Approaches to the systematic review of evidence in the health sciences. Searching for the evidence, selection of studies, quality and validity of included studies, heterogeneity, statistical analysis and other quantitative and qualitative methods. Students to be required to do a meta-analysis on a topic of their own interest. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6189 CLINICAL DECISION MAKING (3cr.)
Theories of decision making and their validity in health care applications. Comparison of decision support methods: decision analysis, utility assessment techniques, patient aids, practice guidelines, care maps. Methods for developing, evaluating, and disseminating decision support tools in clinical practice. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6276 QUANTITATIVE METHODS IN EPIDEMIOLOGY (3cr.)
Application of advanced topics in statistical methods for epidemiologic data analysis: logistic regression and discriminant analysis, Poisson regression, contingency table analysis (including log-linear modelling), time series, survival analysis, Cox regression with and without time-dependent covariates, principle components and factor analysis. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6277 BIOSTATISTICS II (3cr.)
The course, a continuation of EPI 5242, will focus on the statistical analysis of more than one variable and/or more than two groups. Topics covered include the analysis of variance, multiple linear regression and multivariate analysis topics such as the linear discriminant analysis. Statistical analysis relevant to clinical medicine will be discussed in detail with relevant examples from clinical research papers. Prerequisite: EPI 5242 or equivalent and permission of the program director.

EPI6278 ADVANCED CLINICAL TRIALS (3cr.)
Lectures and laboratories on the detailed principles, design, methodology and statistical techniques associated with clinical trials. Emphasis on emerging topics and procedures. Prerequisites: EPI 5242 and EPI 6178 and permission of the program director.
EPI6282 SPECIAL TOPICS IN COMMUNITY MEDICINE (3cr.)
Current Community Health topics will be reviewed. Weekly seminars, written assignments, discussions, research meetings and presentations by students and invited speakers will be conducted throughout the year. Each student must present two seminars. Prerequisite: Permission of the program director.

EPI6283 PHARMACOEPIDEMIOLOGY (3cr.)
Issues in and methodology of pharmacoepidemiology. Discussion on the biases and confounders possible at every stage of a pharmacoepidemiological study, in drug utilization review, drug effectiveness, risk/benefit assessment and other topics. This course will normally be given every second year. Prerequisites: EPI 5240 or equivalent and permission of the program director.

EPI6344 CURRENT ISSUES IN EPIDEMIOLOGY (1.5cr.)
Topics will be selected based on student and faculty interests. Depending on the topics, the course may be given as formal lectures or in seminar format with presentations by participants and invited experts followed by in-class discussion. Prerequisites: EPI 5240 and EPI 5242 or permission of the program director.

EPI6581 INTRODUCTION À L’ÉPIDÉMIOLOGIE SOCIALE (3cr.)
Une analyse de l'influence des forces sociales et du comportement humain sur le développement de la maladie. L'interaction entre le comportement et les systèmes physiologique et endocrinien, y compris le processus psychosomatique. Les indications pour l'intervention préventive par la modification du mode de vie. Également offert en anglais : EPI 6181. Préalable: Permission du responsable du programme.

EPI7101 GENETIC EPIDEMIOLOGY (3cr.)
Application of genetic biological methods to epidemiological research. Covers the development of research hypotheses; genetic determinants and gene-environment interactions; biomarkers for exposure and outcome as well as for predicting prognosis. Students will undertake a course project to design a genetic epidemiological study. Prerequisite: EPI5240 or equivalent.

EPI7102 DATA ANALYSIS METHODS IN GENETIC EPIDEMIOLOGY (3cr.)
Data analysis methods in genetic epidemiology and gene identification. Topics include the relationship between design and analysis; genetic models; methods for case-unrelated control studies, case-familial control studies and other familial designs; introduction to frequentist multiple testing and empirical Bayes methods, focus on applications to genome-wide association studies. Basic approaches in bioinformatics; insights into gene function based on the characterization of three major categories of cellular components (genome, transcriptome and proteome) and their interactions; public molecular databases. Practical lab sessions, both on statistical analysis and integration of discovery with information on gene function (commonly used algorithms; hands-on practice with data retrieval, manipulation and analysis). Prerequisite: EPI5242 or equivalent.

EPI7103 GENETIC ASSOCIATION STUDIES (3cr.)
Population-based family studies, case-control and case-family control designs and analysis. Topics include population-based family studies; case-unrelated control design and variants; case-family control designs (including case-parent trios, e.g. maternal versus paternal versus fetal genetic effects; mitochondrial DNA; imprinting); genome-wide association; linkage disequilibrium; genotyping error; imputation; population stratification and methods for its control; genotyping errors; modeling haplotype variation; Hardy-Weinberg equilibrium; replication; selection of participants, rationale for choice of genes and variants; treatment effects in studying quantitative traits; relatedness of participants; reporting of descriptive and outcome data; issues of data volume; joint effects of genes and environmental factors; epistasis; bioinformatics; causal inference. Prerequisite: EPI5242 or equivalent.

EPI7104 ADVANCED METHODS IN BIOSTATISTICS: ANALYSIS OF VARIANCE (3cr.)
Exploration of the theoretical foundations of the advanced methods in biostatistics as well as of the practical application and interpretation of these methods. Topics include repeated measures ANOVA; multivariate analysis of variance (MANOVA); split-plot ANOVA (SPANOVA); expected mean squares; randomization theory; estimation of variance using regression; tests of hypotheses for balanced and unbalanced data sets. Prerequisite: EPI5242 or equivalent.

EPI7105 ADVANCED METHODS IN BIOSTATISTICS: STATISTICAL INERENCE (3cr.)
Advanced methods in biostatistics and probability modeling. Sample topics include: Bayesian parameter estimation; construction and use of likelihoods; hypothesis testing; comparison of inference methods using jackknife, bootstrap and normal approximations. Prerequisite: EPI5242 or equivalent.

EPI7106 QUALITATIVE RESEARCH METHODS IN EPIDEMIOLOGY (3cr.)
Theoretical frameworks and corresponding methods of qualitative research applied to epidemiological research. Topics will include: theoretical paradigms of qualitative research; matching qualitative research to types of research questions; sampling objectives and procedures; methods of data collection; analysis and interpretation; quality criteria for evaluating qualitative research studies; ethical issues and responsibilities of qualitative researchers. Relationship between qualitative and quantitative research will be explored. Prerequisite: EPI5240 or equivalent.

EPI7107 DESCRIPTIVE EPIDEMIOLOGY (3cr.)
Issues of current debate in Descriptive Epidemiology and epidemiological methods. Topics will include methods for studying the distribution of health conditions and their predictors in populations, current issues and principles of disease classification and surveillance, surveillance of prognostic factors, applying principles of demography in epidemiologic research. Prerequisite: EPI5240 or equivalent.

EPI7108 ANALYTIC EPIDEMIOLOGY (3cr.)
Issues of current debate in Analytic Epidemiology and epidemiological methods. Topics will include theory and methods in the study of the etiology of health
conditions and prognostic factors, current theories of disease causation, application of causal models to epidemiologic questions, implications for study design and analysis, measurement error. Prerequisite: EP15240 or equivalent.

**EP17109 CLINICAL AND APPLIED EPIDEMIOLOGY** (3cr.)
Issues of current debate in Clinical and Applied Epidemiology and epidemiological methods. Topics will include clinical health interventions related to individual patient care; research related to the design and delivery of broader health systems and services; current analytical methods and population-based studies; decision rules; randomized clinical trials; diagnostic tests; interventions that are relevant to public health practice. Prerequisite: EP15240 or equivalent.

**EP17111 BIOSTATISTICS III** (3cr.)
Advanced methods in biostatistics, with emphasis on one or two major methods. Examination of the theoretical foundations of the methods as well as of their practical application and interpretation. Topics include multivariate statistics, longitudinal data analysis, multi-level models, and statistical genetics. Pre-requisite: EP15242 or equivalent.

**EP17113 SPECIAL TOPICS IN EPIDEMIOLOGY II** (3cr.)
Variable topics depending on the interests of students and faculty.

**EP17184 HEALTH POLICY** (3cr.)
Exploration of key issues relating to health policy within and outside Canada. Topics covered: rationale for public provision and funding of health care in Canada; historical and current perspectives regarding structure and process of the Canadian health care system; specific micro and macro policy issues relating to health and health care provision (Canadian and international).

**EP17303 TRANSLATION OF GENETIC DISCOVERIES FROM THE RESEARCH LABORATORY TO THE HEALTH CARE SYSTEM** (1.5cr.)
Overview of the process of transferring genetic discoveries into medicine and public health, focusing primarily on chronic diseases. Topics include basic concepts and existing knowledge translational pathways and frameworks. Interdisciplinary approaches to knowledge translation, including clinical trials, guideline development, dissemination research, outcomes research, and health policy research. Using chronic disease examples to illustrate the process, students will learn which elements need to be considered at each step in the translation process. Prerequisite: EP15240 or equivalent.

**EP17501 ÉPIDÉMIologie GÉNÉTIQUE** (3cr.)
Étude de l’application de méthodes de la biologie génétique à la recherche épidémiologique. Élaboration d’hypothèses de recherche; déterminants génétiques et interactions entre facteurs génétiques et environnementaux; utilisation de biomarqueurs pour la mesure d’une exposition et de son résultat ainsi que pour l’établissement d’un pronostic. Réalisation d’un projet d’étude d’épidémiologie génétique. Préalable : EP15240 ou l’équivalent.

**EP17502 MÉTHODES D’ANALYSE DE DONNÉES EN ÉPIDÉMIologie GÉNÉTIQUE** (3cr.)
Aperçu de méthodes d’analyse des données en épidémiologie génétique et pour l’identification de gènes. Sujets abordés : relation entre protocole et analyse; modèles génétiques; méthodes d’études avec cas témoins non apparentés, d’études avec cas témoins appartenant à la famille, ainsi qu’de d’autres protocoles familiaux; introduction aux tests multiples fréquentistes et aux méthodes bayésiennes empiriques, en mettant l’accent sur des applications à des études d’association pangénomique. Méthodes de base de la bioinformatique; aperçu de la fonction des gènes à partir de la caractérisation de trois catégories principales de composantes cellulaires (génome, transcriptome et protéome) et de leurs interactions; bases de données moléculaires publiques. Séances pratiques de laboratoire, tant sur l’analyse statistique que sur l’intégration de découvertes et de l’information sur la fonction de gènes (algorithmes communément utilisés; travaux pratiques d’extraction, de traitement et d’analyse de données). Préalable : EP15242 ou l’équivalent.

**EP17503 ÉTUDES D’ASSOCIATION EN GÉNÉTIQUE** (3cr.)
Examen approfondi d’études familiales de population, d’études cas témoins et de protocoles avec cas témoins appartenant à la famille, ainsi que de l’analyse des données correspondantes. Sujets abordés : études familiales de population; protocoles avec cas témoins non apparentés et leurs variantes; protocoles avec cas témoins appartenant à la famille (dont des trios formés d’un sujet et de ses parents, p. ex. effets génétiques maternels, paternels et sexuels; ADN mitochondrial; empreinte); études d’association pangénomique; déséquilibre de liaison; imputation; stratification d’une population et méthodes de contrôle de la stratification; erreurs de génotypage; modélisation des variantes d’un haplotype; équilibre de Hardy-Weinberg; réplication; sélection de participants, justification du choix de gènes et de variantes; effets d’un traitement sur l’étude de traits quantitatifs; liens entre participants; compte rendu de données descriptives et de résultats; problèmes liés à la quantité de données; effets conjoints de facteurs génétiques et environnementaux; épidiasie; bioinformatique; inférence causale. Préalable : EP15242 ou l’équivalent.

**EP17504 MÉTHODES AVANCÉES DE BIOSTATISTIQUE : ANALYSE DE VARIANCE** (3cr.)
Exploration des fondements théoriques des méthodes avancées de biostatistique ainsi que des applications pratiques et de l’interprétation de ces méthodes. Sujets abordés : analyse de la variance de mesures répétées; analyse de variance multidimensionnelle; analyse de variance avec subdivision de parcelles; valeurs quadratiques moyennes prévues; théorie de randomisation; estimation de la variance à l’aide d’une régression; tests d’hypothèses sur des jeux de données équilibrés et non équilibrés. Préalable : EP15242 ou l’équivalent.

**EP17505 MÉTHODES AVANCÉES DE BIOSTATISTIQUE : INFÉRENCÉE STATISTIQUE** (3cr.)

**EP17506 MÉTHODES DE RECHERCHE QUALITATIVE EN ÉPIDÉMIologie** (3cr.)
Cadres théoriques et méthodes correspondantes de recherche qualitative appliquées à la recherche en épidémiologie. Sujets abordés : paradigmes théoriques de la recherche qualitative; recherche qualitative adaptée à divers types de questions; objectifs et procédures d’échantillonnage; méthodes de collecte, d’analyse et d’interprétation de données; critères de qualité pour l’évaluation d’une recherche qualitative; questions d’éthique et responsabilités des chercheurs en matière de recherche qualitative. Relations entre recherche qualitative et recherche quantitative. Préalable : EPI5240 ou l’équivalent.

EP17507 ÉPIDÉMILOGIE DESCRIPTIVE (3cr.)
Questions actuellement débattues en épidémiologie descriptive et à propos des méthodes de l’épidémiologie. Sujets abordés : méthodes d’étude de la répartition de diverses affections et de leurs prédicteurs dans une population; problèmes actuels et principes de la classification et de la surveillance des maladies; surveillance de facteurs de pronostic; applications des principes de la démographie à la recherche en épidémiologie. Préalable : EPI5240 ou l’équivalent.

EP17508 ÉPIDÉMILOGIE ANALYTIQUE (3cr.)
Questions actuellement débattues en épidémiologie analytique et à propos des méthodes de l’épidémiologie. Sujets abordés : théorie et méthodes de l’étude de l’étiologie des affections et de leurs facteurs de pronostic; théories actuelles sur les causes des maladies; application de modèles de causalité à des questions d’épidémiologie; conséquences sur la conception de protocoles, l’analyse de données et les erreurs de mesure. Préalable : EPI5240 ou l’équivalent.

EP17509 ÉPIDÉMILOGIE CLINIQUE ET APPLIQUÉE (3cr.)
Questions actuellement débattues en épidémiologie clinique et appliquée, ainsi qu’à propos des méthodes de l’épidémiologie. Sujets abordés : interventions cliniques liées aux soins aux patients particuliers; recherche liée à la conception et à la prestation de systèmes et services élargis de soins de santé; méthodes analytiques actuelles et études de population; règles de décision; essais cliniques aléatoires; tests diagnostiques; interventions pertinentes en matière de santé publique. Préalable : EPI5240 ou l’équivalent.

EP17511 BIOSTATISTIQUE III (3cr.)

EP17513 SUJETS PARTICULIERS EN ÉPIDÉMILOGIE II (3cr.)
Divers sujets choisis en fonction des intérêts des étudiants et du professeur.

EP17702 ÉTUDES D’OBSERVATION (1.5cr.)

EP17703 LES DÉCOUVERTES EN GÉNÉTIQUE : DU LABORATOIRE DE RECHERCHE AU SYSTÈME DE SOINS DE SANTÉ (1.5cr.)

EP17910 ÉTUDES DIRIGÉES EN ÉPIDÉMILOGIE / DIRECTED STUDIES IN EPIDEMIOLOGY (3cr.)
Étude approfondie d’un sujet d’intérêt particulier pour l’étudiant, sous la direction d’un professeur membre du programme. Préalables : EPI5240 ou l’équivalent et approbation du Comité des études doctorales/Directed Studies on a topic of individual interest to the student under the direction of a faculty supervisor. Students planning to take this course must have the proposed content, learning activities and evaluation methods approved by the Doctoral Studies Committee. Prerequisite: EPI5240 or equivalent.

EP17912 ÉTUDES DIRIGÉES EN BIOSTATISTIQUE / DIRECTED STUDIES IN BiOSTATISTICS (3cr.)
Étude approfondie d’un sujet d’intérêt particulier pour l’étudiant, sous la direction d’un professeur membre du programme. Préalables : EPI5242 ou l’équivalent et approbation du Comité des études doctorales. / In-depth study on a topic in biostatistics of individual interest to the student under the direction of a faculty member in the program. Prerequisites: EPI5242 or equivalent and permission of the Doctoral Studies Committee.

EP17913 THÈMES SPÉCIAUX EN ÉPIDÉMILOGIE/SPECIAL TOPICS IN EPIDEMIOLOGY (3cr.)
Sujets variables selon les intérêts des étudiants et du corps professoral. / Variable topics depending on the interests of students and faculty.

EP17980 STAGE / INTERNSHIP
Expérience pratique et exécution d'un projet ayant trait à l'évaluation des technologies de la santé dans un organisme de recherche ou une agence d'évaluation des technologies de la santé, sous la supervision d'un membre professoral. Noté S/NS à partir d'un rapport de stage écrit et des résultats du stage. / Practical experience and completion of a project related to HTA in a research organization or an HTA agency, under the supervision of a faculty member. Graded S/NS based on a written report on the project, and on performance during the internship.

EP17999 THÈSE DE MAÎTRISE EN ÉPIDÉMILOGIE / MSc THESIS IN EPIDEMIOLOGY
Étude des principaux débats et théories sur la nature, les causes et les effets de la mondialisation. Analyse et discussion des divers aspects de la mondialisation.

Students admitted to the program without evidence of proficiency in the second official language must demonstrate their reading competence in this language at university's CO­OP Committee.

La mission du programme de maîtrise en ergothérapie de l'Université d'Ottawa est de former des professionnels de la santé capables de desservir la population francophone de l'Ontario et des autres provinces canadiennes, dans le contexte bilingue et multiculturel du pays.

Le programme de maîtrise a pour but de former des ergothérapeutes compétents dont la pratique est à la fois centrée sur le client et fondée sur les résultats probants et les lignes directrices en vigueur pour la pratique clinique. Les étudiants développent non seulement les connaissances et compétences nécessaires à l'exercice de la profession (savoirs, savoir-faire, savoir-être et savoir agir) mais aussi les habiletés d'analyse critique et de synthèse nécessaires pour évaluer les résultats publiés dans des revues scientifiques.

Renseignements généraux

L’ergothérapie est une science et un art qui tente de prévenir le handicap, de rétablir ou de promouvoir l’occupation, la santé et le bien-être des individus. Les ergothérapeutes travaillent en collaboration avec des personnes ou des groupes de personnes pour prévenir ou résoudre les difficultés de rendement occupationnel. Ces difficultés peuvent survenir suite à un problème de santé, un problème de développement, des barrières environnementales ou des limitations reliées au vieillissement. Elles peuvent être reliées aux domaines des soins personnels, des loisirs et de la productivité. Les ergothérapeutes invitent leurs clients à faire appel à leurs forces créatives pour réinventer leur vie et se construire une nouvelle autonomie.


Le programme est contingenté et requiert six sessions d’études consécutives à temps plein, y compris les stages. Toutefois, pour les étudiants détenteurs d’un baccalauréat en ergothérapie au moment de l’admission, le programme offre un cheminement court menant à l’obtention du diplôme de maîtrise en trois sessions (un an). Les objectifs du programme de formation sont atteints grâce à la réussite des cours théoriques et pratiques, des séminaires d’intégration et des stages. Les activités de formation sont regroupées sous les six thèmes suivants :

Thème 1 : Croissance personnelle et professionnelle;

Thème 2 : Connaissance de l'être humain, des activités qui lui sont propres (ses rôles occupationnels), de son interaction avec son environnement et sa communauté;

Thème 3 : Connaissance à la fois des facteurs qui limitent le rendement occupationnel et du processus ergothérapique centré sur le client qui remédie aux limites du rendement occupationnel;

Thème 4 : Connaissance des communautés et des besoins de santé de la population;

Thème 5 : Analyse critique de la connaissance;

Thème 6 : Intégration des connaissances.

Le mandat du programme d’ergothérapie étant de former des professionnels bilingues capables de desservir les populations francophones, le programme de cours est offert uniquement en français. Cependant, les travaux et examens peuvent être rédigés soit en français, soit en anglais.
Les titulaires d’un baccalauréat spécialisé ou de l’équivalent, avec une moyenne de “B” (70 %), calculée selon les directives de la FÉSP, peuvent être admissibles au programme de maîtrise en ergothérapie.

Les candidats doivent également rencontrer les exigences supplémentaires suivantes :

- Posséder une bonne connaissance du français, écrit et parlé, et une connaissance fonctionnelle de l’anglais, écrit et parlé. Les compétences linguistiques à l’oral et à l’écrit seront vérifiées lors des entrevues de sélection qui se dérouleront dans les deux langues;

- Avoir obtenu un minimum de 3 crédits en anatome du système locomoteur (par exemple, ANP 1506 Anatomie humaine et physiologie II ou l’équivalent);

- Avoir obtenu un minimum de 6 crédits en psychologie, soit un cours d’introduction à la psychologie, soit cours de psychologie du développement de l’enfant (par exemple, FSY 1501 Introduction à la psychologie expérimentale ou l’équivalent et FSY 2505 Psychologie du développement ou l’équivalent);

- Avoir obtenu un minimum de 3 crédits en statistiques (par exemple, HSS 2781 Mesure et analyse des données ou l’équivalent);

- Avoir obtenu un minimum de 3 crédits en sociologie (par exemple, SOC 1501 Éléments de sociologie ou l’équivalent) ou en philosophie (par exemple, PH 1501 Raisonnement et pensée critique ou l’équivalent) ou en anthropologie (par exemple, ANT 2500 Anthropologie physique ou l’équivalent);

- Une expérience de travail ou de bénévolat impliquant des habiletés de relation d’aide, et ce au cours des trois dernières années, est un élément positif et sera considérée dans l’analyse des dossiers. Cette expérience doit être exposée dans le curriculum vitae des candidats avec les coordonnées de la personne ressource ou un document certifiant cette expérience (lettre, certificat ou autre).

Note : Les cours préalables doivent avoir été complétés dans les six années précédant la demande d’admission.

Les cotes de cours indiquées ci-dessus entre parenthèses représentent des équivalents à l’Université d’Ottawa et sont données à titre d’exemple pour aider le candidat dans son choix de cours. Les équivalences pour les préalables à l’admission peuvent être vérifiées auprès du secrétariat scolaire de la Faculté des sciences de la santé.

**Cours de conversation anglaise**

Pour préparer les étudiants à passer leurs stages en milieu bilingue, l’École des sciences de la réadaptation offre un cours de conversation anglaise (REA5940) qui peut être recommandé ou exigé selon la compétence linguistique du candidat.

**Admission au cheminement court**

Les titulaires d’un Baccalauréat en ergothérapie d’une université canadienne reconnue par l’ACE, avec une moyenne de “B” (70 %), calculée selon les directives de la FÉSP, peuvent également être admissibles au cheminement court du programme de maîtrise en ergothérapie. Ces personnes se verront créditer 30 crédits de cours en raison de leur formation, leur diplômation et leur expérience clinique. Il ne leur sera pas nécessaire de refaire les 1,000 heures de formation clinique déjà complétées au Baccalauréat auxquelles s’ajoutent celles acquises sur le marché du travail.

Les candidats doivent également rencontrer les exigences supplémentaires suivantes :

- Détenir un diplôme de Baccalauréat en ergothérapie d’une université qui était agréée par l’ACE au moment de la diplomation;

- Avoir travaillé comme ergothérapeute dans un milieu clinique pour l’équivalent d’au moins deux années complètes à temps plein;

- Être membre en règle ou être éligible à devenir membre en règle de l’Ordre professionnel de sa province au moment de la première inscription ;

- Avoir une connaissance active du français, à l’oral, et avoir une connaissance suffisante de l’anglais pour consulter la documentation scientifique dans cette langue;

- Soumettre une proposition de mémoire de maîtrise, au maximum deux pages, jugée satisfaisante et qui spécifie : le domaine de recherche d’intérêt, la problématique qui interesse le candidat, la question de recherche, la méthodologie proposée et le nom du professeur qui accepte de diriger le mémoire proposé. Le candidat pourra développer cette proposition de mémoire avec son directeur potentiel.

**Consortium national de formation en santé (CNFS)**

Le gouvernement du Canada, par l’entremise de Santé Canada, appuie financièrement depuis le printemps 1999 le Consortium national de formation en santé (CNFS). Le CNFS est un consortium d’universités et d’établissements de santé répartis dans l’ensemble du Canada qui vise à faciliter l’accès à des études en sciences de la santé à des étudiants provenant de milieux francophones en contexte minoritaire. Le CNFS a permis l’ajout de places supplémentaires au programme d’ergothérapie pour des francophones de l’extérieur du Québec et de l’Ontario. Il est prévu que les étudiants qui sont accueillis dans le cadre du
Program Requirements

Exigences du grade

Le programme propose deux cheminement: le cheminement régulier et le cheminement court. Le programme régulier (A) peut être suivi en faisant uniquement des cours et des stages ou en faisant des cours, des stages et un mémoire. Dans les deux cas, les exigences en matière de stages sont les mêmes. Le cheminement court (B) est offert aux étudiants déjà détenteurs d'un baccalauréat en ergothérapie qui répondent aux conditions spécifiques décrites dans la section « Admission ». Le cheminement court est décrit plus loin.

A. Cheminement régulier (60 crédits)

1. Cheminement avec cours :

• 55.5 crédits de cours obligatoires

  - ERG5511 INTRODUCTION À L'ERGOTHÉRAPIE (1.5cr.)
  - ERG5513 PERSPECTIVES THÉORIQUES ET MODÈLES EN ERGOTHÉRAPIE (1.5cr.)
  - ERG5522 (1.5cr.)
  - ERG5523 L'ENVIRONNEMENT PHYSIQUE, SOCIAL, CULTUREL ET INSTITUTIONNEL (1.5cr.)
  - ERG5524 SPIRITUALITÉ ET QUESTIONS DE SENS COMME DÉTERMINANTS DE LA SANTÉ (1.5cr.)
  - ERG5533 SANTÉ ET HANDICAP – PERSONNES, COMMUNAUTÉS ET POPULATIONS (1.5cr.)
  - ERG5712 PRATIQUES PROFESSIONNELLES EN ERGOTHÉRAPIE I (3cr.)
  - ERG5714 PRINCIPES D'ÉVALUATION ET DE TRAITEMENT EN ERGOTHÉRAPIE (3cr.)
  - ERG5721 DIMENSIONS DE LA PERSONNE (3cr.)
  - ERG5731 ATTEINTES À LA SANTÉ PHYSIQUE DES PERSONNES (3cr.)
  - ERG5732 ATTEINTES À LA SANTÉ MENTALE DES PERSONNES (3cr.)
  - ERG5752 MÉTHODOLOGIE DE LA RECHERCHE ET ANALYSE DES DONNÉES DE RECHERCHE EN RÉADAPTATION I (3cr.)
  - ERG5753 MÉTHODOLOGIE DE LA RECHERCHE ET ANALYSE DES DONNÉES DE RECHERCHE EN RÉADAPTATION II (3cr.)
  - ERG5901 FORMATION CLINIQUE EN ERGOTHÉRAPIE I
  - ERG5902 FORMATION CLINIQUE EN ERGOTHÉRAPIE II
  - ERG6545 OCCUPATION HUMAINE II (1.5cr.)
  - ERG6715 PRATIQUES PROFESSIONNELLES EN ERGOTHÉRAPIE II (3cr.)
  - ERG6741 INTERVENTION DE L'ERGOTHÉRAPEUTE AUPRÈS DES ENFANTS (3cr.)
  - ERG6742 INTERVENTION DE L'ERGOTHÉRAPEUTE AUPRÈS DES ADULTES (SANTÉ PHYSIQUE) (3cr.)
  - ERG6743 INTERVENTION DE L'ERGOTHÉRAPEUTE AUPRÈS DES ADULTES (SANTÉ MENTALE) (3cr.)
  - ERG6744 INTERVENTION DE L'ERGOTHÉRAPEUTE AUPRÈS DES PERSONNES AGÉES (3cr.)
  - ERG6754 ANALYSE DES FAITS SCIENTIFIQUES POUR LA PRATIQUE ERGOTHÉRAPIQUE (3cr.)
  - ERG6755 Séminaire de recherche (3cr.)
  - ERG6761 SÉMINAIRE D'INTÉGRATION DES ACQUIS EN ERGOTHÉRAPIE (3cr.)
  - ERG6903 FORMATION CLINIQUE EN ERGOTHÉRAPIE III
  - ERG6904 FORMATION CLINIQUE EN ERGOTHÉRAPIE IV
  - ERG6905 FORMATION CLINIQUE EN ERGOTHÉRAPIE V

• 4.5 crédits de cours optionnels (3 cours de 1.5 crédits)

• stages cliniques (1000 heures réparties sur cinq stages)

2. Cheminement avec cours et mémoire

• 58.5 crédits de cours obligatoires (liste ci-haut mais remplacer ERG 6755 (3cr.) par ERG 6999 (6cr.))

• 1.5 crédit de cours optionnel

• stages cliniques (1000 heures réparties sur cinq stages)

Le cheminement choisi devra être approuvé par la direction du programme.

Pour participer aux stages, il faut présenter certains documents, conformément aux exigences des agences, des milieux cliniques et du Ministère de la Santé de l'Ontario, visant à protéger les clients ainsi que les étudiants.

Les documents à soumettre à la personne responsable des immunisations à la Faculté des sciences de la santé sont les suivants :

• Immunisations : Une fois rempli par un médecin ou une infirmière, l'étudiant doit retourner le formulaire "dossier d'immunisation" au plus tard à la date indiquée dans l'offre d'admission.
Normes minimales et échecs pour le cheminement régulier

Une moyenne globale non cumulative calculée pour chacune des sessions devra être maintenue à un minimum de B. La note de passage dans chaque cours individuel est de C+. Tout cours obligatoire échoué doit être repris. L'étudiant qui a subi deux échecs (l'équivalent de six crédits) doit se retirer du programme. Du point de vue de ce règlement, les stages sont considérés équivalents à trois crédits chacun. Les stages sont notés S (satisfaisant) ou NS (non satisfaisant). Tout stage pour lequel la note NS a été obtenue doit être répété. Dans l’éventualité d’un deuxième échec au même stage ou à deux stages différents, l’étudiant doit se retirer du programme.

Durée du programme

On s'attend à ce que toutes les exigences soient remplies en deux années d'études à temps plein. Le délai maximum permis est de quatre ans à partir de la date initiale d'inscription au programme.

B. Cheminement court (30 crédits)

- 22.5 crédits de cours obligatoires
  
  ERG5513 PERSPECTIVES THÉORIQUES ET MODÈLES EN ERGOTHÉRAPIE (1.5cr.)
  ERG5533 SANTÉ ET HANDICAP – PERSONNES, COMMUNAUTÉS ET POPULATIONS (1.5cr.)
  ERG5752 MÉTHODOLOGIE DE LA RECHERCHE ET ANALYSE DES DONNÉES DE RECHERCHE EN RÉADAPTATION I (3cr.)
  ERG5753 MÉTHODOLOGIE DE LA RECHERCHE ET ANALYSE DES DONNÉES DE RECHERCHE EN RÉADAPTATION II (3cr.)
  ERG6545 OCCUPATION HUMAINE II (1.5cr.)
  ERG6754 ANALYSE DES FAITS SCIENTIFIQUES POUR LA PRATIQUE ERGOTHÉRAPIQUE (3cr.)
  ERG6998 LECTURES DIRIGÉES ET PROJET DE MÉMOIRE (3cr.)
  ERG6999 MÉMOIRE DE RECHERCHE (6cr.)

- 7.5 crédits de cours optionnels dont 1.5 crédits parmi les cours optionnels offerts au programme de Maîtrise en ergothérapie et 6.0 crédits parmi les cours offerts dans d'autres programmes d'études supérieures à l'Université d'Ottawa, cours pertinents à l'ergothérapie et/ou à leur projet de recherche pour le mémoire. Ces cours doivent être approuvés par le préalable par le directeur de mémoire et la directrice du programme.

Résidence pour le cheminement court

Il faut s'inscrire à au moins trois sessions à temps plein.

Durée du cheminement court

Le cheminement court se fait sur une année scolaire (trois sessions à temps plein). Le mémoire se fait simultanément aux cours et pourra se prolonger jusqu'à l'année suivante dans certains cas. La durée maximum permise est de trois ans.

Normes minimales et échecs pour le cheminement court

Une moyenne globale non cumulative calculée pour chacune des sessions devra être maintenue à un minimum de B. La note de passage dans chaque cours individuel est de C+. Tout cours obligatoire échoué doit être repris. L'étudiant qui a subi deux échecs (l'équivalent de six crédits) doit se retirer du programme.

Courses

ERG5511 INTRODUCTION À L’ERGOTHÉRAPIE (1.5cr.)
Introduction aux concepts, aux valeurs, aux bases philosophiques et historiques de la profession de même qu'aux rôles et fonctions de l'ergothérapeute. Initiation au processus de l'activité humaine comme outil d'intervention.

ERG5513 PERSPECTIVES THÉORIQUES ET MODÈLES EN ERGOTHÉRAPIE (1.5cr.)
Introduction aux cadres de référence, aux modèles théoriques et aux modèles de pratique en ergothérapie. Préalable: ERG 5712.

ERG5522 OCCUPATION HUMAINE I (1.5cr.)
Exploration de l’occupation et l’engagement dans des activités significatives comme outils de promotion de la santé et comme mesure de la santé et du bien-être. Étude de l'occupation humaine dans les activités quotidiennes, le loisir et les activités productives selon les besoins et l'âge de la personne ; étude de l’impact de

**ERG5523 L’ENVIRONNEMENT PHYSIQUE, SOCIAL, CULTUREL ET INSTITUTIONNEL** (1.5cr.)
Étude théorique et pratique des multiples environnements qui exercent une influence sur, et qui sont influencés par, l’activité humaine. Concomitant: ERG 5511.

**ERG5524 SPIRITUALITÉ ET QUESTIONS DE SENS COMME DÉTERMINANTS DE LA SANTÉ** (1.5cr.)
Intégration des concepts de base de l'ergothérapie dans une perspective spirituelle de l'être humain déterminé par le sens qu'il donne à sa vie. **Préalable: ERG 5522.**

**ERG5533 SANTÉ ET HANDICAP – PERSONNES, COMMUNAUTÉS ET POPULATIONS** (1.5cr.)
Intégration de la perspective des atteintes à la santé par l'étude des déterminants de la santé et du handicap pour les personnes, les communautés et les populations ainsi que des mécanismes politiques et sociaux qui exercent une influence sur une prestation équitable des soins de santé. **Préalable: ERG 5524.**
Concomitant: ERG 5902.

**ERG5712 PRATIQUES PROFESSIONNELLES EN ERGOTHÉRAPIE I** (3cr.)
Étude théorique et pratique des différents aspects de la relation d'aide en réadaptation, soit les principes de communication interpersonnelle, les aspects déontologiques et éthiques, les principes organisationnels et les mises en application. Concomitant: ERG5901.

**ERG5714 PRINCIPES D’ÉVALUATION ET DE TRAITEMENT EN ERGOTHÉRAPIE** (3cr.)
Étude des principes généraux d'évaluation et des étapes de l’intervention en ergothérapie. **Préalable: ERG 5712.** Concomitant: ERG 5902.

**ERG5721 DIMENSIONS DE LA PERSONNE** (3cr.)
Étude du développement de l'être humain de la naissance à la mort, dans ses dimensions physiques, cognitives, perceptuelles, affectives, ainsi que de l'importance relative de chacune de ces dimensions pour l'activité humaine. Concomitant: ERG 5511.

**ERG5731 ATTEINTES À LA SANTÉ PHYSIQUE DES PERSONNES** (3cr.)
Analyse des processus pathogènes qui portent atteinte à la santé physique ainsi que des problèmes fonctionnels connexes.

**ERG5732 ATTEINTES À LA SANTÉ MENTALE DES PERSONNES** (3cr.)
Analyse des processus pathogènes qui portent atteinte à la santé mentale ainsi que des problèmes fonctionnels connexes.

**ERG5752 MÉTHODOLOGIE DE LA RECHERCHE ET ANALYSE DES DONNÉES DE RECHERCHE EN RÉADAPTATION I** (3cr.)
Initiation aux différentes méthodes qui permettent de répondre à des questions pertinentes à la pratique et relatives à la fréquence, l’incidence, l’étiologie, le pronostic, l'efficience, l'efficacité, la corrélation coût-efficacité dans le domaine de la réadaptation. Étude des processus suivants : définition d’une question de recherche, sélection d’une méthodologie appropriée, collecte de données, méthodes d’analyse de données. Un accent particulier sera mis sur la critique et la synthèse des écrits scientifiques qui sous-tendent les meilleures pratiques.

**ERG5753 MÉTHODOLOGIE DE LA RECHERCHE ET ANALYSE DES DONNÉES DE RECHERCHE EN RÉADAPTATION II** (3cr.)
Application des méthodes de recherche permettant de répondre à des questions pertinentes à la pratique et relatives à l’expérience individuelle de la maladie, du handicap, ou relative à d’autres facteurs ayant un impact sur le rendement occupatioinal, la culture des organisations, l’évolution des théories et le développement à base communautaire. Mise en œuvre des processus suivants : définition d’une question de recherche, sélection d’une méthodologie appropriée, collecte de données, méthodes d’analyse de données. Un accent particulier sera mis sur la critique et la synthèse des écrits scientifiques qui sous-tendent les meilleures pratiques.

**ERG5901 FORMATION CLINIQUE EN ERGOTHÉRAPIE I**
Sous supervision professionnelle, initiation à la pratique de la discipline. Observation et participation à des approches d'évaluation et d'intervention. Premier stage. **Préalable: ERG 5511. Concomitant: ERG 5712.**

**ERG5902 FORMATION CLINIQUE EN ERGOTHÉRAPIE II**
Sous supervision professionnelle, mise en pratique des acquis relatifs à la relation d'aide. Participation active à la planification et à la mise en œuvre du processus d'évaluation. Participation active à la mise en œuvre de l’intervention auprès de la clientèle ciblée. Deuxième stage. **Préalables: ERG 5731, ERG 5732, ERG 5901. Concomitant: ERG 5714.**

**ERG6545 OCCUPATION HUMAINE II** (1.5cr.)
Étude de l’occupation dans les processus ergothérapiques dans le but d’alléger les difficultés de rendement occupatioanal liées à différents problèmes de santé. **Préalables: ERG 5322, ERG 6744.**

**ERG6548 INTERVENTION PARTICULIÈRE EN ERGOTHÉRAPIE** (1.5cr.)
Étude d'une intervention particulière, spécialisée et d'actualité relativement à la pratique en ergothérapie. Concomitant: ERG 6545.

**ERG6549 THÈMES CHOISIS EN ERGOTHÉRAPIE** (1.5cr.)
Étude d'un thème contemporain relatif à la pratique de l'ergothérapie. Concomitant: ERG 6545.

**ERG6550 PERSPECTIVE PARTICULIÈRE EN ERGOTHÉRAPIE** (1.5cr.)
Apprécier une perspective particulière relativement à la pratique de l'ergothérapie. Concomitant: ERG 6545.

ERG6715 PRATIQUES PROFESSIONNELLES EN ERGOTHÉRAPIE II (3cr.)

ERG6741 INTERVENTION DE L'ERGOTHÉRAPEUTE AUPRÈS DES ENFANTS (3cr.)

ERG6742 INTERVENTION DE L'ERGOTHÉRAPEUTE AUPRÈS DES ADULTES (SANTÉ PHYSIQUE) (3cr.)

ERG6743 INTERVENTION DE L'ERGOTHÉRAPEUTE AUPRÈS DES ADULTES (SANTÉ MENTALE) (3cr.)

ERG6744 INTERVENTION DE L'ERGOTHÉRAPEUTE AUPRÈS DES PERSONNES AGÉES (3cr.)

ERG6754 ANALYSE DES FAITS SCIENTIFIQUES POUR LA PRATIQUE ERGOTHÉRAPIQUE (3cr.)

ERG6755 SÉMINAIRE DE RECHERCHE (3cr.)
Sous la direction d'un professeur en ergothérapie, synthèse et analyse des écrits sur un thème particulier pour la constitution d'une équipe de recherche et la mise en œuvre d'un projet relevant des principes élémentaires de recherche et de rédaction scientifique. Le projet de recherche fait en équipe, peut prendre la forme d'une revue systématique des écrits, d'une méta-analyse, de la préparation d'une demande de fonds de recherche ou d'un projet pilote. Préalable: ERG 5752, ERG 5753.

ERG6761 SÉMINAIRE D'INTÉGRATION DES ACQUIS EN ERGOTHÉRAPIE (3cr.)

ERG6903 FORMATION CLINIQUE EN ERGOTHÉRAPIE III

ERG6904 FORMATION CLINIQUE EN ERGOTHÉRAPIE IV

ERG6905 FORMATION CLINIQUE EN ERGOTHÉRAPIE V
Sous supervision professionnelle, les étudiants consolideront les attitudes, les connaissances et les habiletés menant au développement des compétences essentielles à l'entrée en pratique. Cinquième stage. Préalables: ERG 6904, ERG 6743, ERG 6744.

ERG6998 LECTURES DIRIGÉES ET PROJET DE MÉMOIRE (3cr.)
Examen approfondi d'une problématique ou d'un courant théorique en ergothérapie en lien avec le domaine de recherche du mémoire sous la supervision du directeur de mémoire. Noté S (satisfaisant) ou NS (non satisfaisant)

ERG6999 MÉMOIRE DE RECHERCHE (6cr.)
Sous la direction d'un membre du corps professoral, mise en œuvre d'un projet de recherche relevant des principes élémentaires de recherche déjà acquis et rédaction du mémoire en présentant les résultats. L'étudiant doit faire approuver le choix de son directeur ainsi que de son sujet de mémoire par le comité des études supérieures avant de s'inscrire à la troisième session d'études (avril). Le mémoire, d'une cinquantaine de pages, consiste en l'approfondissement d'une question théorique ou appliquée reliée à l'ergothérapie à l'aide d'une méthodologie stricte. Noté S/NS. Exclusion : ERG 6755. Préalable: ERG 5752, ERG 5753.

REA5940 CONVERSATION ANGLAISE POUR LES STAGES EN RÉADAPTATION/ENGLISH CONVERSATION FOR CLINICAL PLACEMENTS IN REHABILITATION
Cours visant la préparation des étudiants en réadaptation pour l’intervention ayant lieu en anglais : relation d’aide, entrevue initiale, consentement aux soins, évaluation, intervention, congé et rédaction de notes de dossier à l’aide de la méthode SOAP (Subjective, Objective, Assessment, Plan). La terminologie spécifique aux différents domaines de la réadaptation est abordée. Noté (S) satisfaisant ou (NS) non satisfaisant. Cours réservé aux étudiants inscrits à l’un des programmes de maîtrise professionnels de l’École des sciences de la réadaptation. / Course aimed at preparing students to converse effectively with English-
speaking colleagues and clients. Topics will include English terms and dialogue related to forming a therapeutic relationship, the initial interview, obtaining informed consent, assessment, intervention, discharge and the charting of notes using the SOAP (Subjective, Objective, Assessment, Plan) method. Specific rehabilitation terminology will be presented. Graded (S) satisfactory or (NS) non satisfactory. Course reserved for students registered in one of the professional master’s programs within the School of Rehabilitation Sciences.

REA6547 SANTÉ ET RÉADAPTATION AU TRAVAIL (1.5cr.)

Geography (MA / MGeo / MSc)

The objectives of the department are to foster awareness of the field of Geography, and to add to the body of geographic knowledge and methodology through teaching and research. The department also endeavors to prepare specialized teachers and researchers to meet the demands of the teaching profession and of various public and private agencies. The Department of Geography offers a master of arts (with thesis), a master of science (with thesis), a master in geography (without thesis) and a PhD in geography. In certain cases, students may be admitted to the master’s in geography on a part-time basis.**

**Part-time students must normally complete course requirements, except the thesis, within a period of not more than 24 months. For more information consult the department.

Admission

Admission Requirements

To be admissible to the master’s program, the student must hold an BA with honours in geography or in a related discipline with an academic record indicating at least (B+) or the equivalent. Candidates whose bachelor’s degree with honours (or the equivalent) is in an area other than geography may be admitted for a qualifying period, during which they must take selected courses required in the department’s BA with honours program.

Students registered in the MA or MSc program in geography at the University of Ottawa who have obtained excellent results may be admitted into the PhD program without completing a master’s. To take advantage of this option, they must meet, in sequence, the following conditions: a) obtain an 80 per cent (A-) average in three master’s courses, b) have the department’s approval and c) successfully complete GEG 7906 Directed Research. This course will provide six credits that may be used toward the fulfillment of the PhD course requirements, thus leaving one three-credit course to be completed.

Additional Information

For additional information refer to the following Website:

http://www.geography.uottawa.ca/PDF/Form_geography.pdf

Program Requirements

Degree Requirements

Master of arts in Geography

1. Nine credits from the following lists: 5105/5505, 5109, 5510, 6101/6501, 6102/6502, 6103/6503 and 7910. Three credits can be replaced by three other credits approved by the Department of Geography and the Faculty of Graduate and Postdoctoral Studies.

2. GEG 7998 MA Thesis Project. Preparation and presentation of the MA thesis proposal (3 cr.)

3. GEG 7999 Master’s Thesis

4. Second Language Proficiency Test

In the course of their studies, students are required to demonstrate at least a passive knowledge of the second official language of Canada. Students must write the second language proficiency test in the fall or winter session of their first year of graduate studies. Passing this test satisfies the language requirement for the master’s and PhD degrees. This test consists of translating a text (600-1000 words) chosen by the supervisor, in the research field of the candidate. The text chosen will not be made known in advance to the candidate. A French-English dictionary will be permitted. This test should precede the MA Thesis Proposal
Presentation of the PhD Comprehensive Examination. A candidate who fails the test will have to successfully complete a course at the Official Languages and Bilingualism Institute approved by the department. This requirement applies only to students whose mother tongue is either English or French.

**Master of Science in Geography**

1. Nine credits from the following: 5310/5710, 5311, 5707, 6101/6501, 6102/6502, 6103/6503 and 7910. Three credits may be replaced by three other credits approved by the Department of Geography and the Faculty of Graduate and Postdoctoral Studies. Recommended courses from other departments include GEO 5132, 5133, 5139, 5140, 5141, 5142 and 5143.

2. GEG 7996 MSc Thesis Project. Preparation and presentation of the MSc thesis proposal (3 cr.)

3. GEG 7999 - Master’s thesis.

4. Second Language Proficiency Test

- The requirements for the second official language of Canada are the same as those specified for the Master of Arts (see Degree Requirements - Master of Arts).

**Master in Geography (without thesis)**

1. Thirty credits in geography chosen as follows:
   - 1.1 Thirty credits from GEG courses at the 5000- and 6000-level. Six credits may be replaced by three other credits approved by the Department of Geography and the Faculty of Graduate and Postdoctoral Studies.
   - 1.2 Up to nine credits may be chosen from GEG courses at the 4000-level, except for GEG 4000, 4001, 4019 and 4918.

2. Second Language Proficiency Test

- The requirements for the second official language of Canada are the same as those specified for the Master of Arts (see Degree Requirements - Master of Arts).

**Courses**

Les cours de cotes 51XX et 55XX sont réservés aux étudiants inscrits aux programmes de maîtrise és arts, de maîtrise en géographie et de doctorat.

Les cours de cotes 53XX et 57XX sont réservés aux étudiants inscrits aux programmes de maîtrise és sciences, de maîtrise en géographie et de doctorat.

Les cours de niveau 6000 sont disponibles pour l'ensemble des étudiants diplômés en géographie.

Les cours de niveau 7000 sont réservés aux étudiants inscrits dans les programmes de maîtrise és arts et de maîtrise és sciences.

Les cours de niveaux 8000 et 9000 sont réservés aux étudiants inscrits au programme de doctorat.

Courses with 51XX and 55XX codes are reserved for students enrolled in the MA, MGe or PhD programs.

Courses with 53XX and 57XX codes are reserved for students enrolled in the MSc, MGe or PhD programs.

Courses at the 6000-level are available for all graduate students in geography.

Courses at the 7000-level are reserved for students enrolled in the MA and MSc programs.

Courses at the 8000- or 9000-levels are reserved for students enrolled in the PhD program.

**GEG5105 SELECTED TOPICS IN HUMAN GEOGRAPHY** (3cr.)

**GEG5109 PLACE AND SOCIAL TRANSFORMATIONS** (3cr.)

Interplay between social and spatial transformations and its implications for meanings and representations from global to local scales.

**GEG5310 SELECTED TOPICS IN PHYSICAL GEOGRAPHY** (3cr.)
GEG5311 ENVIRONMENTAL CHANGE IN COLD REGIONS (3cr.)
Dynamics of cold environments with particular emphasis on their sensitivity to climate variability and climate change, natural and anthropogenically induced.

GEG5505 THÈMES CHOISIS EN GÉOGRAPHIE HUMAINE (3cr.)

GEG5510 ESPACES ET LIEUX ENTRE SOCIÉTÉ ET CULTURE (3cr.)
Espaces de référence, lieux d'appartenance et territoire dans le contexte des mutations sociales contemporaines et de la fragmentation des identités culturelles.

GEG5707 MILIEUX NORDIQUES (3cr.)
Les milieux glaciaires ou pergiglaciers, anciens ou actuels. Approches géomorphologique, hydrologique et paléobotanique.

GEG5710 THÈMES CHOISIS EN GÉOGRAPHIE PHYSIQUE (3cr.)

GEG6101 DATA ANALYSIS AND MODELLING (3cr.)
Techniques of analysis of empirical data: quantitative, semi-quantitative and qualitative. Multivariate and time-series data analysis.

GEG6102 ADVANCED GEOMATICS (3cr.)
Concepts and themes in advanced geomatics: geographical information systems, computer cartography and remote sensing.

GEG6103 SPATIAL DATA ANALYSIS (3cr.)
Visualisation and analysis of spatial data: point-pattern analysis, spatial interpolation and estimation, spatial autocorrelation. Analysis of spatial interaction and spatio-temporal dynamics.

GEG6501 ANALYSE DE DONNÉES ET MODÉLISATION (3cr.)
Modes de traitement appropriés à différents types de données empiriques : quantitatives, semi-quantitatives et qualitatives. Examen des méthodes d'analyse multivariées et temporelles.

GEG6502 GÉOMATIQUE AVANCÉE (3cr.)
Concepts et thèmes en géomatique avancée : systèmes d'information géographique, cartographie digitale et télédétection.

GEG6503 ANALYSE DES DONNÉES SPATIALES (3cr.)
Visualisation et analyse de données spatiales : analyse de configurations spatiales, interpolation et estimation spatiales, autocorrélation spatiale. Analyse des interactions dans l'espace et de la dynamique spatio-temporelle.

GEG7906 RECHERCHE DIRIGÉE / DIRECTED RESEARCH (6cr.)
Recherche dirigée pendant une session, évaluée par trois membres de la Faculté des études supérieures et postdoctorales. L'inscription à temps plein est obligatoire. La note donnée sera (S) satisfaisant ou (NS) non satisfaisant. N.B. Inscription limitée aux étudiants désirant transférer de la maîtrise au doctorat. / One session of directed research, evaluated by three members of the Faculty of Graduate and Postdoctoral Studies. The student must be enrolled full-time for this session. The course will be graded (S) satisfactory or (NS) not satisfactory. NOTE: Restricted to students intending to transfer from master's to PhD.

GEG7910 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)

GEG7996 ÉLABORATION ET PRÉSENTATION DU PROJET DE THÈSE DE MAÎTRISE ÈS SCIENCES/PREPARATION AND PRESENTATION OF THE MSc THESIS PROJECT (3cr.)
The projet de recherche doit normalement s'inscrire dans un champ d'études reconnu par le CRSNG. / The research project must normally be in a research field recognized by NSERC.

GEG7998 ÉLABORATION ET PRÉSENTATION DU PROJET DE THÈSE DE MAÎTRISE ÈS ARTS/PREPARATION AND PRESENTATION OF THE MA THESIS PROJECT (3cr.)
The projet de recherche doit normalement s'inscrire dans un champ d'études reconnu par le CRSHC. / The research project must normally be in a research field recognized by SSRHC.

GEG7999 THÈSE DE MAÎTRISE/MASTER'S THESIS

GEG8900 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)

GEG9001 ÉLABORATION ET PRÉSENTATION DU PROJET DE THÈSE DE DOCTORAT / PREPARATION AND PRESENTATION OF PhD THESIS PROJECT (6cr.)

GEG9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION

GEG9999 THÈSE DE DOCTORAT / PhD THESIS
Ottawa-Carleton Geoscience Centre

GEO5133 (GEOL 5303) ADVANCED MICROPALeOANTIOLOGY
Selected topics in micropaleontology covered in greater detail than in introductory micropaleontology. Areas addressed include the paleoecology, biogeography and biology of foraminifera and other microfossil groups, as well as their application to biostratigraphy and paleo-oceanography.

GEO5139 (GEOL 5309) GLACIAL AND PERIGLACIAL GEOLOGY (3cr.)
An examination of various sedimentary environments associated with glacial and periglacial processes and their significance for mineral exploration and environmental geochemistry. Study of cold climate non-glacial conditions and the development of permafrost and permafrost-related features, including the effect of groundwater flow on permafrost distribution.

GEO5140 (GEOL 5400) PLEISTOCENE PERMAFROST AND PERIGLACIAL ENVIRONMENTS
An examination of the stratigraphical evidence for cold, non-glacial conditions during the Pleistocene when extensive areas of mid-latitude were exposed to intense frost action and permafrost. Pleistocene periglacial sediments and sedimentary structures indicative of past permafrost are considered.

GEO5141 (GEOL 5401) PERMAFROST HYDROLOGY AND INVESTIGATIVE METHODS
An examination of groundwater flow in permafrost regions. The importance of groundwater in the formation of various types of ground ice, and the effect of groundwater flow on permafrost distribution.

GEO5142 (GEOL 5402) ENVIRONMENTAL GEOSCIeNCE (3cr.)
A study-seminar course in which students will examine, in depth, certain environmental problems, including geological hazards, mineral and energy consumption and environmental degradation. The relation between development and the environment will be considered. Students will prepare a report and present a seminar on a subject of their choice, and will participate in a research project centered in the Ottawa area.

GEO5143 (GEOL 5403) ENVIRONMENTAL ISOTOPES AND GROUNDWATER GEOCHEMISTRY (3cr.)
Stable environmental isotopes (18O, 2H, 13C, 34S, 15N) in studies of groundwater origin and flow, and geothermal studies. Groundwater dating techniques involving tritium and radiocarbon, and exotic radioisotopes (e.g. 36Cl, 39Ar, 85Kr). Low temperature aqueous geochemistry and mineral solubility with emphasis on the carbonate system. Some applications to paleoclimatology will be discussed. Prerequisite: Fourth-year Hydrogeology (67.420 or GEO 4342) or equivalent.

Globalization and International Development (MA)

The Faculty of Graduate and Postdoctoral Studies (FGPS), in collaboration with the Faculty of Arts, the Faculty of Law (common law and droit civil), and the Faculty of Social Sciences, offers an interdisciplinary master’s program focusing on the dynamics of globalization and international development. The program includes a CO-OP option. The degree awarded is the Master of Arts (MA) in Globalization and International Development.

The program draws on the expertise of professors in economics, geography, history, law, political science, religious studies, sociology and anthropology and it benefits from the strength of numerous advanced research institutes and centres. Students are provided with the training needed to address complex, multifaceted problems that may simultaneously encompass economic, political, social, cultural, religious, legal, ethical and environmental elements. The program is administered by a program committee, composed of representatives from the participating academic units and chaired by the program director.

The core courses of the program are offered each year in both English and French. The elective courses may be offered in either language; students are advised to check with the academic unit offering the course.

In accordance with University of Ottawa regulations, examinations, assignments and the research paper or thesis may be written in either one of the two official languages (English or French).

Admission

To be considered for direct admission, candidates must hold:

a) an honour’s bachelor’s degree in international development and globalization or a related field (e.g., international studies and modern languages, environmental studies, religious studies, economics, geography, history, sociology, political science)

OR

b) an undergraduate law degree (LLB/LLL or equivalent).

An overall undergraduate average of 75% (B+) (calculated in accordance with FGPS guidelines) is required. Candidates are expected to have completed at least one introductory course in macroeconomics (e.g., ECO 1102 or ECO 1302 or equivalent), prior to admission.
The admissions committee may also recommend candidates who do not fully meet the above requirements but who do meet the minimum requirements of the Faculty of Graduate and Postdoctoral Studies (an honours bachelor’s degree with 70% (B) standing) and who have demonstrated knowledge of the field through relevant training and/or work experience.

A letter of intent outlining the candidate’s interest in the program and relevant academic and practical experience must be submitted along with the application. Candidates should also indicate their preferred field (among four defined by the program).

Candidates who meet the basic admission requirements but who need to complete prerequisites for graduate courses or who need essential background knowledge in one or more fields may be admitted to a qualifying program.

**Collaborative Program in Women’s Studies at the Master’s Level**

The interdisciplinary MA program in globalization and international development is a participating unit in the collaborative program in women’s studies at the master’s level. This program has been established for students wishing to enrich their training in globalization and international development by including an interdisciplinary component in Women’s studies. The specific requirements of the collaborative program include two core courses and a thesis or major research paper on a topic related to Women’s studies. These two courses fit into the globalization and international development course requirements and do not add to the number of courses required for the master’s in globalization and international development. In addition, FEM 5103/FEM 5503 (Feminist Methodologies/Méthodologies féministes) may be taken in lieu of the required methodology course in the globalization and international development program, i.e., MDG 5122/MDG 5522 (Research Seminar/Séminaire de recherche). However, students are encouraged to take both methodology courses, i.e., FEM 5103/5503 and MDG 5122/5522.

Students should normally apply for admission to the Women’s studies collaborative program at the same time as they apply for admission to the master’s program in globalization and international development. For further details, please consult the Women’s studies program description on the website of the Faculty of Graduate and Postdoctoral Studies (FGPS) at: [http://www.grad.uottawa.ca](http://www.grad.uottawa.ca)

**CO-OP Program**

To be admissible to the CO-OP program, students must be enrolled full time in the Interdisciplinary MA Program in Globalization and International Development, must meet the minimum CGPA requirement of the Faculty of Graduate and Postdoctoral Studies (7.0, i.e., 75% or its equivalent), must enter the program in the Fall term, and must be a Canadian citizen, resident, or permanent resident. Applications for the CO-OP program must be received by the end of the first month of the student’s enrollment in the MA program. Admission to the CO-OP program will be on a competitive basis and will be managed by the CO-OP Office.

**Language Requirements**

Candidates must be able to understand, speak and write either English or French fluently. Applicants whose mother tongue is neither English nor French are required, at the time of application, to provide evidence of proficiency in one of these languages. Proof of having achieved a score of at least 280 in the computer-based Test of English as a Foreign Language (TOEFL) or in an equivalent test must be provided. For French proficiency, proof of having achieved a CarTTEST score of 5.0 in Listening, in Reading, and in Writing must be provided.

In addition, students admitted to the program without evidence of proficiency in the second official language must demonstrate their reading competence in this language at the earliest opportunity by passing the language requirements (MDG 5999) administered by the program. A candidate who fails the test will have to successfully complete a course at the Official Languages and Bilingualism Institute Institute approved by the program.

**Mentoring System**

Applications are reviewed by the program admissions committee. The committee assigns each student a professor who acts as a mentor and assists in developing an individualized study plan that takes account of interdisciplinary requirements and of the student’s needs, interests, and preferred field.

**Lecture Series**

All students are required, during the first year, to attend a lecture series where faculty and students from participating academic units, from other academic units or from outside organizations address important themes in globalization and international development.

**Program Requirements**

**Master’s Degree Requirements**

The program requirements consist of 24 credits of courses and a research paper. A thesis option also exists but requires special permission from the program committee (see 2 below). In addition, there is a CO-OP option (see 3 below).

The program has four fields: political economy of globalization and development; power, law and international society; conflict, security, and territoriality in a globalizing world; globalization, culture, and identity.
1. The master’s with research paper requires:

   a) 24 credits as follows:

   - Four core courses (12 credits): MDG 5120; MDG 5121; MDG 5122; MDG 5123.
     Students with advanced training in international economics or in international finance and development may be exempted from MDG 5123 and allowed to replace it with a three-credit course from the list of electives.
   - Four elective courses (12 credits) in the chosen field, distributed between at least two disciplines in the program. The choice of electives must be approved by the program director or a delegate.

   b) MDG 6998 Research Paper (6 credits).
   For information regarding the research paper, consult the guide Preparing a Thesis or a Research Paper, accessible through the FGPS Web site (www.grad.uottawa.ca).

2. The master’s with thesis requires:

   a) 18 credits as follows:

   - Four core courses (12 credits): MDG 5120; MDG 5121; MDG 5122; MDG 5123.
     Students with advanced training in international economics or in international finance and development may be exempted from MDG 5123 and allowed to replace it with a three-credit course from the list of electives.
   - Two elective courses (6 credits) in the chosen field, preferably distributed between two disciplines in the program. The choice of electives must be approved by the program director or a delegate.

   The thesis must meet the standards specified by the FGPS. For information regarding the thesis, consult section G of the General Regulations of the FGPS and the guide Preparing a thesis or a Research Paper, which are both accessible through the FGPS Web site (www.grad.uottawa.ca).

3. The requirements of the CO-OP program are as follows:

   Complete two work terms.

   CO-OP students must register in the “CO-OP Work Term” (MDG 6001, MDG 6002) in each of the two work terms. They must register full-time.

   Each work term is graded P/F, based on the employer’s report and on the written report completed by the student. (The report must be 30 pages, including appendices.) The report is evaluated by a member of the MDG Admissions/Program Committee, who also serves as the Program’s representative on the university’s CO-OP Committee.

   The credits awarded for CO-OP terms may not be used to obtain equivalences for other courses. In other words, the CO-OP credits are additional to the minimum requirements of the degree.

   To remain enrolled in the CO-OP program, the students must:

   - be registered full-time;
   - maintain a 7.0 cumulative grade point average;
   - obtain a pass grade (P) for each CO-OP work term.

**Duration of the program**

Students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

**Second Language Requirement**

Students admitted to the program without evidence of proficiency in the second official language must demonstrate their reading competence in this language at the earliest opportunity by passing the language requirements (MDG 5999) administered by the program. A candidate who fails the test will have to successfully complete a course at the Official Language and Bilingualism Institute (OLBI) approved by the program.

**Courses**

**MDG5110 DEVELOPMENT POLICY AND PRACTICE** (3cr.)

Study of policy formulation and the role of strategic planning in the global South. Emphasis will be placed on how international institutions and policy documents impact upon the global South and how, in turn, changes in domestic and international environments shape these institutions and actors. Various political planning approaches are also examined.
MDG5510 POLITIQUES ET PRATIQUES DU DÉVELOPPEMENT (3cr.)
Étude de la formulation des politiques et de la planification stratégique dans les pays en développement. Le cours examine d’une part, la façon dont les institutions internationales et les documents de politiques exercent un impact sur les pays du sud, et, d’autre part, l’influence des changements nationaux et internationaux sur ces institutions. Y sont également examinées les diverses approches en matière de planification politique.

MDG5111 MDG5111 PROJECT FACILITATION AND EVALUATION (3cr.)
Fundamentals of project facilitation, acquisition and practice of evidence-based learning evaluation techniques. Particular attention will be paid to participatory decision-making processes, consensus building tools, facilitating policy analysis and conflict management. Topics will include the project evaluation context; evaluation designs and their uses; tools and data collection strategies; communicating and using evaluation results; institutionalizing evaluation within organizations; and evaluation ethics.

MDG5511 FACILITATION ET ÉVALUATION DE PROJET (3cr.)
Fondements de l’animation de projets contribuant à l’acquisition des compétences essentielles à l’application des techniques d’évaluation basées sur les faits probants. Une attention particulière est accordée aux processus décisionnels participatifs, aux outils de formation de consensus, à l’analyse des politiques, ainsi qu’à la gestion des conflits. Les sujets vont inclure les contextes d’évaluation des projets; les outils et stratégies de collecte des données; la communication et l’utilisation des résultats d’évaluation; l’institutionnalisation de l’évaluation au sein d’une organisation; ainsi que l’éthique de l’évaluation.

MDG5120 UNDERSTANDING GLOBALIZATION (3cr.)
Study of leading theories and debates on the nature, causes and consequences of globalization. Analysis and discussion of the different aspects of globalization, including its cultural, political economic, security, legal and territorial implications. Interdisciplinary approach, with a focus on discussion and evaluation of key texts.

MDG5520 COMPRENDRE LA MONDIALISATION (3cr.)
Étude des principaux débats et théories sur la nature, les causes et les effets de la mondialisation. Analyse et discussion des divers aspects de la mondialisation, des répercussions culturelles, politiques, économiques et juridiques ainsi que des conséquences sur les territoires et la sécurité. Approche interdisciplinaire mettant l'accent sur l'étude et l'évaluation de textes clés.

MDG5121 UNDERSTANDING DEVELOPMENT (3cr.)
Study of leading theories and debates concerning the meaning, challenges and possibilities of development. Analysis and discussion of the different aspects of development, including its cultural, political, economic, security, legal and territorial implications. Interdisciplinary approach, with a focus on discussion and evaluation of key texts.

MDG5521 COMPRENDRE LE DÉVELOPPEMENT (3cr.)

MDG5122 RESEARCH SEMINAR (3cr.)
Development and design of a research project appropriate for an MA research paper or thesis. Formulation of appropriate research questions and relevant methodologies, and development of expertise in the chosen methods. Review and discussion of key theoretical and epistemological issues facing researchers, such as the appropriate balance between theory and empiricism. Presentation and critical discussion of individual projects. Prerequisites: MDG5120 and MDG5121.

MDG5522 SÉMINAIRE DE RECHERCHE (3cr.)
Développement et création d'un projet de recherche pertinent pour un mémoire ou une thèse de maîtrise. Formulation de questions de recherches, élaboration d'une méthodologie appropriée et acquisition d'expertise dans les méthodes choisies. Étude de questions théoriques et épistémologiques auxquelles les chercheurs doivent faire face, telles que la façon de trouver le juste milieu entre la théorie et l'empirisme. Présentation de projets individuels et discussion critique. Préalables : MDG5520 et MDG5521.

MDG5123 GLOBAL ECONOMIC ISSUES (3cr.)
Introduction to the key economic concepts and institutions, and to the analytical and technical tools that are essential to an adequate understanding of the processes of globalization and development. Focus on the globalization of product, labour and financial markets. Prerequisite: ECO1102, ECO1302 or equivalent.

MDG5523 QUESTIONS D’ÉCONOMIE MONDIALE (3cr.)
Introduction aux institutions et concepts économiques clés ainsi qu'aux outils analytiques et techniques essentiels pour une bonne compréhension des processus de mondialisation et de développement. Accent sur la mondialisation des produits, du travail et des capitaux. Préalable : ECO1502, ECO1702 ou l'équivalent.

MDG5140 PROJECT MANAGEMENT FOR INTERNATIONAL DEVELOPMENT (3cr.)
Key concepts and stages of the project management cycle. Study of project initiation, planning, appraisal, feasibility analysis, implementation, monitoring, and selected project management tools. Focus on management of international development projects. Prerequisite: MDG5121.
MDG540 GESTION DE PROJET POUR LE DÉVELOPPEMENT INTERNATIONAL (3cr.)

MDG5195 SPECIAL TOPICS IN GLOBALIZATION AND INTERNATIONAL DEVELOPMENT I (3cr.)

MDG5595 THÈMES CHOISIS EN MONDIALISATION ET DÉVELOPPEMENT INTERNATIONAL I (3cr.)

MDG5196 SPECIAL TOPICS IN GLOBALIZATION AND INTERNATIONAL DEVELOPMENT II (3cr.)

MDG5596 THÈMES CHOISIS EN MONDIALISATION ET DÉVELOPPEMENT INTERNATIONAL II (3cr.)

MDG5910 EXPÉRIENCE DE TERRAIN EN MONDIALISATION/DÉVELOPPEMENT INTERNATIONAL ; FIELDWORK IN GLOBALIZATION/INTERNATIONAL DEVELOPMENT (3cr.)
Recherche intensive ou expérience de terrain effectuée indépendamment ou dans une équipe rattachée à un organisme approprié au Canada ou à l'étranger. Cette recherche doit être menée sous l’égide d’un professeur de MDG (normalement le superviseur de l’étudiant), qui est responsable d’évaluer le rapport final de l’expérience. Préalable : Approbation du comité du programme. Noté : SNS (satisfaisant/non satisfaisant). / Intensive research or fieldwork carried out either independently or as part of an existing project or team sponsored by an appropriate institution in Canada or abroad. Must be under the guidance of an MDG professor (usually the student’s advisor), who is responsible for grading the report due at the end of the fieldwork. Prerequisite: Approval of the Program Committee. Graded : SNS (Satisfactory/Not satisfactory)

MDG5999 EXIGENCE DE LANGUE / LANGUAGE REQUIREMENT
Noté (S) satisfaisant ou (NS) non satisfaisant / Graded (S) Satisfactory or (NS) Not satisfactory.

MDG6001 STAGE COOP I / CO-OP WORK TERM I (6cr.)
Expérience en milieu de travail. Noté P (réussite) / F (échéc) par un professeur du programme selon les résultats du rapport écrit et l’évaluation du superviseur de stage. Préalable : permission du responsable des études supérieures. / Experience in a workplace setting. Graded P (pass) / F (fail) by a professor in the program based on the written report and the evaluation of the internship supervisor. Prerequisite: permission of the graduate studies co-ordinator.

MDG6002 STAGE COOP II / CO-OP WORK TERM II (6cr.)
Expérience en milieu de travail. Noté P (réussite) / F (échéc) par un professeur du programme selon les résultats du rapport écrit et l’évaluation du superviseur de stage. Préalable : permission du responsable des études supérieures. / Experience in a workplace setting. Graded P (pass) / F (fail) by a professor in the program based on the written report and the evaluation of the internship supervisor. Prerequisite: permission of the graduate studies co-ordinator.

MDG6100 DIRECTED STUDIES IN GLOBALIZATION AND INTERNATIONAL DEVELOPMENT (3cr.)

MDG6500 ÉTUDES DIRIGÉES EN MONDIALISATION ET DÉVELOPPEMENT INTERNATIONAL (3cr.)

MDG6998 MÉMOIRE / RESEARCH PAPER (6cr.)
Préalable : MDG5522 / Prerequisite: MDG5122.

MDG6999 THÈSE DE MAÎTRISE / MASTER'S THESIS
Préalable : MDG5522 / Prerequisite: MDG5122.

Cours au choix / Electives
La liste de cours au choix ci-dessous sert de lignes directrices aux étudiants et à leurs conseillers. Chaque année, une liste des cours au choix approuvés et disponibles pour les étudiants du programme sera affichée sur le site web. D’autres cours d’études supérieures peuvent également être choisis avec l’approbation du comité du programme.

Il revient aux étudiants de s’assurer qu’ils satisfont aux préalables des cours au choix qu’ils désirent suivre et d’obtenir la permission de l’unité scolaire, le cas échéant.

The following list of electives is not exhaustive, and is provided as a guideline for students and their advisors. Each year a list of elective courses approved and offered for students in the program will be posted on the program’s website. Graduate courses other than those posted on the program website may be selected with the approval of the program committee.

It is the students’ responsibility to verify that they have the prerequisites for the elective courses they wish to take and to obtain the permission of the academic unit if required.

DCL5508 DROIT COMPARÉ (3cr.)
Définition et méthode du droit comparé. Étude sommaire des grands système de droit comtemporains, et comparaison de leurs fondements. Étude de certaines institutions juridiques dans le contexte de ces divers systèmes.
Students must demonstrate their reading competence in Canada's other official language, French or English, at the earliest opportunity, by passing a language examination.

Students may prepare for a master's degree in one of two ways:

Applicants who have successfully completed compulsory credits or their equivalents prior to admission will be granted an exemption, that is, they will be

involved in providing a description of the proposed course along with a rationale for the relevance of this course to the student's program of study. The School

of its theoretical, methodological and ethical/legal underpinnings will be studied. Critical examination of information management principles and

security and privacy, IT impacts and challenges, issues related to IT assessment and evaluation in health care.

Applies the tools of decision analysis (e.g., decision trees, and uncertainty analysis) to risk management problems in health care.

MHA6216 RISK MANAGEMENT IN HEALTH CARE

MHA6230 HUMAN RESOURCE MANAGEMENT IN HEALTH CARE

MHA6250 HEALTH CARE ACCOUNTING AND FINANCE

MBA5235 MANAGEMENT SKILLS 1

MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS

MDG6002 STAGE COOP II / CO-OP WORK TERM II

MHS5701 RECHERCHE ET MÉTHODOLOGIES DE RECHERCHE

MHS7998 INTERNAT DE RECHERCHE EN SYSTÈMES DE SANTÉ / HEALTH SYSTEMS RESEARCH INTERNSHIP

POL6500 ANALYSE POLITIQUE INTERNATIONALE ET COMPARÉE

DCL6734 ORGANISATION INTERNATIONALE DU COMMERCE (3cr.)

ECO4115 MONETARY THEORY (3cr.)

ECO4515 THÉORIE MONÉTAIRE (3cr.)

ECO4117 DEVELOPMENT ECONOMICS (3cr.)

MBA5635 pour étudiants MBA seulement.

2nd digit:

Niveau 5000 :

Fall Session (full-time session)

Block 5 and intensive courses

Year 1

The courses sequence of working professionals who opted for part-time delivery is as follows:

MHA Program Options for Working Professionals

Students are normally admitted to the Program on a full-time basis and are required to register full-time for three sessions. Applicants applying to be admitted on

Students are required to attend the regular seminars throughout their program of study; students are expected to present their proposal and

Students must complete all degree requirements within a maximum of five years of the date of initial registration in the program.

secretariat will inform the student of the decision: if applicable, the revised grade will be forwarded to the Faculty of Graduate and Postdoctoral Studies.

Experience in a common law and international commerce environment. The internship will include readings, observation, and work assignments, allowing students
to gain insight into the daily practice and policy issues of lawyers working in this field.

Examen de questions d’actualité dans le domaine de la common law et du commerce international.

Examen de questions d’actualité dans le domaine de la common law et du commerce international.

Stage dans un milieu de travail spécialisé en common law et commerce international. Le stage comprendra de la recherche, de l’observation et des travaux
pratiques, offrant une expérience de la réalité du travail et des questions qui se posent au jour le jour dans ce domaine.

Examen de questions d’actualité dans le domaine de la common law et du commerce international.

Niveau 5000 :

Préalable : MBA 5635 pour étudiants MBA seulement.

MBA 5635 pour étudiants MBA seulement.

MBA5235 MANAGEMENT SKILLS 1

MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS

MDG6002 STAGE COOP II / CO-OP WORK TERM II

MHS5701 RECHERCHE ET MÉTHODOLOGIES DE RECHERCHE

MHS7998 INTERNAT DE RECHERCHE EN SYSTÈMES DE SANTÉ / HEALTH SYSTEMS RESEARCH INTERNSHIP

POL6500 ANALYSE POLITIQUE INTERNATIONALE ET COMPARÉE

DCL6734 ORGANISATION INTERNATIONALE DU COMMERCE (3cr.)

ECO4115 MONETARY THEORY (3cr.)

ECO4515 THÉORIE MONÉTAIRE (3cr.)

ECO4117 DEVELOPMENT ECONOMICS (3cr.)
Each work term is graded P/F (Pass or Fail), based on the employer's report and on a written report completed by the student. The student's control studies will be reviewed.

**Courses**

- ECO6572 LE DÉVELOPPEMENT ÉCONOMIQUE: ASPECTS INTERNATIONAUX (3cr.)
  Analyse des problèmes fondamentaux du développement économique international tels que le commerce en ressources primaires et biens manufacturés, les flux financiers et la dette, le rôle des entreprises multinationales, le transfert de technologie et les dimensions internationales des questions environnementales en relation avec les pays en voie de développement.

- ECO6573 ASPECTS ENVIRONNEMENTAUX DU DÉVELOPPEMENT ÉCONOMIQUE (3cr.)
  Politiques du développement durable et de la qualité de l'environnement dans les pays en voie de développement. Thèmes étudiés : l'utilisation de l'énergie, la déforestation, la sécheresse et la désertification, l'épuisement des ressources naturelles, la dette, l'environnement et la pauvreté, le développement durable dans l'industrie et l'agriculture, les politiques de conservation, le contrôle de la pollution et les problèmes de l'environnement global.

- GEG5105 SELECTED TOPICS IN HUMAN GEOGRAPHY (3cr.)
- GEG5505 THÈMES CHOISIS EN GÉOGRAPHIE HUMAINE (3cr.)
- HIS5103 SEMINAR IN CANADIAN HISTORY (3cr.)
- HIS5503 SÉMINAIRE EN HISTOIRE CANADA (3cr.)
- HIS6103 SEMINAR ON AMERICAN HISTORY (3cr.)
- HIS6332 SEMINAR ON THE HISTORY OF TECHNOLOGY (3cr.)
- HIS6336 SEMINAR ON IMMIGRANTS AND ETHNIC GROUPS IN NORTH AMERICA (3cr.)
- HIS6503 SÉMINAIRE EN HISTOIRE AMÉRICAINE (3cr.)
- HIS6532 SÉMINAIRE EN HISTOIRE DE LA TECHNOLOGIE (3cr.)
- HIS7103 SEMINAR IN EUROPEAN HISTORY (3cr.)
- HIS7330 SEMINAR ON COMPARATIVE HISTORY (3cr.)
- HIS7331 SEMINAR ON THE HISTORY OF WOMEN AND GENDER (3cr.)
- HIS7333 SEMINAR ON INTERNATIONAL RELATIONS (3cr.)
- HIS7335 SEMINAR ON WAR AND SOCIETY (3cr.)
- HIS7336 SLOVAKS IN EUROPE, CANADA AND THE UNITED STATES SINCE 1870 (3cr.)
- HIS7337 SEMINAR ON HISTORY OF MEDICINE (3cr.)
- HIS7503 SÉMINAIRE EN HISTOIRE EUROPÉENNE (3cr.)
- HIS7530 SÉMINAIRE EN HISTOIRE COMPARÉE (3cr.)
- HIS7535 SÉMINAIRE SUR LA GUERRE ET LA SOCIÉTÉ (3cr.)
- HIS7705 MÉTHODES DE RECHERCHE EN HISTOIRE (3cr.)
- HIS7731 SÉMINAIRE EN HISTOIRE DES FEMMES ET DU GENRE (3cr.)
- HIS7733 SÉMINAIRE EN RELATIONS INTERNATIONALES (3cr.)
- POL6500 ANALYSE POLITIQUE INTERNATIONALE ET COMPARÉE (3cr.)
  L'objectif de ce cours est de présenter les principaux schémas d'analyse en politique internationale et comparée, et de les relier de façon critique. Il s'agira d'une analyse des apports méthodologiques et théoriques dans les deux champs d'étude.

- POL7502 THÈMES CHOISIS EN POLITIQUE INTERNATIONALE ET COMPARÉE (3cr.)
- POL7509 GOUVERNANCE ET MONDIALISATION (3cr.)
  Analyse des institutions et des pratiques de régulation politique à l’échelle internationale dans le contexte de la mondialisation. Étude des grands courants de changement de la gouvernance nationale et internationale, y compris les forces de résistance. Études de cas.
Health Administration (MHA)

Introduction

The Telfer School of Management provides an outstanding environment for students pursuing graduate studies in health care management both from an academic and a professional point of view. In addition to the Master in Health Administration (MHA), the Telfer School of Management offers at the graduate level a master of business administration (MBA), a master of science in management and a master of science in health systems, as well as a number of joint programs with the faculties of Law and of Engineering. Moreover, the MHA program has close links to other faculties including the Faculty of Health Sciences and the Faculty of Medicine to assure relevance to clinical practice for health service administration. The MHA program participates in one interdisciplinary initiative: the graduate diploma in health services and policy research. For information on the program, please check under those headings in the graduate program list.
The MHA program also has close links with hospitals, long-term care institutions, community health agencies, psychiatric institutions, federal and provincial governments, and international, national, and provincial health organizations to assure curricular relevance and excellence.

Moreover, the program maintains close ties with the Canadian College of Health Service Executives, the American College of Health Service Executives, and other professional bodies across North America. The emphasis in this program is on proactive management with a vision of humanistic leadership and public service in a period of intense change in health-care systems around the world.

The MHA is closely allied to, and aligned with, the MBA program. MHA students take their core management courses with MBA students. The MHA aims to prepare students for the managerial and leadership responsibilities faced in rapidly changing health-care environments.

The MHA program allows for full-time or part-time study, with the common core management courses (of the MBA) available in either English or French. The MHA health specialization courses are available only in English. The MHA requires an administrative residency of at least 16 weeks that expands the students’ experience in health care or health policy and awareness of the applicability of the material covered in the academic portion of the program to the practical world of management of health care.

Mission

The mission of the MHA program is to prepare ethical and socially responsible professionals to assume management and leadership positions in the changing health service system, primarily in Canada but also internationally, and to strive for excellence in professional education, scholarly research and community service in health systems management. The program focuses on the quality of student experience and education and is engaged in continuous curriculum development through excellence in research and strong links with the community of health care practitioners in the field.

Goals and Objectives

Given its mission statement, the MHA program will pursue the following goals:

1. Provide comprehensive education in health services and systems management.
2. Conduct relevant health management research.
3. Make continuous improvements to the program by proactively responding to market needs.
4. Create opportunities to effectively link students with the health community to enhance the student's learning experience.
5. Assist students in the development of meaningful career plans.
6. Foster strong, ongoing, lasting and mutually beneficial relationships with the MHA Alumni Association, the local Chapter of CCHSE and its members as well as all residency sites and preceptors.
7. Provide patient-centered inter-professional learning opportunities.

History of the Program

The master's in health administration (MHA) program began as the School of Hospital Administration in 1964. It changed its name in 1970 to include the notion of health in order to broaden its focus. In 1979, a reorganization of the Faculty of Administration program changed the school's name to the MHA program. Since 1997, the core management disciplines of the MHA program are covered through MBA courses offered to both MBA and MHA students.

Accreditation

One of only three business schools in Canada accredited by the Association to Advance Collegiate Schools of Business (AACSB), the European Quality Improvement System (EQUIS) and the Association of MBAs (AMBA), the Telfer School is recognized by The Princeton Review as one of the world’s best 250 business schools and has been ranked by the Financial Times as a top 150 business school for the last three years.

Libraries

The Morisset and health sciences libraries of the University house extensive collections of books, periodicals and documents relevant to the arts and sciences, including health administration, general administration and medicine. Students also have access to the National Library and the Canadian Institute for Scientific and Technical Information (formerly the National Research Council Library), as well as dozens of other specialized collections in Ottawa.

Financial Support

Students of health administration are eligible for bursaries, loans and some scholarships which are available to all graduate students. The MHA program offers various admissions scholarships: please consult the Telfer School of Management web site for details.

Students may compete for several awards annually. The MHA Alumni association offers an award of excellence to the MHA student who has completed the best field project as part of his or her residency based on the preceptor’s recommendation and an oral presentation. The Robert Wood Johnson Award, is awarded annually by Johnson & Johnson to the graduate of the program who demonstrates the most promise of making a significant contribution to the field of health administration. In addition to this financial assistance, there are a number of other awards and bursaries available to MHA students. Additional information is available from the Faculty of Graduate and Postdoctoral Studies, as well as from the Telfer School of Management graduate programs secretariat.

Computer facilities

The Telfer School of Management offers students well-equipped computer facilities. Hardware and software common in business are available.
Computers are also used as a main teaching tool in the many multimedia classrooms available on campus.

The MHA program fosters the development of its students’ computer skills by providing them with continuous access to the most current suite software, to financial databases, to specialized business software, as well as to the Internet and electronic mail. Computer and multimedia equipment are also available to prepare assignments and class presentations.

In addition to those tools and services provided by the Telfer School of Management, students can access computer, communication and multimedia services provided to all University students.

**Admission**

Admission to the master’s of health administration program is open to candidates holding a Canadian baccalaureate degree or its equivalent. A minimum standing of B or 70% overall average is required. The Faculty of Graduate and Postdoctoral Studies will determine the equivalency of qualifications for applicants from non-Canadian institutions. In addition, a limited number of candidates may be considered for admission on the basis of substantial managerial or professional training and experience (normally 10 years or more) even if they do not hold a university degree or do not meet the minimum academic requirements.

Entry into the Master in Health Administration (MHA) program takes place in the fall session (full-time and part-time students) of each year. Classes start mid-August. In order to be considered for admission, completed applications must be received no later than April 1 of the year of potential entry.

Due to immigration requirements, all applications other than those from Canada, the United States and Europe must be received no later than January 1. Later applications will only be considered at the discretion of the Telfer School of Management.

In its evaluation of applicants, the admissions committee will identify those who lack mathematical background and will strongly recommend that they complete four Quantitative Analysis for Business Modules (namely “Basic Mathematics”, “Spreadsheet for Statistics”, “Mathematics for Finance”, and “Calculus for Microeconomics”) offered in an hybrid delivery mode (on-line with some one-on-one tutorials with a professor; the modules can be done completely on-line for students who can not attend live tutorials). Furthermore, all students admitted will be invited to complete these four modules to refresh their quantitative analysis skills.

**Required Documents**

Admission to the program is competitive and the number of candidates that can be accommodated is limited. Admission will be granted only to those who clearly demonstrate high promise of success in the MHA program. In applying to the program, candidates should provide the following documentation:

- a duly completed application form
- a non-refundable application fee
- past academic performance : original transcripts from all post-secondary institutions attended, as well as any additional evidence of academic excellence such as grade point average, class rank, awards, publications, professional designations
- related work experience : a current curriculum vitae that details managerial or professional experience. A minimum of 2 years of full time work experience is required. In general, preference is given to those applicants who have greater work experience, particularly when there is evidence of career progression
- two confidential letters of recommendation that comment on the applicant’s suitability for graduate study
- a narrative statement that indicates the applicant’s personal motivation for entering the MHA program, and how they would contribute to the learning environment
- standardized test : The Graduate Management Admission Test (GMAT) is compulsory for all candidates planning to take the MHA (both Anglophones and francophones, since the MHA specialization courses are offered only in English). A score of at least 50 percentile is required for the GMAT, and each individual component being within the 45 percentile. A score of 4.5 is also required on the essay writing.
- Applications for the GMAT can be obtained from Educational Testing Service P.O. Box 6103 Princeton, New Jersey USA, 08541-6103
- personal interview : in some cases, applicants may be required to attend a personal interview with a representative of the MHA program

Candidates whose mother tongue is neither English nor French are required to provide evidence of proficiency in one of Canada’s official languages. These candidates must submit one of the following to the Faculty of Graduate and Postdoctoral Studies to confirm their proficiency:

1. A score of at least 250 on the Test of English as a Foreign Language (TOEFL), with a score of at least 5 on the Test of Written English (TWE) and a score of at least 50 on the Test of Spoken English (TSE). The TOEFL is administered by Educational Testing Service, Box 899, Princeton, New Jersey, USA, 08540; see also ww.wbt1.toelf.org.
2. A score of at least 7 in at least three of the four International English Language Testing System (IELTS) tests (Reading, Listening, Writing, Speaking) and at least 6 in the fourth. The IELTS is administered by the British Council: www.ielts.org.
3. A score of at least 14 on the CANTEST, administered by the University of Ottawa, with no individual test score below 4.0, along with a score of 4.5 on the oral component of the test.
4. Proof of completion within the last five years, of a previous degree program in an English language university.
5. Proof of recent prolonged residence and exercise of a profession in an English speaking country (normally at least four years over the last six years).

All applications, supporting documents, and inquiries from candidates for the MHA program should be sent to the Telfer School of Management.

N.B. The selection committee will not consider applications unless all the required documents are submitted.
Language of Instruction

In the application to the MHA program, students must elect to take the common core components either in English or in French and are placed, once admitted, in a cohort/study group accordingly. The health administration modules are taught only in English; therefore a good command of English is necessary. However, students may submit assignments, research papers, directed readings or examination papers either in English or in French. Administrative residencies can be arranged in French-language institutions.

The MHA Program

Recognition of Courses

Advanced Standing

At the time of admission, a student may receive advanced standing for graduate courses in management completed previously as a regular student either in a Canadian MBA program or a similar program accredited by the AACSB International or an equivalent.

Credits may also be granted for graduate courses completed previously in a University of Ottawa interdisciplinary program in which the Telfer School of Management is involved.

The maximum number of credits allowed is 27. No credits will be granted for courses completed more than five years ago or for which the grade was lower than B or 70 %. Advanced standing is usually granted only for core courses.

Orientation

The program begins the last two weeks of August with a period dedicated to skills development and program orientation / information for all students (MBA 5235 or MBA 5260).

Computer skills

Students must be familiar with the use of computers and basic applications related to administration such as word processing, spreadsheets and presentation software.

Program Requirements

Master's Degree Requirements

MHA Program

The MHA curriculum is composed of 54 credits as follows:

- Management Core (MBA and ADM course codes): 16.5 credits
- Health Management (MHA) courses: 30 credits
- Administrative residency and field project: 7.5 credits.

Courses

Many of the program requirements consist of 3-credit courses, normally offered on the basis of three hours per week over twelve weeks during a university session. Each session has been divided into two blocks, allowing the program to also offer 1.5-credit courses, also known as modules. The 18-hour modules, normally offered over a six-week period, provide more variety in course offerings and allow flexibility in course delivery, as some modules may be offered in an intensive format such as over a 3-day weekend. Any given course is normally offered only once a year in a specific academic session or block. Multiple sections (day and evening) of each course may be scheduled in the same session or block, given the program structure and based on enrolment figures; some courses are offered only in the evenings. The Telfer School of Management may choose not to offer a course for which the demand is too low.

* Throughout this text, the term “courses” refers both the three-credit courses and to 1.5 credit modules.

Management Skills

The MHA program begins with a period dedicated to skills development (leadership, communications, negotiation, group work, and other related management tools necessary for a solid grounding in business, MBA 5235). This skills development course is offered during the last two weeks of August for full-time students and during the last week-end of August for working professionals.

Common Core in Management

The MHA program starts with a common core in management with the MBA program. The common core provides groundwork in basic management disciplines and skills.

Health Management Specialization

The MHA program offers a large number of health management specialization courses that prepare its students for the challenges that managers in the health system must face. All these courses are required.
Health Care Administrative Residency and Field Project (MHA 6990)
The residency is an integral part of the program and takes place in the last academic session (fourth session in the full-time program). During this period, the students are assigned to a specific preceptor but remain under the supervision of the program. The residency may be spent in a variety of health agencies and institutions. All students must register full-time for this activity.

The administrative residency has three major learning goals: to integrate course knowledge in health care management; to develop cognitive skills; to enhance leadership skills.

The Field Project is an integral part of the successful completion of the administrative residency requirement. It integrates curricular content with practical experience and is undertaken under joint supervision by the faculty member and the preceptor in whose organization the administrative residency takes place.

The project describes a particular area of the student’s residency experience and contribution to the residency site and is structured according to a standard format accepted in medical research. Successful Field Project papers should combine the student’s knowledge of theory with the practical experience gained during the administrative residency. In order to pass this course, the student must successfully complete the administrative residency component (evaluated as S/NS) and receive a passing grade in the field project component.

Students will be given a kick off orientation by the Residency Coordinator(s) followed by individual meetings to help guide the development of career goals and residency objectives leading to the selection of site options. Once residency sites have been finalized, a second orientation will target preparation for the actual residency experience. Prerequisite: At least 12 credits of MBA courses and 18 credits of MHA courses

Evaluation and Promotion

The term "courses" refers to both 3-credit courses and to 1.5-credit modules.

Grades are awarded according to the following scale:

A+ 90 - 100 % 10 points Exceptional
A 85 - 89 % 9 points Excellent
A- 80 - 84 % 8 points Excellent
B+ 75 - 79 % 7 points Very Good
B 70 - 74 % 6 points Very Good
C+ 65 - 69 % 5 points Good
C 60 - 64 % 4 points
All grades below C+ (66%) are failing grades for graduate students.
D+ 55 - 59 % 3 points
D 50 - 54 % 2 points
E 40 - 49 % 1 point
F 0 - 39 % 0 point

ABS-EIN*

* ABS (absent, no work submitted) Awarded to a student who has not attended the course and has not informed the academic unit and the Faculty of Graduate and Postdoctoral Studies in writing, within two weeks of the start of the course. This symbol is equivalent to a failing grade (F).

* EIN (incomplete) Awarded when at least one of the compulsory elements of evaluation have not been provided. This symbol is equivalent to a failing grade (F).

Dropping Courses

Given the integrative nature of the program delivery, full-time and part-time students are not allowed to drop 5000-level courses: however, they may drop 6000-level courses, but only during the first two weeks of classes.

Failures and Minimum Standards

Students must meet the following requirements throughout their program.

1. Requested Cumulative Grade Point Average and Probation Period
   1.1. General Standard: Students must maintain a cumulative grade point average (CGPA) of 6.0 throughout the program and their overall CGPA upon completion of all requirements must be 6.0 in order to qualify for graduation. Those who fail to maintain an average of 6.0 at the time of the periodic review are placed on probation. All courses are included in the calculation of the CGPA.

   The CGPA of full-time students initially will be reviewed at the end of Block 2, and subsequently at the end of each block, provided they have completed 12 credits since the last CGPA review. The academic performance of working professionals will be reviewed at the end of Block 6 for the first two years of the program. Thereafter, their performance will be evaluated upon completion of each additional 12 credits. Students who fail to qualify for removal from probation on the next review must withdraw from the program.

2. Failures
   2.1. General Standard: Students who received failing grades (below C+) in more than 4.5 credits must withdraw from the program.
2.2. 5000-level MBA Courses:

a) Students receiving a grade below 50 per cent (E or F on the previous scale) in any 5000-level MBA course must repeat the failed course. Moreover, registration in any activity for which the failed one is a prerequisite is prohibited until such time as the failed activity has been passed.

b) Students receiving a grade between 50 and 64 per cent (D, D+ or C on the previous scale) in a 1.5 credit 5000-level MBA module must be repeated or replaced by a 6000-level MBA or ADM module of their choice. Any 3 credit MBA course in which a student received a grade between 50 and 64 per cent must be repeated. In both cases, registration is permitted in any other core course for which the failed one is a prerequisite. This is to ensure that students take their MBA core courses with their entry cohort. Registration is, however, prohibited in any elective module for which the failed one is prerequisite, until the failed module has been passed.

2.3. MHA and ADM 6000-level modules: since all 6000-level courses are required in the MHA program, a failed 6000-level course must be repeated. A student may not register in any module for which the failed module is a prerequisite.

Students who fail to meet these requirements must withdraw from the program.

Change of Grade on the Record

Revision

Students wishing to request a review of any marked assignments returned while the course is in progress must do so within one week of receipt of the marked assignment from the professor. Students wishing to request a review of final examinations and term work returned after the end of a course must do so within one week following the posting of grades by the graduate programs secretariat.

The request must be made in writing to the graduate programs secretariat using the special form available for this purpose. A copy of the student's request will be forwarded to the professor, who will submit his decision to the director of the MBA program, using the Change of Grade Report. The graduate programs secretariat will inform the student of the decision: if applicable, the revised grade will be forwarded to the Faculty of Graduate and Postdoctoral Studies.

Appeal process

A student who is not satisfied with the professor's decision, and who wishes to proceed with a formal review, must submit a written request to the graduate programs secretariat within one week of communication of the professor's decision. The Director of the MBA program will proceed with a reevaluation according to the procedure approved by the Senate of the University, a copy of which can be found at the graduate programs secretariat or at the Faculty of Graduate and Postdoctoral Studies (FGPS). One or two professors qualified in the discipline and appointed by the director of the MBA program will re-assess the assignment, test or examination in question and will submit their decision to the Director of the MBA program, who will communicate the decision to the student.

A student who disagrees with this decision may, within a week of communication of the Telfer School of Management decision, submit a written appeal to the dean of the FGPS, who will refer the appeal to the Executive Committee of the FGPS.

Duration

Students must complete all degree requirements within a maximum of five years of the date of initial registration in the program.

Full-time MHA Program

A full-time student is expected to complete the program in 15 months.

The schedule of the full-time MHA follows. Note that the MHA modules are normally offered after 4 p.m., while the MBA common core is offered between 8:30 a.m. and 4 p.m., or (on an exceptional basis) after 4 p.m. if a student is assigned to a cohort intended primarily for part-time students.

Core modules taken in the full-time MBA program (MBA/ADM) and health administration modules (MHA):

Year 1

Fall Session

Block 1
MBA5235 MANAGEMENT SKILLS 1 (1.5cr.)
MBA5260 THE WORLD OF THE GENERAL MANAGER AND OF STRATEGIC MANAGEMENT (1.5cr.)
MBA5300 DATA ANALYSIS (3cr.)
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)
MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)

Block 2
MBA5265 PERFORMANCE MANAGEMENT (1.5cr.)
MBA5300 DATA ANALYSIS (3cr.)
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)
MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)
Winter Session

Block 3
- ADM6260 PROJECT MANAGEMENT I (1.5cr.)
- MHA6266 INTERNATIONAL PERSPECTIVES IN HEALTH CARE (1.5cr.)
- MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY (3cr.)
- MHA6370 INTRODUCTION TO HEALTH INFORMATICS (3cr.)
- MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)

Block 4
- MBA5236 LEADERSHIP AND MANAGEMENT (1.5cr.)
- MHA6250 HEALTH CARE ACCOUNTING AND FINANCE (1.5cr.)
- MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY (3cr.)
- MHA6370 INTRODUCTION TO HEALTH INFORMATICS (3cr.)
- MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)

Spring / Summer Session

Block 5 and intensive courses
- MHA6215 MANAGEMENT AND EVALUATION OF QUALITY OF PATIENT CARE (1.5cr.)
- MHA6216 RISK MANAGEMENT IN HEALTH CARE (1.5cr.)
- MHA6271 APPLICATION OF INFORMATION TECHNOLOGY IN HEALTH CARE (1.5cr.)
- MHA6351 HEALTH ECONOMICS (3cr.)
- MHA6361 LEADING STRATEGY AND CHANGE IN HEALTH CARE ORGANIZATIONS (3cr.)

Block 6 and intensive courses
- MHA6212 GOVERNANCE AND ETHICAL MANAGEMENT IN HEALTH CARE ORGANIZATIONS (1.5cr.)
- MHA6230 HUMAN RESOURCE MANAGEMENT IN HEALTH CARE (1.5cr.)
- MHA6351 HEALTH ECONOMICS (3cr.)

Year 2

Full Session

Blocks 1 & 2
- MHA6203 PROGRAM EVALUATION FOR HEALTH CARE MANAGERS (1.5cr.)
- MHA6990 HEALTH CARE ADMINISTRATIVE RESIDENCY AND FIELD PROJECT (7.5cr.)

MHA Program Options for Working Professionals

Working professionals may complete the MHA requirements on a part-time basis and choose between two delivery modes: the part-time program (expected duration of 36 months) and the full-time program for working professionals (expected duration of 28 months).

The typical schedule of the part-time MHA follows. Most management core and specialization courses are offered after 4 p.m. for working professionals. Certain courses follow an irregular sometime intensive schedule: intensive courses including weekend and full weekday classes. Students will be informed in advance of these irregular schedules. Students must register full-time during the session when they are completing their residency.

In their application to the MHA program, students must elect to take the core courses in English or in French and are placed, once admitted, in a cohort/study group accordingly. Students who opted for the part-time program are required to take the courses in the following sequence (the course sequence for the full-time program for working professionals is presented later in the document). Exceptions will be permitted only for valid reasons, such as illness. Students must apply to the graduate programs secretariat in writing for permission to deviate from the proposed sequence. Failure to follow the required progression will result in delays in their program.

All students, whatever option they choose, must complete all degree requirements within five years.

The courses sequence of working professionals who opted for part-time delivery is as follows:

Year 1

Fall Session

Block 1
- MBA5235 MANAGEMENT SKILLS 1 (1.5cr.)
- MBA5300 DATA ANALYSIS (3cr.)
- MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)

Block 2
- MBA5300 DATA ANALYSIS (3cr.)
- MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)

Winter Session
Blocks 3 & 4
MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY (3cr.)
MHA6370 INTRODUCTION TO HEALTH INFORMATICS (3cr.)

**Spring / Summer Session**

Blocks 5 & 6
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MHA6351 HEALTH ECONOMICS (3cr.)

**Year 2**

**Fall Session**

Block 1
MBA5260 THE WORLD OF THE GENERAL MANAGER AND OF STRATEGIC MANAGEMENT (1.5cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)

Block 2
MBA5265 PERFORMANCE MANAGEMENT (1.5cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)

**Winter Session**

Block 3
MHA6266 INTERNATIONAL PERSPECTIVES IN HEALTH CARE (1.5cr.)
MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)

Block 4
MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)

**Spring / Summer Session**

Block 5 and intensive courses
MBA5236 LEADERSHIP AND MANAGEMENT (1.5cr.)
MHA6361 LEADING STRATEGY AND CHANGE IN HEALTH CARE ORGANIZATIONS (3cr.)

Block 6 and intensive courses
MHA6212 GOVERNANCE AND ETHICAL MANAGEMENT IN HEALTH CARE ORGANIZATIONS (1.5cr.)

**Year 3**

**Fall Session (full-time session)**

Blocks 1 & 2
MHA6203 PROGRAM EVALUATION FOR HEALTH CARE MANAGERS (1.5cr.)
MHA6990 HEALTH CARE ADMINISTRATIVE RESIDENCY AND FIELD PROJECT (7.5cr.)

**Winter Session**

Block 3
ADM6260 PROJECT MANAGEMENT I (1.5cr.)

Block 4
MHA6250 HEALTH CARE ACCOUNTING AND FINANCE (1.5cr.)

**Spring / Summer Session**

Block 5 and intensive courses
MHA6215 MANAGEMENT AND EVALUATION OF QUALITY OF PATIENT CARE (1.5cr.)
MHA6216 RISK MANAGEMENT IN HEALTH CARE (1.5cr.)
MHA6271 APPLICATION OF INFORMATION TECHNOLOGY IN HEALTH CARE (1.5cr.)

Block 6 and intensive courses
MHA6230 HUMAN RESOURCE MANAGEMENT IN HEALTH CARE (1.5cr.)

**Accelerated program option**

Individuals in full-time employment may opt for the full-time program for working professionals and accelerate completion of their degree by completing two additional full-time sessions (Spring sessions of Year 1 and Year 2) of 9 credits each of coursework, thus reducing the total program duration from 36 to 28 months. The program will offer certain courses on an irregular schedule which will allow students to balance their workload over the session. We present below the 28-month program structure.
Year 1

Fall Session

Block 1
MBA5235 MANAGEMENT SKILLS 1 (1.5cr.)
MBA5300 DATA ANALYSIS (3cr.)
MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)

Block 2
MBA5300 DATA ANALYSIS (3cr.)
MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)

Winter Session

Blocks 3 & 4
MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY (3cr.)
MHA6370 INTRODUCTION TO HEALTH INFORMATICS (3cr.)

Spring / Summer Session (full-time session)

Block 5 and intensive courses
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MHA6215 MANAGEMENT AND EVALUATION OF QUALITY OF PATIENT CARE (1.5cr.)
MHA6351 HEALTH ECONOMICS (3cr.)

Block 6 and intensive courses
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MHA6230 HUMAN RESOURCE MANAGEMENT IN HEALTH CARE (1.5cr.)
MHA6351 HEALTH ECONOMICS (3cr.)

Year 2

Fall Session

Block 1
MBA5260 THE WORLD OF THE GENERAL MANAGER AND OF STRATEGIC MANAGEMENT (1.5cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)

Block 2
MBA5265 PERFORMANCE MANAGEMENT (1.5cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)

Winter Session

Block 3
ADM6260 PROJECT MANAGEMENT I (1.5cr.)
MHA6266 INTERNATIONAL PERSPECTIVES IN HEALTH CARE (1.5cr.)
MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)

Block 4
MHA6250 HEALTH CARE ACCOUNTING AND FINANCE (1.5cr.)
MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)

Spring / Summer Session (full-time session)

Block 5 and intensive courses
MBA5236 LEADERSHIP AND MANAGEMENT (1.5cr.)
MHA6216 RISK MANAGEMENT IN HEALTH CARE (1.5cr.)
MHA6271 APPLICATION OF INFORMATION TECHNOLOGY IN HEALTH CARE (1.5cr.)
MHA6361 LEADING STRATEGY AND CHANGE IN HEALTH CARE ORGANIZATIONS (3cr.)

Block 6 and intensive courses
MHA6212 GOVERNANCE AND ETHICAL MANAGEMENT IN HEALTH CARE ORGANIZATIONS (1.5cr.)

Year 3

Fall Session (full-time session)

Blocks 1 & 2
MHA6203 PROGRAM EVALUATION FOR HEALTH CARE MANAGERS (1.5cr.)
MHA6990 HEALTH CARE ADMINISTRATIVE RESIDENCY AND FIELD PROJECT (7.5cr.)
Transfer of Credits

Under certain circumstances it is permissible for students registered in the program to take courses at another faculty or another university and to have the credits for these courses transferred towards the requirements of the degree. Arrangements for registration in such courses must be approved in advance by the Telfer School of Management and completed by the closing date for registration of the MHA program in the session concerned.

Students who intend to take courses at Ontario universities must complete in advance the form entitled Ontario Visiting Graduate Student Application available at the secretariat of the School or at the Faculty of Graduate and Postdoctoral Studies. Students who intend to take courses at a university outside of Ontario must obtain in advance a Letter of Permission at the school or at the Faculty of Graduate and Postdoctoral Studies.

The maximum number of credits that can be granted in advanced standing or in transferred credits is 27. The regular rules of evaluation and promotion apply to all courses taken by transfer of credit.

Graduate Diploma in Business Administration

The Graduate Diploma is awarded only to students already registered in the MBA or MHA programs who are not continuing in these programs. Students must:

In order to receive the Graduate Diploma, candidates must:
- be admitted and registered in either the MBA or the MHA program;
- have completed at least 27 credits of MBA or MHA or ADM courses with satisfactory performance (normally with a 6.0 cumulative grade point average), including at least 15 credits of MBA 5000-level courses from the following list:

MBA5210 BUSINESS / GOVERNMENT RELATIONS (1.5cr.)
MBA5211 CORPORATE GOVERNANCE AND ETHICS (1.5cr.)
MBA5235 MANAGEMENT SKILLS 1 (1.5cr.)
MBA5236 LEADERSHIP AND MANAGEMENT (1.5cr.)
MBA5237 CHANGE MANAGEMENT (1.5cr.)
MBA5241 MANAGERIAL ACCOUNTING INFORMATION AND DECISIONS (1.5cr.)
MBA5260 THE WORLD OF THE GENERAL MANAGER AND OF STRATEGIC MANAGEMENT (1.5cr.)
MBA5265 PERFORMANCE MANAGEMENT (1.5cr.)
MBA5266 PERFORMANCE MANAGEMENT: BUSINESS PROCESS MODELLING (1.5cr.)
MBA5270 INFORMATION AND COMMUNICATION TECHNOLOGIES FOR MANAGERS (1.5cr.)
MBA5300 DATA ANALYSIS (3cr.)
MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS (3cr.)
MBA5350 CORPORATE FINANCIAL MANAGEMENT (3cr.)
MBA5355 ECONOMICS FOR THE GLOBAL MANAGER (3cr.)
MBA5360 STRATEGY FORMULATION AND IMPLEMENTATION (3cr.)
MBA5380 OPERATIONS MANAGEMENT (3cr.)

Courses

Explication des cotes de cours

1er chiffre :

Niveau 5000 : activités du tronc commun

Niveau 6000 : activités de spécialisation en gestion des services de santé

2e chiffre :

2, 4 cours offerts en anglais
6, 8 cours offerts en français
9 cours bilingues

3e chiffre :

0 Analyse des données, statistiques
1 Politique publique, gestion du secteur public
2 Marketing
3 Comportement organisationnel, ressources humaines
4 Comptabilité
5 Finance, économie
6 Politique de santé ou des affaires, gestion internationale, haute technologie
7 Systèmes d'information
8 Modèles décisionnels en gestion, gestion des opérations
9 Séminaires, projets, stage administratif

Explanation of Course Codes

1st digit:

5000 level: common core

6000 level: Health Administration specialization

2nd digit:

2, 4 courses offered in English
6, 8 courses offered in French
9 bilingual courses

3rd digit:

0 Data Analysis, Statistics
1 Public Policy, Public Sector Management, Health Care Systems
2 Marketing
3 Organizational Behaviour, Human Resources
4 Accounting
5 Finance, Economics
6 Health or Business Policy, International Management, High Technology
7 Information Systems
8 Management Decision Models, Operations Management
9 Seminars, Projects, Residency

Activités du tronc commun / Core Courses

MBA5235 MANAGEMENT SKILLS 1 (1.5cr.)
Development of increased skills and understanding of participant preferences for the management of interpersonal and team-based issues and processes in a work environment. Special focus on diversity and ethics in a team environment. Effective business communications, including skills for delivery of high quality business presentations; exposure to common business software for inclusion in the student's professional toolbox.

MBA5236 LEADERSHIP AND MANAGEMENT (1.5cr.)
Leadership versus management; participatory leadership; transactional leadership; transformational leadership; reciprocity and mutual influence between leaders and followers; leading up (followership); situational determinants of effective leadership; cross-cultural leadership; virtual leadership. Course delivery involves class discussions, experiential exercises, guest speakers and case studies. Prerequisite: MBA 5330.

MBA5260 THE WORLD OF THE GENERAL MANAGER AND OF STRATEGIC MANAGEMENT (1.5cr.)
Understanding the role of the general manager in setting direction, creating competitive advantage, allocating resources, integrating operations and projects, framing the organizational infrastructure and context and managing change. Introduction to the concept of strategy and alternative models of strategic making.

MBA5265 PERFORMANCE MANAGEMENT (1.5cr.)
The focus will be on learning about business intelligence and performance management approaches at operational levels in the organization. Frameworks such as the Balanced Score Card and Quality Management will be covered, as well as the use of business intelligence to explore performance problems. Prerequisite: MBA 5270 or equivalent.

MBA5300 DATA ANALYSIS (3cr.)
Introduction to statistical data analysis. Basic concepts important to management: problem-solving and decision-making using data. Application of univariate and bivariate methods to various datasets. Use of software and the interpretation of statistical output. Models and tools to assist students in collecting, organizing, understanding, analyzing, presenting and communicating data.

MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
The strategic advantage of understanding and integrating organizational behaviour (OB) frameworks in designing and implementing effective human resource (HR) activities (namely attraction, development, maintenance and retention of employees), in measuring performance and in achieving high-performance outcomes in various global organizational contexts. OB topics covered include motivation, rewards, leadership, group dynamics, organizational politics, job and organization design, and culture. *Prerequisite: MBA 5235 for MBA students only.*

**MBA5340 FINANCIAL ACCOUNTING INFORMATION AND DECISIONS** (3cr.)
This course focuses on the role of the accounting function external to the organization. It takes a broad view of financial accounting, encompassing a wide range of external financial and economic information, both national and international. The orientation will help students to understand what accounting can do for decision makers and how accounting and ethical choices affect decisions. Current issues in financial accounting and reporting are discussed.

**MBA5635 HABILETÉS DE GESTION I** (1.5cr.)
Développer une connaissance de soi ainsi que les habiletés interpersonnelles nécessaires à la gestion des relations interpersonnelles et au sein d'équipes en milieu de travail. Accent porté sur la diversité et l'éthique dans le travail d'équipe. Formation en communication et présentations efficaces dans les affaires. Aperçu de logiciels informatiques pour professionnels en milieu d'affaires.

**MBA5636 LEADERSHIP ET GESTION** (1.5cr.)
Le leadership versus la gestion; leadership participatif; leadership transactionnel; leadership transformationnel; réciprocité et influence mutuelle entre leader et suiveur; influence vers le haut (suituance); circonstances influençant l'efficacité du leadership; différences culturelles et leadership ; leadership virtuel. Cours comportant des discussions de groupe, des exercices, des conférenciers invités et des études de cas. *Préalable : MBA 5730.*

**MBA5660 L'UNIVERS DU DIRECTEUR GÉNÉRAL ET LE MANAGEMENT STRATÉGIQUE** (1.5cr.)
Le but du cours est d'introduire les étudiants au monde de la haute direction. Il vise l'identification des défis auxquels fait face le directeur général, ainsi que la présentation des modèles et grilles d'analyse de base, quand vient le moment de choisir une orientation stratégique, de rechercher des avantages concurrentiels, d'intégrer les ressources, d'intégrer les opérations et les projets, de se donner les moyens pour la mise en œuvre des stratégies arrêtées et de gérer le changement.

**MBA5665 GESTION DE LA PERFORMANCE** (1.5cr.)
Il sera question de l'apprentissage de la veille économique et de la gestion de la performance au niveau opérationnel en entreprise. On verra les concepts tels que le tableau de bord équilibré et la gestion de la qualité, ainsi que l'emploi de la veille économique pour explorer des défaillances de la performance. *Préalable : MBA 5670 ou l'équivalent.*

**MBA5700 ANALYSE DE DONNÉES EN GESTION** (3cr.)
L'analyse des données comme support dans le processus de prise de décisions, dans l'évaluation de l'information véhiculée quotidiennement à travers les rapports d'organismes, les articles de presse, etc., et pour faire face aux changements. Interprétation des concepts et techniques de base utilisés en analyse des données. Développement de la compréhension de ce que l'on peut tirer d'une analyse statistique, ainsi que des limitations de cette même analyse. Interprétation correcte des résultats en particulier en contexte de globalisation ou de gestion des entreprises de haute technologie. Initiation au rôle de la statistique dans la conduite des affaires. Résumé et présentation des données complexes. Traitement d'ensembles de données réalistes à l'aide de l'ordinateur et de maîtrise d'un logiciel statistique d'usage courant. Interprétation des concepts et techniques de base utilisés dans l'analyse des données. Tirer des conclusions à partir d'échantillons et reconnaître et exploiter les relations entre deux variables.

**MBA5730 COMPORTEMENTS ORGANISATIONNELS ET GESTION DES RESSOURCES HUMAINES** (3cr.)

**MBA5740 INFORMATION COMPTABLE ET DÉCISION** (3cr.)
Le rôle de ce cours est de traiter de la comptabilité comme source d'information aux décideurs de l'entreprise. Le cours adopte une vision élargie de la comptabilité qui couvre une grande variété d'informations de nature financière et économique, nationale et internationale. Cette orientation permettra aux étudiants de comprendre le rôle que peut jouer la comptabilité auprès des décideurs internes et externes.

**ADM6260 PROJECT MANAGEMENT I** (1.5cr.)

**Modules de spécialisation M.G.S.S. / MHA Specialization Modules**
(Ces cours ne sont offerts qu'en anglais) / (Courses offered in English only).

**MHA6203 PROGRAM EVALUATION FOR HEALTH CARE MANAGERS** (1.5cr.)
This course is intended for future health care managers who will contract out or procure program evaluations within their organizations. It covers the
development of evaluation questions and standards of effectiveness, program evaluation designs, sampling, collecting information (primary and secondary), evaluation measures, managing evaluation data, analyzing evaluation data, evaluation reports, and development of “Requests for Proposals (RFPs)” that form the basis for these evaluations. To become familiar with this process, students are required to prepare an evaluation proposal similar to that which would be commissioned and received from consulting firms and/or academic groups who respond to RFPs that are developed by managers who are required to contract out such program evaluations. At the conclusion of this course, students will be able to develop RFPs and to adequately assess evaluations proposals, i.e., be able to ask right questions, and to know which disciplines to include as members of the proposal review team.

MHA6212 GOVERNANCE AND ETHICAL MANAGEMENT IN HEALTH CARE ORGANIZATIONS (1.5cr.)
Governance models for health care organizations. Definition, resolution and handling of ethical problems of administrators, professionals and researchers in health organizations. Reconciliation of conflicting interests of the stakeholders according to ethical principles.

MHA6213 DIRECTED READINGS IN HEALTH CARE MANAGEMENT (3cr.)
Personal definition, investigation and synthesis of broadly based literature on a topic from a list prepared in advance by the MHA faculty. Bi-weekly progress reports submitted by e-mail or in person. Presentation of the report at a seminar organized by a supervisor. Prerequisites: must have completed the common core and at least 10.5 MHA credits.

MHA6215 MANAGEMENT AND EVALUATION OF QUALITY OF PATIENT CARE (1.5cr.)
This course will apply concepts from the literature to analyze and understand quality management and patient safety issues, and discuss these concepts in relation to accountability. It will prepare students for the health care workplace by exposing them to practices and aspects related to patient safety and quality in health care, and identifying contemporary approaches to address them. Various models and approaches for assessing and improving quality will be discussed including evidence-based medicine and management, systematic reviews, clinical practice guidelines, and quality improvement approaches. Various quality initiatives and quality improvement tools will be discussed and evaluated.

MHA6216 RISK MANAGEMENT IN HEALTH CARE (1.5cr.)
Applies the tools of decision analysis (e.g., decision trees, and uncertainty analysis) to risk management problems in health care. The general purpose of these tools will be highlighted. Early lectures will focus on medical decision-making applications (e.g., choosing a diagnostic cut-point, choosing between different health technologies, and aiding a patient with her choice of course of action). Later lectures will demonstrate how the decision analysis tools can enlighten broader risk management deliberations (such as whether to invoke a quarantine, whether to issue health-alerts, whether to support new vaccines, etc.). Case studies will be used to exemplify lessons learned from the risk assessment, the risk communication, the risk perception and the risk management literatures. Prerequisite: MBA 5300, MHA 6380

MHA6230 HUMAN RESOURCE MANAGEMENT IN HEALTH CARE (1.5cr.)
This course will build on the foundation established by MBA5330 with a specific focus on the major issues unique to effective health human resources management. Topics covered include measuring needs and planning for the current and future supply of human resources in this labor intensive sector. Recruitment, retention and development strategies to meet changing workforce conditions. Understanding the unique regulatory environments where many professions are regulated by provincial laws and professional colleges while others are not. Labor relation issues and approaches in this highly unionized environment. Funding, team work and inter-professional practice, scope of practice issues and organizational design. Interactions of organizational and professional accreditation mechanisms (such as professional colleges and associations, and accreditation bodies). Prerequisite: MBA 5330

MHA6250 HEALTH CARE ACCOUNTING AND FINANCE (1.5cr.)
Financial structure of the health care system. Introduction to managerial accounting with special emphasis on the management of health care agencies. Principles of costing. Multi-product and case mix measures. Resource use decisions, budgeting and control, and pricing analysis for health care organizations. Fundamentals of capital financing, financial planning and financial policy formulation within the health care context in Canada. Relevant healthcare financial guidelines or coding standards may be introduced. Prerequisite: MBA 5340

MHA6266 INTERNATIONAL PERSPECTIVES IN HEALTH CARE (1.5cr.)
Geopolitics of world health: health inequities between countries and within countries. Health systems as a determinant of health: Canada and the USA. OECD/WHO countries: France, No. 1? Germany (Bismarck model) and the UK (Beveridge model) – major reforms. Sweden (Beveridge) - a very decentralized system. International actors: WHO (PAHO), private foundations, NGOs, pressure groups.

MHA6271 APPLICATION OF INFORMATION TECHNOLOGY IN HEALTH CARE (1.5cr.)
Discusses contemporary health information technologies (IT) and their role in improving, transforming, and supporting the delivery of health services and the overall process of care: computer-based patient records, computerized order entry and results reporting, clinical services applications (lab, pharmacy, radiology-PACS), clinical decision support systems, nursing information systems, telemedicine and telehealth applications, e-health applications, IT/IS project development and management (including end-users involvement, implementation aspects, alignment with work practices), risks in IT projects, information security and privacy, IT impacts and challenges, issues related to IT assessment and evaluation in health care. Prerequisite: MHA 6370

MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY (3cr.)
Provides a survey of epidemiology; viewed through a "population health" lens. Course will provide a survey of: measures of health status (including measures of mortality and morbidity); and measures of association. The basic epidemiological designs (observational, case-control, cohort, time series, and randomized control studies) will be reviewed. The factors affecting the precision and validity of these studies (e.g., statistical power, confounding, effect modification, and causality criterion) will be reviewed. Emphasis will be placed on equipping students with an ability to critically evaluate clinical, epidemiological, and health administration evidence in support of decisions. Guidance will also be provided to help select appropriate outcome indicators and critically evaluate interventions/programs. Students will get hands on experience computing effect measures (e.g., odds ratios) from study results, as well as with assessing the
MHA6351 HEALTH ECONOMICS (3cr.)
The course provides a macro-economic perspective on the demand and supply of healthcare, highlighting the market failures that are archetypical within the health domain. It contrasts Welfarist and Extra-Welfarist perspectives on resource allocation (contrasting technical versus allocative efficiency). The course will also review cost-benefit, cost-effectiveness, and cost-utility approaches of evaluating health interventions; and in so doing the course will provide students an opportunity for hands-on computation (workshops). The course will also consider the issue of equity and methods for incorporating equity into health economic evaluations.

MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)

MHA6361 LEADING STRATEGY AND CHANGE IN HEALTH CARE ORGANIZATIONS (3cr.)

MHA6370 INTRODUCTION TO HEALTH INFORMATICS (3cr.)
Overview of current developments, issues and challenges in the emerging field of health informatics. Historical development as well as basic foundations of health informatics including theoretical, methodological and ethical/legal underpinnings will be studied. Critical examination of information management principles and methods in Canadian health care organizations both public and private. Emerging applications in health informatics as well as approaches to understanding and evaluating these applications. Identification of the issues which CIO’s face in their attempts to provide the right information to the right people, at the right time.

MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)
The use of these methods has recently become an active and growing area of practice and research in contexts including wait list management, patient flow, population demand estimates, health human resource management and the coordination of resources for elective and emergency services. This course is designed to provide health care decision makers with an overview of several useful quantitative methods that can provide insight and support for complex decisions. The course will cover the following topics: decision analysis; mathematical model formulation; linear programming and optimization; forecasting; queuing theory and simulation modeling; dynamic programming. This class is not intended for students who have a background in operations research. Rather it is intended for future or current managers who need to have a grasp of the potential of the mathematical tools available to help optimally utilize the resources under their control.

MHA6990 HEALTH CARE ADMINISTRATIVE RESIDENCY AND FIELD PROJECT (7.5cr.)
Prerequisite : Un minimum de 12 crédits de cours MBA et 18 crédits de cours MHA. / Prerequisite: At least 12 credits of MBA courses and 18 credits of MHA courses.

Cours au choix hors de l'École / Electives Outside the School
Il est également possible de choisir des cours ou des modules optionnels à l'extérieur de l'École de gestion Telfer. Pour ce faire, on doit obtenir l'autorisation en soumettant une description du cours ainsi que les raisons motivant la demande. L'École se réserve le droit de refuser une telle demande si l'étudiant est en période de probation.

En outre, il est possible de choisir des cours de niveau supérieur dans une discipline reconnue par la Faculté des études supérieures et postdoctorales. Pour la description des cours, veuillez vous adresser au secrétariat des programmes de 2e cycle de l'École de gestion Telfer.

Students may take courses outside of the Telfer School of Management as electives. To do so, they must receive permission of the School. Normally this would involve providing a description of the proposed course along with a rationale for the relevance of this course to the student's program of study. The School reserves the right to refuse such requests when a student is on academic probation.

Students may take graduate level courses in any discipline recognized by the Faculty of Graduate and Postdoctoral Studies. For more information on these courses, please consult the relevant program calendars that are available at the graduate programs secretariat.
Health Systems (MSc)

The Telfer School of Management (TSoM) offers a graduate program leading to the degree of Master of Science in Health Systems (MSc in HS). This research-based program is designed to train researchers and academic leaders in the expanding field of health systems. These systems are studied using the scientific problem solving methods of management science and systems science. Students follow a process of scientific discovery applying abstract modeling or empirical discovery paradigms.

The program builds on the expertise of professors and researchers in health systems research from the Telfer School of Management and from the Faculties of Health Sciences, Medicine, Social Sciences, Engineering and the Institute of Population Health. The program operates under the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS), accessible at www.grad.uottawa.ca. It is offered in both English and French, primarily on a full-time basis.

Admission

Applicants must hold a four-year bachelor’s (honours) degree in management (B. Com.), health sciences, life sciences, medicine, nursing, computer science, economics, social sciences, engineering, mathematics or a related field with at least a 75% (B+) cumulative grade point average (CGPA) calculated in accordance with FGPS guidelines.

The academic profile of applicants must contain a background in analysis including the equivalent of at least 6 credits of analysis courses. Analysis courses include undergraduate level courses in quantitative and qualitative research methods, micro and macro economics, calculus, probability and statistics, linear algebra, and information technology. These courses represent excellent preparatory material for the core courses of the MSc in HS program. Students lacking background in the quantitative analysis material may be required to complete prerequisite course work as a condition of admission. The specific requirements of the qualifying program will be determined by the admissions committee based on the academic and professional profile of the applicant.

Applicants to the program must have achieved at least a 50th percentile score on either the GMAT (General Management Admission Test) or GRE (Graduate Record Examinations), or TAGE-MAGE (Test d' Aptitude aux Études en Gestion), and submit at least two letters of recommendation and a statement of research interest of between 800-1000 words. The research statement is a letter of intent stating the applicant’s motivation for studying in the MSc in HS program, their commitment to conducting research, their preferred areas of research interest as well as identifying a possible research supervisor.

Applicants who have successfully completed compulsory credits or their equivalents prior to admission will be granted an exemption, that is, they will be permitted, on the advice of their supervisor, to replace those credits with elective credits in the program. To be eligible for exemption, the credits must have been completed with a grade of 70 per cent (B) or better no more than five years prior to admission to the MSc. The maximum number of credits for which an exemption can be granted is six. The general regulations of the FGPS, section B.2.7, apply for transfer of credits.

Students are normally admitted to the Program on a full-time basis and are required to register full-time for three sessions. Applicants applying to be admitted on a part-time basis may be considered, provided they have demonstrated a clear commitment and plan for completing their degree requirements in a timely way.

Language Requirements

Applicants must be able to understand, speak and write either English or French fluently and they must indicate in their application the language in which they intend to take their courses. Those whose mother tongue is neither English nor French are required, at the time of application, to provide evidence of proficiency in one of these languages. Applicants whose mother tongue is not English and who intend to study in English are required to provide one of the following as evidence of proficiency in English (the test scores cannot be more than two years old as of September 1 of the year of potential entry into the program):

1. A score of at least 250 on the Test of English as a Foreign Language (TOEFL), with a score of at least 5 on the Test of Written English (TWE) and a score of at least 50 on the Test of Spoken English (TSE). The TOEFL is administered by Educational Testing Service, Box 899, Princeton, New Jersey, USA, 08540; see also www.web1.toefl.org
2. A score of at least 7 in at least three of the four International English Language Testing System (IELTS) tests (Reading, Listening, Writing, Speaking) and at least 6 in the fourth. The IELTS is administered by the British Council: www.ielts.org
3. A score of at least 14 on the CANTEST, administered by the University of Ottawa, with no individual test score below 4.0, along with a score of 4.5 on the oral component of the test.
4. Proof of completion within the last five years, of a previous degree program in an English language university.
5. Proof of recent prolonged residence and exercise of a profession in an English speaking country (normally at least four years of the last six years).

Candidates applying to study in French must submit one of the following to confirm their French proficiency:

1. A score of at least 14 on the TESTCAN, administered by the University of Ottawa, with no individual test score below 4.0, along with a score of 4.5 on the oral component of the test.
2. Proof of completion within the last five years, of a previous degree program in a French language university.
3. Proof of recent prolonged residence and exercise of a profession in a French-speaking country (normally at least four years of the last six years).

Considering the significant amount of health systems research that is published in English, all applicants need the ability to read and understand written English; proof of this ability may be required.
Minimum Standards

The minimum passing grade in all courses taken as part of the program is 66 per cent (C+). Students who incur failures in two courses (equivalent to six credits) or whose thesis proposal is rejected twice (NS grade in MHS 7998) must withdraw.

Language of Instruction

All core courses and some of the electives are offered in both French and English. Some of the seminars in the Health Systems Research Seminar will be delivered in English and some in French so that the requirement may be completed fully in either language. There are sufficient elective courses in both languages for students to complete the elective requirements in either French or English. As per University of Ottawa policy, students can complete major assignments, examinations and their thesis in either French or English. This also applies to the oral presentations given by the students in the Health Systems Research Seminar. Opportunities exist for students to use French or English as a primary language of communication as they conduct their research.

Duration of Program

Students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

Program Requirements

Degree Requirements

The MSc in health systems requires successful completion of 30 credits consisting of 15 course credits (9 credits of core courses and 6 credits of electives), a 3-credit Health Systems Research Internship and 12 credits for the thesis.

The passing grade in all courses is B. Students who fail 6 credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

1. Core Courses (9 credits)
   - MHS5301 RESEARCH DESIGN METHODOLOGIES AND THE CONDUCT OF RESEARCH (3cr.)
   - MHS6380 SYSTEMS ANALYSIS, MODELING, AND DECISION SUPPORT IN HEALTH (3cr.)
   - MHS6990 SÉMINAIRES SUR LA RECHERCHE EN SYSTÈMES DE SANTÉ / HEALTH SYSTEMS RESEARCH SEMINARS (1.5cr.)
   - Students are required to attend the regular seminars throughout their program of study; students are expected to present their proposal and preliminary research results normally in the winter (session II) or Spring (session III) session of the Health Systems Research Seminars.
   - At least 1.5 credits of MHA courses; the complete list of courses is available in the MHA calendar.

2. Electives (6 credits)

   Students in consultation with their thesis supervisor will select elective courses in areas related to their research topics. All courses offered in the MHA program are open to the MSc students. Registration to courses offered in the MBA, the MSc in Management and other graduate programs will normally require permission from the respective Program Directors.

   The following list of electives, regrouped under possible themes of study, is not exhaustive, and is provided as a guideline for students and their advisors. Each year a list of elective courses approved and offered for students in the program will be posted on the program’s website. Graduate courses other than those posted on the program website may be selected with the approval of the Thesis Supervisor and Program Director. It is the students’ responsibility to verify that they have the prerequisites for the elective courses they wish to take and to obtain the permission of the academic unit if required. Students are advised that enrolment in out of faculty courses may be limited at the discretion of the faculty offering the course. Unless otherwise indicated, all courses are worth 3 credits.

Health Services and Policy

- MHA6203 PROGRAM EVALUATION FOR HEALTH CARE MANAGERS (1.5cr.)
- MHA6212 GOVERNANCE AND ETHICAL MANAGEMENT IN HEALTH CARE ORGANIZATIONS (1.5cr.)
- MHA6216 RISK MANAGEMENT IN HEALTH CARE (1.5cr.)
- MHA6250 HEALTH CARE ACCOUNTING AND FINANCE (1.5cr.)
- MHA6351 HEALTH ECONOMICS (3cr.)
- HAH6206 HEALTH CARE SYSTEM ORGANIZATION AND POLICY (1.5cr.)
- ADM6209 GOVERNANCE (1.5cr.)
- ADM6609 GOVERNANCE (1.5cr.)
- NSG6160 POLICY, POLITICAL ACTION AND CHANGE IN HEALTH CARE (3cr.)
- NSG6560 POLITIQUE, ACTION POLITIQUE ET CHANGEMENT EN SOINS DE SANTÉ (3cr.)
HSR6120 KNOWLEDGE TRANSFER FOR HEALTH SERVICES AND POLICY RESEARCH (3cr.)
EPIT7181 EPIDEMIOLOGY FOR HEALTH POLICY (3cr.)

Public Health and Health Promotion
MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY (3cr.)
MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
MBA5720 GESTION STRATÉGIQUE DE MARKETING (3cr.)
EPIS181 POPULATION HEALTH RISK ASSESSMENT I (3cr.)
EPIS210 PUBLIC HEALTH ADMINISTRATION (3cr.)
EPIS271 HEALTH PROMOTION (3cr.)

Health Care Organizations
MHA6230 HUMAN RESOURCE MANAGEMENT IN HEALTH CARE (1.5cr.)
MHA6361 LEADING STRATEGY AND CHANGE IN HEALTH CARE ORGANIZATIONS (3cr.)
MHA6250 HEALTH CARE ACCOUNTING AND FINANCE (1.5cr.)
MBA5237 CHANGE MANAGEMENT (1.5cr.)
MBA5637 GESTION DU CHANGEMENT (1.5cr.)
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MBA5730 COMPORTEMENTS ORGANISATIONNELS ET GESTION DES RESSOURCES HUMAINES (3cr.)
ADM6210 MODELS OF PUBLIC, PRIVATE AND CIVIC GOVERNANCE (1.5cr.)
ADM6610 MODELES DE GOUVERNANCE DANS LES SECTEURS PUBLIC, PRIVÉ ET CIVIQUE (1.5cr.)
MBA6266 PRINCIPLES OF NEGOTIATION FOR THE GLOBAL MANAGER (1.5cr.)
MBA6666 PRINCIPES DE NÉGOCIATION POUR LES GESTIONNAIRES D'ENTREPRISES INTERNATIONALES (1.5cr.)

Health Systems Analysis and Optimization
MHA6271 APPLICATION OF INFORMATION TECHNOLOGY IN HEALTH CARE (1.5cr.)
MHA6370 INTRODUCTION TO HEALTH INFORMATICS (3cr.)
MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)
MBA5380 OPERATIONS MANAGEMENT (3cr.)
MBA5780 GESTION DES OPÉRATIONS (3cr.)
ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)
SYS5130 SYSTEMS OPTIMIZATION AND MANAGEMENT (3cr.)
SYS5140 ECONOMIC SYSTEM DESIGN (3cr.)
EPIS242 BIOSTATISTICS I (3cr.)
EPIS542 BIOSTATISTIQUE I (3cr.)
EPIS6188 SYSTEMATIC REVIEWS AND META-ANALYSIS (3cr.)
MAT5307 (MATH 5804) TOPICS IN OPERATIONS RESEARCH (3cr.)

Health Informatics and Technology
MHA6271 APPLICATION OF INFORMATION TECHNOLOGY IN HEALTH CARE (1.5cr.)
MHA6370 INTRODUCTION TO HEALTH INFORMATICS (3cr.)
EPIT6179 COMPUTER APPLICATIONS IN MEDICINE (3cr.)
EPIS188 HEALTH TECHNOLOGY ASSESSMENT (3cr.)
CSIS115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
CSIS143 (COMP 5403) REAL-TIME SYSTEMS DEVELOPMENT (3cr.)
CSIS387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)
CSIS5787 (COMP 5706) FOUILLE DES DONNÉES ET APPRENTISSAGE DES CONCEPTS (3cr.)

Quality of Care
MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY (3cr.)
MHA6216 RISK MANAGEMENT IN HEALTH CARE (1.5cr.)
MBA6220 MANAGING CUSTOMER RELATIONS (1.5cr.)
MBA6620 GESTION DE LA RELATION CLIENT (1.5cr.)
MHA6361 LEADING STRATEGY AND CHANGE IN HEALTH CARE ORGANIZATIONS (3cr.)
MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)
MHA6215 MANAGEMENT AND EVALUATION OF QUALITY OF PATIENT CARE (1.5cr.)

Clinical Decision Making and Support
MHA6203 PROGRAM EVALUATION FOR HEALTH CARE MANAGERS (1.5cr.)
MHA6216 RISK MANAGEMENT IN HEALTH CARE (1.5cr.)
MHA6380 QUANTITATIVE METHODS AND THEIR APPLICATIONS TO HEALTH CARE DECISION MAKING (3cr.)
MBA5380 OPERATIONS MANAGEMENT (3cr.)
MBA5780 GESTION DES OPÉRATIONS (3cr.)
NSG6133 DECISION MAKING IN CLINICAL PRACTICE (3cr.)
NSG6533 PRISE DE DÉCISIONS EN SITUATION CLINIQUE (3cr.)
EPI5181 POPULATION HEALTH RISK ASSESSMENT I (3cr.)
EPI6276 QUANTITATIVE METHODS IN EPIDEMIOLOGY (3cr.)
PHR6101 RISK MANAGEMENT IN GOVERNMENT (3cr.)
CSI5307 EXPERT SYSTEMS
EC5519 MEDIATION AND NEGOTIATION: THEORY AND RESEARCH (3cr.)

3. Master’s Thesis and Health Systems Research Internship (15 credits)

The research deliverables of the program are comprised of the Master’s thesis and the research internship for a total of 15 credits.

MHS7999 THÈSE DE MAÎTRISE / MSc THESIS (12cr.)

Students registered for the MSc in HS must submit to their Thesis Committee, before the end of the second session of registration in the program, a clearly defined research proposal. The Thesis Committee will be formed prior to the thesis proposal submission. The Committee will include the thesis supervisor (and co-supervisor, if desired), a researcher from one of the collaborating institutions who may also act as co-supervisor, and another faculty member. Approval of the proposal by the Thesis Committee will normally be obtained by the end of the second session and no later than the end of the third. A student must register in the Masters thesis in the session immediately following the approval of the proposal. A student whose proposal is not approved on the first attempt may be permitted to submit a second proposal and present it in the Health Systems Research Seminars. Failure to obtain approval following the second submission will lead to an NS grade and to withdrawal from the program.

The master’s thesis should reveal that the candidate is able to work independently in a scholarly manner and is acquainted with the principal works published on the subject of the thesis. Insofar as possible, the thesis should be an original contribution. Theses will comprise theoretical and/or empirical research contributions applying a wide range of data collection methodologies, and modeling and analysis techniques based on appropriate software applications. Data collection methodologies will include the gathering of secondary data from published or archived sources, and/or primary data through interviews, surveys, and ethnographic studies. For example, topics for thesis research may address the issues of improving efficiencies of a health system and providing quality health services, the role of information and communication technologies in delivery of health services and the development of decision support tools.

Once the thesis proposal is accepted, students will be eligible to begin their Health Systems Research Internship with one of the collaborating organizations (see MHS 7998).

The completed thesis will be evaluated by a Thesis Examining Board composed of at least two professors who are members of the FGPS and involved in the MSc in Health Systems. For information regarding the thesis, consult section G of the General Regulations of the FGPS and the guide Preparing a Thesis or a Research Paper, which are both accessible through the FGPS Web site at www.gradstud.uottawa.ca.

MHS7998 INTERNAT DE RECHERCHE EN SYSTÈMES DE SANTÉ / HEALTH SYSTEMS RESEARCH INTERNSHIP (3cr.)

All MSc students will be required to undertake a one-session Research Internship that takes place in one of the collaborating Research Institutes. Students will work under the direction of their thesis supervisor and of a research mentor in the Institute. The Institute mentor is one of the members of the Thesis Committee. The Internship will allow the student to conduct thesis research and at the same time learn about and be involved in one or several of the cutting-edge research projects conducted in the Institute. It is expected that the student while doing the Health Systems Research Internship will participate in research seminars offered at the Institute as per the advice of the Internship supervisor as well as in the Health Systems Research Seminars. At the end of the session of the internship, students will be required to present a report to their Thesis Committee summarizing the research activities completed during the internship. The internship will be evaluated by the members of the Thesis Committee based on: (i) the Health Systems Research Seminars presentation and (ii) the written internship report to the Thesis Committee. The internship is graded on a (S) Satisfactory / (NS) Non-Satisfactory basis.

Courses

MHS5301 RESEARCH DESIGN METHODOLOGIES AND THE CONDUCT OF RESEARCH (3cr.)
Introduction to research and scientific inquiry in order to foster a better understanding of the research discovery process. The process of planning, designing, and conducting a research study focusing on the research process, detailed discussions of the research methods and techniques available for use at each stage in the process, and linking the choice of research methods and techniques to the nature of the problem and the objectives of the study. Exposure to various research methodologies including paradigms of social phenomena modeling, qualitative research, mathematical modeling methods, and experimental design approaches including randomized control trials (RCT) design principles.

MHS5701 RECHERCHE ET MÉTHODOLOGIES DE RECHERCHE (3cr.)
Introduction à la recherche et aux travaux scientifiques afin de mieux comprendre la démarche propre aux travaux de recherche. Planification, conception
et la réalisation d’une étude, l’accent étant mis sur le processus de recherche, examen détaillé des méthodes et techniques de recherche pouvant être utilisées à chaque stade de la recherche tout en liant le choix de ces méthodes et techniques à la nature du problème et aux objectifs de l’étude. Présentation de méthodologies de recherche variées comprenant les paradigmes des sciences sociales pour la modélisation de phénomènes sociaux, les méthodes de recherche qualitatives, les méthodes de modélisation mathématique et la conception d’expériences incluant les principes de conception d’essais contrôlés et randomisés (ECR).

MHS6380 SYSTEMS ANALYSIS, MODELING, AND DECISION SUPPORT IN HEALTH (3cr.)
Review of Checkland’s soft-systems modeling methodology and of other systems approaches. Study of systems analysis in the broader context of modeling complex systems and of techniques for providing decisional support at macro and micro levels, including support of clinical decisions. Oral and written reports required.

MHS6390 RESEARCH TOPICS IN HEALTH SYSTEMS (3cr.)
Seminar course focusing on current research issues and topics in health systems. Topics may change from year to year.

MHS6780 ANALYSE DE SYSTÈMES, MODÉLISATION ET SOUTIEN DÉCISIONNEL EN SANTÉ (3cr.)
Ce cours traite de la méthodologie de modélisation des systèmes souples de Checkland et d’autres approches systémiques. Il portera notamment sur l’analyse des systèmes dans le contexte élargi de la modélisation de systèmes complexes et sur le soutien décisionnel aux niveaux local et global, appliqué notamment aux décisions cliniques. Pour chacun des grands thèmes du cours (approche systémique, systèmes complexes et soutien décisionnel), les étudiants devront mener des recherches, rédiger des rapports et présenter leurs résultats en classe.

MHS6790 SUJETS DE RECHERCHE EN SYSTÈMES DE SANTÉ (3cr.)
Ce cours donné sous forme de séminaire porte sur des questions et des sujets de recherche d’actualité dans le domaine des systèmes de santé. Les sujets traités dans ce cours peuvent changer d’année en année.

MHS6990 SÉMINAires SUR LA RECHERCHE EN SYSTÈMES DE SANTÉ / HEALTH SYSTEMS RESEARCH SEMINARS (1.5cr.)
Cette activité comprend deux types de séminaires de recherche : ceux donnés par des conférenciers invités et ceux animés par des étudiants qui présenteront leurs projets de thèse. Les étudiants doivent assister à au moins six des séminaires donnés par des conférenciers invités pendant toute la durée du programme d’études. Les projets de thèse et résultats préliminaires des recherches des étudiants sont normalement présentés lors de la session d’hiver (session II) ou celle du printemps (session III). Noté S (satisfaisant) ou NS (non satisfaisant). / Research seminar series with some invited speakers and some consisting of student presentations of their thesis proposals. Students are expected to attend at least six of the invited speakers’ seminars over the duration of their program. Students are normally expected to present their proposal and preliminary research results in the winter (session II) or spring (session III). Graded S (Satisfactory) or NS (Not Satisfactory).

MHS6998 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
Études avancées dans un domaine de systèmes de santé sous la direction d’un professeur et aboutissant à un rapport écrit. L’étudiant peut proposer un sujet de recherche. Préalable : approbation du directeur de la programmation sur recommandation du directeur de thèse de l’étudiant. Les étudiants peuvent s’inscrire à un maximum de 6 crédits de cours de lectures dirigées. / Advanced study in an area of health systems under the supervision of a professor and leading to a major written report. Students may propose research topics. Prerequisite: approval by the program director on the recommendation of the student’s thesis supervisor. Students can register to at most 6 credits of directed readings.

MHS6999 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
Études avancées dans un domaine de systèmes de santé sous la direction d’un professeur et aboutissant à un rapport écrit. L’étudiant peut proposer un sujet de recherche. Préalable : approbation du directeur du programme sur recommandation du directeur de thèse de l’étudiant. Les étudiants peuvent s’inscrire à un maximum de 6 crédits de cours de lectures dirigées. / Advanced study in an area of health systems under the supervision of a professor and leading to a major written report. Students may propose research topics. Prerequisite: approval by the program director on the recommendation of the student’s thesis supervisor. Students can register to at most 6 credits of directed readings.

MHS7998 INTERNAT DE RECHERCHE EN SYSTÈMES DE SANTÉ / HEALTH SYSTEMS RESEARCH INTERNSHIP (3cr.)
Internat de recherche en systèmes de santé d’une durée d’une session qui aura lieu à l’un des instituts partenaires de l’Université sous la supervision directe de leur directeur de thèse et d’un mentor membre de l’institut. Pendant son internat, l’étudiant effectuera sa recherche de thèse tout en prenant part à l’un ou plusieurs des projets de recherche d’avant-garde de l’institut. On s’attend à ce qu’il participe, sur la recommandation de son mentor, à des séminaires de recherche offerts par l’institut ainsi qu’au Séminaire sur la recherche en systèmes de santé. À la fin de l’internat, l’étudiant devra présenter à son comité de thèse un rapport sommaire sur ses activités de recherche. Les membres du comité de thèse évalueront l’internat selon les critères suivants : (i) la présentation que l’étudiant aura faite lors du Séminaire sur la recherche en systèmes de santé; (ii) le rapport d’internat écrit que l’étudiant aura présenté à son comité de thèse. L’internat sera noté (S) satisfaisant ou (NS) non satisfaisant. / One-session research internship in one of the collaborating Research Institutes under the direction of their thesis supervisor and of a research mentor in the Institute. The Internship will allow the student to conduct thesis research and at the same time learn about and be involved in one or several of the cutting-edge research projects conducted in the Institute. It is expected that the student will participate in research seminars offered at the Institute as per the advice of the Internship supervisor as well as in the Health Systems Research Seminars. At the end of the session of the internship, the student will be required to present a report to the Thesis Committee summarizing the research activities completed during the internship. The internship will be evaluated by the members of the Thesis Committee based on: (i) the Health Systems Research Seminars presentation and (ii) the written internship report to the Thesis Committee. The internship is graded on a (S) Satisfactory / (NS) Non-Satisfactory basis.

MHS7999 THÈSE DE MAÎTRISE / MSc THESIS (12cr.)
**History (MA)**

The Department of History offers the degrees of Master of arts (with or without thesis) and doctor of philosophy in history. Within the limits imposed by the availability of qualified staff, students may pursue their studies in English or in French.

At the master's level students undertake research in diverse areas corresponding to the expertise and interests of faculty members.

**Admission**

Students must have an honours BA in history (or the equivalent) with a minimum average of 70 per cent (B) before they can be considered for admission. The department may require a written or oral entrance examination.

**Collaborative Program in Women's Studies at the Master's Level**

The Department of History is a participating unit in the collaborative program in women's studies at the master's level. This program has been established for students wishing to enrich their training in history by including an interdisciplinary component in Women's studies. The specific requirements of the collaborative program include two core courses and a thesis or major research paper on a topic related to Women's studies. Only one of the core "FEM" courses will be counted for credit towards the requirements of the master's with thesis option.

Students should normally apply for admission to the Women's studies collaborative program at the same time as they apply for admission to the master's program in history. For further details, please consult the Women's Studies brochure of the Faculty of Graduate and Postdoctoral Studies.

**Co-op Program Option**

To be admissible to the Co-op option, a student must be enrolled full time in the History Department's MA Program, must meet the minimum CGPA requirement for admission to that program (which is 7.0, i.e., 75% or equivalent), must enter the program in the Fall term, and must be a Canadian citizen or permanent resident. Applications for the Co-op option must be received before the end of the first month of the student's enrollment in the MA program. Admission to the Co-op option will be on a competitive basis and will be managed by the Co-op Office.

Co-op students must register (full-time) in each of the two Co-op Work terms (HIS6001, HIS6002). The Co-op work terms are each worth six credits.

Each work term is graded P/F (Pass or Fail), based on the employer's report and on a written report completed by the student. The student's report must be 15-20 pages, including appendices. The History Department's Co-op officer (a Regular Professor who also serves as the Department's representative on the university's Co-op Committee) will evaluate the student reports.

The credits awarded for Co-op terms may not be used to obtain equivalences for other courses. In other words, the Co-op credits are additional to the minimum requirements of the degree.

To remain enrolled in the Co-op program, a student must:

1. maintain full-time status
2. maintain a 7.0 grade point average
3. obtain a passing grade for each Co-op work term

**Program Requirements**

**Master's Degree Requirements**

Students may prepare for a master's degree in one of two ways:

1. The successful completion of 12 credits at the graduate level and the preparation and effective defence of a thesis (HIS 7999) before a board of at least two examiners, members of the Faculty of Graduate and Postdoctoral Studies, and presided over by the Chairperson of the Department or his representative. The master's thesis should be between 125 and 150 pages in length.

2. The successful completion of 18 credits at the graduate level plus a research paper (HIS 6999). The research paper must receive the approval of the supervisor and a passing grade from the reader. The research paper should be about 50 pages in length.
Language

Students in both the master's and doctoral programs must understand, speak and write either English or French fluently. In addition, students in both programs must demonstrate their reading competence in Canada's other official language, French or English, at the earliest opportunity, by passing a language examination administered by the department in the fall or winter session. To this end, registration in HIS 5599 is compulsory.

Students who take a graduate course in history in the other language may be exempted from this examination, given a favourable report from the professor concerned.

Students working in a field of history where a language other than English or French is necessary may also be required to demonstrate their grasp of that language.

Residence

Students admitted on a full-time basis must register full-time for at least three sessions.

Courses

Pour satisfaire aux exigences de la maîtrise, les étudiants peuvent accumuler jusqu'à six crédits parmi les champs de niveau 9000. Le cours HIS 5522 ou HIS 5122 est obligatoire pour les candidats à la maîtrise.

Les personnes inscrites à la maîtrise peuvent, à la discrétion du Comité des études supérieures du Département, suivre un cours de trois crédits choisi entre HIS 7399 Directed Studies in History ou HIS 7799 Études dirigées en histoire.

Les candidats à la maîtrise peuvent, avec la permission du Comité des études supérieures du Département, accumuler trois crédits parmi les séminaires de quatrième année.

Tous les cours de niveau 5000, 6000 et 7000 énumérés ci-après valent trois crédits (à l'exception des cotes HIS 5199, 5599, 6999 et 7999). Ils ne sont pas nécessairement offerts chaque année. Pour savoir quel est le programme en vigueur chaque année, consulter le Département d'histoire ou encore son site Internet.

Up to six credits in 9000-level fields may be counted towards the master's program course requirements. HIS 5122 or HIS 5522 is obligatory.

Students in the master's program may take, at the discretion of the departmental graduate studies committee, one three-credit directed studies course (either HIS 7399 Directed Studies in History or HIS 7799 Études dirigées en histoire).

Master's students may also take, with the approval of the departmental graduate studies committee, three credits from among fourth-year seminars.

All of the 5000-, 6000- and 7000-level courses listed below are for three credits each (except for HIS 5199, 5599, 6999 and 7999). They are not necessarily offered every year.

Students should check with the Department or the departmental Web site for annual course offerings.

HIS7399 DIRECTED STUDIES IN HISTORY (3cr.)
HIS7799 ÉTUDES DIRIGÉES EN HISTOIRE (3cr.)
HIS5103 SEMINAR IN CANADIAN HISTORY (3cr.)
HIS5111 SEMINAR IN NEW FRANCE (3cr.)
HIS5122 RESEARCH SEMINAR (3cr.)
HIS5125 SEMINAR ON HISTORY OF QUEBEC (3cr.)
HIS5129 SEMINAR ON BRITISH NORTH AMERICA (3cr.)
HIS5199 ENGLISH LANGUAGE REQUIREMENT IN HISTORY
HIS5503 SÉMINAIRE EN HISTOIRE CANADA (3cr.)
HIS5511 SÉMINAIRE EN HISTOIRE DE LA NOUVELLE-FRANCE (3cr.)
HIS5522 SEMINAIRE DE RECHERCHTE (3cr.)
HIS5525 SÉMINAIRE EN HISTOIRE DU QUÉBEC (3cr.)
HIS5529 SÉMINAIRE EN HISTOIRE DU CANADA SOUS LE RÉGIME BRITANNIQUE (3cr.)
HIS5599 EXIGENCE DE LANGUE FRANÇAISE EN HISTOIRE

HIS6001 STAGE COOP I / CO-OP WORK TERM I (6cr.)
Experience in milieu de travail. Le stage est évalué P (réussite) / F (échec) par un professeur du programme basé sur l’évaluation fournie par le superviseur du stage et le rapport de stage rédigé par l’étudiant. Préalable :permission du Bureau coop. / Experience in a workplace setting. Graded P (Pass) / F (Fail) by a professor in the program based on the work performance evaluation provided by the workplace supervisor and the student’s work term report. Prerequisite: Permission of the co-op office.

HIS6002 STAGE COOP II / CO-OP WORK TERM II (6cr.)
Experience in milieu de travail. Le stage est évalué P (réussite) / F (échec) par un professeur du programme basé sur l’évaluation fournie par le superviseur du stage et le rapport de stage rédigé par l’étudiant. Préalable :HIS6001. / Experience in a workplace setting. Graded P (Pass) / F (Fail) by a professor in the program based on the work performance evaluation provided by the workplace supervisor and the student’s work term report. Prerequisite: HIS6001.

HIS6103 SEMINAR ON AMERICAN HISTORY (3cr.)
HIS6332 SEMINAR ON THE HISTORY OF TECHNOLOGY (3cr.)
HIS6334 HISTORY OF FRANCOPHONES IN NORTH AMERICA, OUTSIDE OF QUEBEC (3cr.)
HIS6336 SEMINAR ON IMMIGRANTS AND ETHNIC GROUPS IN NORTH AMERICA (3cr.)
HIS6503 SÉMINAIRE EN HISTOIRE AMÉRICaine (3cr.)
HIS6532 SÉMINAIRE EN HISTOIRE DE LA TECHNOLOGIE (3cr.)
HIS6536 SÉMINAIRE EN HISTOIRE DES IMMIGRANTS ET DES COMMUNAUTÉS ETHNO-CULTURELLES EN AMÉRIQUE DU NORD (3cr.)
HIS6734 HISTOIRE DES FRANCOPHONES EN AMÉRIQUE DU NORD, HORS QUÉBEC (3cr.)
HIS6999 MÉMOIRE DI MAÎTRISE / MA RESEARCH PAPER
HIS7103 SEMINAR IN EUROPEAN HISTORY (3cr.)
HIS7304 SEMINAR ON MEDIEVAL HISTORY (3cr.)
HIS7330 SEMINAR ON COMPARATIVE HISTORY (3cr.)
HIS7331 SEMINAR ON THE HISTORY OF WOMEN AND GENDER (3cr.)
HIS7333 SEMINAR ON INTERNATIONAL RELATIONS (3cr.)
HIS7335 SEMINAR ON WAR AND SOCIETY (3cr.)
HIS7336 SLOVAKS IN EUROPE, CANADA AND THE UNITED STATES SINCE 1870 (3cr.)
HIS7337 SEMINAR ON HISTORICAL MEDICINE (3cr.)
HIS7338 SEMINAR ON THE HISTORY OF COLONIALISM AND POSTCOLONIALISM (3cr.)
In-depth examination of issues relating to the history of colonialism and postcolonialism.
HIS7503 SÉMINAIRE EN HISTOIRE EUROPÉENNE (3cr.)
HIS7504 SÉMINAIRE EN HISTOIRE MÉDIÉVALE (3cr.)
HIS7530 SÉMINAIRE EN HISTOIRE COMPARÉE (3cr.)
HIS7535 SÉMINAIRE SUR LA GUERRE ET LA SOCIÉTÉ (3cr.)
HIS7705 MÉTHODES DE RECHERCHE EN HISTOIRE (3cr.)
HIS7731 SÉMINAIRE EN HISTOIRE DES FEMMES ET DU GENRE (3cr.)
HIS7733 SÉMINAIRE EN RELATIONS INTERNATIONALES (3cr.)
HIS7738 SÉMINAIRE EN HISTOIRE DU COLONIALISME ET DU POSTCOLONIALISME (3cr.)

Etudes approfondies sur des questions liées à l'histoire du colonialisme et du postcolonialisme.

HIS7999 THÈSE DE MAÎTRISE / MA THESIS

HIS8900 SÉMINAIRE DE RECHERCHE DOCTORALE / DOCTORAL RESEARCH SEMINAR (3cr.)
Séminaire sur des sujets se rapportant aux débats historiographiques et aux méthodologies de recherche en histoire. / Seminar on topics relating to the historiographical debates and research methodologies in history.

Tous les champs de niveau 9900 ci-après valent trois crédits (à l'exception des cotes HIS 9998 et 9999). Les étudiants doivent choisir leurs champs d'études et leurs directeurs de champs, tout en tenant compte de la disponibilité des professeurs. La langue d'enseignement est décidée sur entente entre l'étudiant et le professeur.

All the 9900-level doctoral fields listed below are for three credits (except HIS 9998 and 9999). Subject to availability of professors, students are responsible for determining their fields and field directors. The language of instruction is decided on mutually between the student and the professor.

HIS9901 LE CANADA FRANÇAIS / FRENCH CANADA (3cr.)
HIS9902 L’AMÉRIQUE COLONIALE / COLONIAL AMERICA (3cr.)
HIS9903 L’AMÉRIQUE BRITANNIQUE DU NORD JUSQU’À 1873 / BRITISH NORTH AMERICA TO 1873 (3cr.)
HIS9904 LE CANADA APRÈS LA CONFÉDÉRATION / POST-CONFEDERATION CANADA (3cr.)
HIS9905 LA NOUVELLE-FRANCE / NEW FRANCE (3cr.)
HIS9910 QUÉBEC / QUEBEC (3cr.)
HIS9920 L’AMÉRIQUE LATINE / LATIN AMERICA (3cr.)
HIS9930 HISTOIRE DE L’ASIE / ASIAN HISTORY (3cr.)
HIS9940 HISTOIRE DU MOYEN-ORIENT ET DE L’AFRIQUE DU NORD / MIDDLE EASTERN AND NORTH AFRICAN HISTORY (3cr.)
HIS9950 HISTOIRE DE L’AFRIQUE / HISTORY OF AFRICA (3cr.)
HIS9954 HISTOIRE DES ÉTATS-UNIS / U.S. HISTORY (3cr.)
HIS9980 HISTOIRE ÉCONOMIQUE / ECONOMIC HISTORY (3cr.)
HIS9981 HISTOIRE SOCIO-CULTURELLE / SOCIO-CULTURAL HISTORY (3cr.)
HIS9982 HISTOIRE INTELLECTUELLE / INTELLECTUAL HISTORY (3cr.)
HIS9983 HISTOIRE POLITIQUE / POLITICAL HISTORY (3cr.)
Human and Molecular Genetics (Collaborative)

This is a collaborative graduate specialization in human and molecular genetics at master's and doctoral level. The primary graduate programs in biochemistry (BCH), cellular and molecular medicine (CMM) and neuroscience (NSC) all collaborate in offering the specialization. The degree awarded specifies the primary program and indicates "specialization in human and molecular genetics".

Students must meet the admission and curriculum requirements of their primary program as well as the specific requirements of the collaborative program.

Members of the program include scientists with interest and expertise in the following areas: developmental genetics, neuromuscular disease, microbial genetics, host resistance, cancer biology, aging, development of novel molecular therapeutics, gene therapy, growth and development, auto-immune diseases, molecular biology of viruses, bacteria and parasites, genetic epidemiology, retinal development and disease, animal models of human disease, molecular aspects of signal transduction.

Admission

Candidates are admitted through the master's or doctoral program either in biochemistry (BCH) or cellular and molecular medicine (CMM) or neuroscience (NSC) and must therefore meet the admission requirements of those programs. Transfer from master's to doctoral level without completing a master's thesis is permitted in the collaborative program under the same conditions as in the primary programs. Proficiency in English is required. Candidates should indicate in their initial application for admission into the primary program that they wish to be accepted into the collaborative program. To be accepted, the thesis director must be a member of the collaborative program. Students will normally be informed about their acceptance into the collaborative program at the same time as being informed about their admission into the primary program.

Additional Information

For detailed information about the primary participating graduate programs, consult the relevant sections of the graduate calendar at the web address: www.grad.uOttawa.ca.

Students are also advised to consult the General Regulations of the Faculty of Graduate and Postdoctoral Studies at the web address: www.grad.uOttawa.ca.
Program Requirements

Master’s Program Requirements

1. Six credits of courses, three credits of which must be from the student’s primary program and three of which must be HMG credits;

2. Enrolment in the seminar course, presentation of one seminar and active participation in the seminar series in the student’s primary program;

3. Presentation and successful defence of a thesis based on original research carried out under the direct supervision of a member of the collaborative program.

Master’s candidates intending to transfer directly to the doctoral program must meet the conditions set by their primary program.

Course selection is subject to the approval of the HMG program director.

Courses

HMG8103 ADVANCED TOPICS IN THE MOLECULAR BIOLOGY OF HUMAN DISEASES I (3cr.)
Topics will be selected and representative of current developments in the field. The course consists of a repeated series of a 3 hour lecture by an expert in the field one week, followed by student presentations, discussions and critique of assigned papers on that topic the following week. Topics on selected diseases will focus on various aspects of cancer, apoptosis, disease gene identification and gene therapy. In the past these topics have included the molecular aspects of various cancers, spinal muscular atrophy, tissue regeneration, the discovery of disease genes, infectious disease (HIV) and gene therapy. Students will write a grant proposal and participate in mock grant review panels. Depending on enrolment, the course may be limited to HMG students only. Prerequisite: Permission of the HMG program director.

HMG8105 / BCH8105 ADVANCED TOPICS IN THE MOLECULAR BIOLOGY OF HUMAN DISEASES II (3cr.)
Topics will be selected and representative of current developments in the field. The course consists of a repeated series of a 3 hour lecture by an expert in the field one week, followed by student presentations, discussions and critique of assigned papers on that topic the following week. Topics on selected diseases will focus on various aspects of cancer, apoptosis, disease gene identification and gene therapy. In the past these topics have included the molecular aspects of various cancers, spinal muscular atrophy, tissue regeneration, the discovery of disease genes, infectious disease (HIV) and gene therapy. Students will write a grant proposal and participate in mock grant review panels. Depending on enrolment, the course may be limited to HMG students only. Prerequisite: Permission of the HMG program director.

HMG8600 SPECIAL TOPICS IN HUMAN AND MOLECULAR GENETICS (3cr.)
Current topics in molecular genetics, developmental genetics, cancer genetics, neurogenetics, population genetics, clinical genetics and other areas depending on available expertise and interest expressed. Offered alternate years subject to sufficient demand. Prerequisite: Permission of the course coordinator.

Human Kinetics (MA /MSc /MHK)
The School of Human Kinetics, Faculty of Health Sciences, offers a Master of Arts degree (MA), a Master of Science degree (MSc), and a Master of Human Kinetics (MHK). The MSc program and the MA program both require a thesis. The Master of Human Kinetics is a course based program, offering two concentrations, one in sport management and the other in intervention and consultation. An integrated approach to the study of sport, physical activity and health allows students and professors to share research interests and professional expertise, and to contribute to the broad field of human kinetics.

The programs are offered on a full-time or on a part-time basis in French and in English. In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The MA and MSc programs pursue three major objectives:

1. to contribute to the accumulation of facts and scientific data related to sport, physical activity and health, as well as to foster the development of critical thinking skills and problem solving abilities;

2. to facilitate the acquisition of quantitative and qualitative knowledge in the field of biophysical sciences of sport, physical activity and health;

3. to prepare human kinetics specialists so that they are better able to play a determinant role in Canadian society.
Theses may pertain to either of two general areas of specialization:

1. MA: the focus is on sociocultural, psychosocial and administrative sciences (e.g., psychology, sociology, administration, intervention) as they relate to sport, physical activity and health.

2. MSc: the focus is on biophysical sciences (e.g., biomechanics, physiology, psychomotor) as they relate to sport, physical activity and health.

The MHK program is an applied studies program that prepares students either in Sport Management or in Intervention and consultation. The program is course-based with an emphasis on a supervised internship that seeks to enhance the personal, academic and career development of students. Academic goals include developing such cognitive skills as problem solving, critical thinking, analysis and synthesis and, most importantly, relating theory to practice.

**Admission**

**Admission Requirements**

Applicants for any of the master's programs must meet the general requirements of the Faculty of Graduate and Postdoctoral Studies (FGPS). They must hold an honours bachelor's degree (or equivalent) in human kinetics or a related field, with a minimum average of 70% (B).

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

**Collaborative Program in Women's Studies at the Master's Level**

The School of Human Kinetics participates in the collaborative program in women's studies at the master's level. This program has been established for MA students wishing to enrich their training in human kinetics by including an interdisciplinary component in women's studies. The specific requirements of the collaborative program include two core "FEM" courses and a thesis on a topic related to women's studies. Students in the collaborative program must complete three credits additional to those required in the regular program. Students should normally apply for acceptance in the women's studies collaborative program at the same time as they apply for admission to the MA program in human kinetics. For further details, please consult the women's studies collaborative program on the website of the FGPS.

**Program Requirements**

**MASTER OF ARTS IN HUMAN KINETICS (MA)**

**Degree Requirements**

The MA program requires 15 credits of courses and a thesis.

**Compulsory courses (15 credits):**

APA6302 QUALITATIVE RESEARCH METHODS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
OR
APA6303 QUANTITATIVE RESEARCH METHODS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)

APA6100 QUALITATIVE DATA ANALYSIS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
OR
APA6101 QUANTITATIVE DATA ANALYSIS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)

APA6904 THÈMES CHOISIS EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ: ÉTUDES SOCIOCULTURELLES / SELECTED TOPICS IN SPORT, PHYSICAL ACTIVITY AND HEALTH: SOCIOCULTURAL STUDIES (3cr.)
OR
APA6905 THÈMES CHOISIS / SELECTED TOPICS (3cr.)

APA6907 EXAMEN DES ÉCRITS PSYCHOSOCIAUX EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ / EXAMINATION OF PSYCHOSOCIAL LITERATURE IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
APA6923 SÉMINAIRE / SEMINAR (1.5cr.)
APA6924 SÉMINAIRE / SEMINAR (1.5cr.)

**Thesis**

APA6999 RECHERCHE ET THÈSE DE MAÎTRISE / MASTER'S RESEARCH AND THESIS

**MASTER OF SCIENCE IN HUMAN KINETICS (MSc)**
The MSc program requires 30 credits, 21 of which are compulsory and 9 of which are optional.

Compulsory courses for concentration in Sport Management (21 credits)
APA5103 LEADERSHIP AND SUPERVISION IN SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5104 SPORT AND PHYSICAL ACTIVITY IN CANADIAN LIFE (3cr.)
APA5105 ORGANIZATIONAL THEORY IN SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5303 MARKETING AND SPONSORSHIP OF SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5308 ORGANIZATIONAL BEHAVIOUR IN SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5316 SEMINAR: CURRENT RESEARCH IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY (1.5cr.)
APA5317 SEMINAR: PROFESSIONAL ENVIRONMENT (1.5cr.)
APA5915 STAGE EN ADMINISTRATION DU SPORT ET DE L’ACTIVITÉ PHYSIQUE / INTERNSHIP IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY
APA5920 RAPPORT DE STAGE EN ADMINISTRATION DU SPORT ET DE L’ACTIVITÉ PHYSIQUE / INTERNSHIP REPORT IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY
APA6902 INTÉGRATION DE LA THÉORIE ET DE LA PRATIQUE / INTEGRATION OF THEORY AND PRACTICE (3cr.)

Compulsory courses for concentration in Intervention and Consultation (21 credits)
APA5106 MENTAL SKILLS TRAINING FOR SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
APA5107 COUNSELLING SKILLS AND APPROACHES IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
APA5306 ETHICS AND VALUES IN SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5309 PERFORMANCE ENHANCEMENT, QUALITY LIVING AND MENTAL TRAINING CONSULTATION (3cr.)
APA5311 ANALYSIS AND ENHANCEMENT OF INTERVENTIONS IN SPORT, PHYSICAL ACTIVITY AND HEALTH SETTINGS (3cr.)
APA6905 THÈMES CHOISIS / SELECTED TOPICS (3cr.)
APA5314 SEMINAR: CONSULTATION AND INTERVENTION I (1.5cr.)
APA5315 SEMINAR: CONSULTATION AND INTERVENTION II (1.5cr.)
APA5925 STAGE EN INTERVENTION ET CONSULTATION / INTERNSHIP IN INTERVENTION AND CONSULTATION
APA5930 RAPPORT DE STAGE EN INTERVENTION ET CONSULTATION / INTERNSHIP REPORT IN INTERVENTION AND CONSULTATION

Optional Courses (9 credits)
The choice of optional courses must be approved by the Director of Graduate Studies. The following is a list of suggested optional courses.
APA5303 MARKETING AND SPONSORSHIP OF SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5304 ECONOMY OF SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5305 POLICY ANALYSIS OF SPORT AND PHYSICAL ACTIVITY IN CANADA (3cr.)
APA5306 ETHICS AND VALUES IN SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5307 SPORT, PHYSICAL ACTIVITY AND THE LAW (3cr.)
APA5308 ORGANIZATIONAL BEHAVIOUR IN SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5318 FINANCIAL MANAGEMENT OF SPORT AND PHYSICAL ACTIVITY (3cr.)
APA5997 ÉTUDES DIRIGÉES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ / DIRECTED STUDIES IN SPORT, PHYSICAL ACTIVITY AND
HEALTH (3cr.)
APA6302 QUALITATIVE RESEARCH METHODS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)

Duration of the programs

The requirements of the MA or MSc program are usually fulfilled within two years of full-time study and within one year and four months for the MHK. The maximum time permitted whether full-time or part-time is four years from the date of initial registration.

Residence

All students admitted full-time must complete a minimum of three sessions of full-time registration, regardless of which program is chosen.

Courses

APA5103 LEADERSHIP AND SUPERVISION IN SPORT AND PHYSICAL ACTIVITY (3cr.)
Critical analysis of leadership theories and related research. Discussion of the nature and scope of supervision of personnel and programs, strategic planning, personal values and development of organizational vision, and staff and program evaluation in sport and physical activity environments.

APA5104 SPORT AND PHYSICAL ACTIVITY IN CANADIAN LIFE (3cr.)
Sociological analysis of sport and physical activity. Socio-historical determinants of sport and physical activity. Emphasis on the organizational structure of sport and physical activity, ideologies, and current practices. Different themes may also be examined: sociology of sport organizations, social movements, and social problems.

APA5105 ORGANIZATIONAL THEORY IN SPORT AND PHYSICAL ACTIVITY (3cr.)
Interpretation of organizational theory in the context of sport and physical activity environments. Focus on the study of Canadian amateur and professional sport organizations as well as other organizations associated to sport and physical activity in the public and private sectors.

APA5106 MENTAL SKILLS TRAINING FOR SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Critical examination of mental skills used to enhance performance in diverse sport, exercise, and health settings. Discussion of various ways to assess mental skills. Experimentation with teaching different mental training techniques and creating effective mental skills training programs. Prerequisite: APA 5309.

APA5107 COUNSELLING SKILLS AND APPROACHES IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Critical examination of counselling approaches and theories. Discussion and application of fundamental counselling skills in the contexts of sport, physical activity, and health.

APA5303 MARKETING AND SPONSORSHIP OF SPORT AND PHYSICAL ACTIVITY (3cr.)
Study of the literature and research pertaining to the marketing and sponsorship of sport and physical activity programs and events. Strategic planning, fundraising, and event management for various types of organizations.

APA5304 ECONOMY OF SPORT AND PHYSICAL ACTIVITY (3cr.)
Principles of economics applied to sport and physical activity: market supply and demand, competition, profit maximisation, and cartels. Study of labour markets: value of the marginal physical product, monopoly, exploitation, and unionization. Public economics of sport and physical activity.

APA5305 POLICY ANALYSIS OF SPORT AND PHYSICAL ACTIVITY IN CANADA (3cr.)
Critical examination of the role of government in policy development. An analysis of sport and physical activity policies as related to amateur and professional sport organizations in Canada as well other organizations involved in sport and physical activity in the public and private sectors.

APA5306 ETHICS AND VALUES IN SPORT AND PHYSICAL ACTIVITY (3cr.)
Critical examination of professionals' and volunteers' decision-making in the context of sport and physical activity. Discussion of concepts and theories to encourage and cultivate critical, reflective, and ethically-based thinking about the cases examined.

APA5307 SPORT, PHYSICAL ACTIVITY AND THE LAW (3cr.)
Study of legal aspects of sport and physical activity including general introduction to law and the Canadian constitution. Legislation related to sports and physical activity programs, criminal liability for violence, civil liability for injuries and the duties of organizers and instructors, civil rights of athletes in selection and disciplinary procedures, human rights issues, and selected issues in professional sport including employment relations.

APA5308 ORGANIZATIONAL BEHAVIOUR IN SPORT AND PHYSICAL ACTIVITY (3cr.)
Study of organizational behavior in sport and physical activity organizations. Discussion of topics such as effective interpersonal communication, goal setting, group dynamics, team building, group renewal processes, gender differences in the workplace, power dynamics, and conflict management.

APA5309 PERFORMANCE ENHANCEMENT, QUALITY LIVING AND MENTAL TRAINING CONSULTATION (3cr.)
Presentation of current material in applied sport psychology, mental training consulting, and performance and life enhancement. Discussion of mental skills used at developmental and high performance levels. Application of mental skills related to personal excellence.

APA5311 ANALYSIS AND ENHANCEMENT OF INTERVENTIONS IN SPORT, PHYSICAL ACTIVITY AND HEALTH SETTINGS (3cr.) Critical behaviour analysis of practitioners and clients in various sport, physical activity, and health contexts. Presentation of plans to enhance learning situations. Discussion of concepts of clinical supervision, self- supervision and peer-supervision. Experimentation with various observational tools. Prerequisite: APA 5107, 5925, 6905.

APA5314 SEMINAR: CONSULTATION AND INTERVENTION I (1.5cr.) Presentation, discussion, and critical analysis of current interventions and related issues in sport, physical activity, and health. Graded on a (S) satisfactory / (NS) not satisfactory basis.

APA5315 SEMINAR: CONSULTATION AND INTERVENTION II (1.5cr.) Critical analysis of current interventions and related issues in sport, physical activity, and health. Discussion of applied consultations. Preparation for the internship. Graded on a (S) satisfactory / (NS) not satisfactory basis.

APA5316 SEMINAR: CURRENT RESEARCH IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY (1.5cr.) Critical analysis of current research in the administration of sport and physical activity. Graded on a (S)satisfactory / (NS) not satisfactory basis.

APA5317 SEMINAR: PROFESSIONAL ENVIRONMENT (1.5cr.) Presentation and discussion of current issues in the administration of sport and physical activity. Oral presentation of selected topics and research papers. Graded on a ($)satisfactory / (NS) not satisfactory basis.

APA5318 FINANCIAL MANAGEMENT OF SPORT AND PHYSICAL ACTIVITY (3cr.) Financial management concepts and tools applied to sport and physical activity programs. Topics include: public and private sector funding, accounting and budgeting, economic impact studies, feasibility studies, resource acquisition strategies, public private partnerships, forms of ownership and event management.

APA5503 LEADERSHIP ET SUPERVISION EN SPORT ET ACTIVITÉ PHYSIQUE (3cr.) Analyse critique des théories et de la recherche en leadership. Discussion de la supervision du personnel et des programmes, de la planification stratégique, des valeurs personnelles et du développement d'une vision organisационnelle, et de l'évaluation du personnel et des programmes dans le contexte du sport et de l'activité physique.


APA5505 PERSPECTIVES ORGANISATIONNELLES DU SPORT ET DE L’ACTIVITÉ PHYSIQUE (3cr.) Interprétation des théories organisationnelles dans le contexte du sport et de l’activité physique. Accent sur les organisations du sport amateur et professionnel au Canada de même que des organisations du secteur public et privé oeuvrant dans le domaine du sport et de l’activité physique.


APA5507 HABILETÉS ET APPROCHES DE COUNSELLING EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.) Analyse critique des approches et théories de counselling. Discussion et application des habiletés de counselling de base dans les contextes du sport, de l’activité physique et de la santé.

APA5703 MARKETING ET COMMANDITE DU SPORT ET DE L’ACTIVITÉ PHYSIQUE (3cr.) Revue de la littérature et de la recherche portant sur le marketing, la commandite des événements et des programmes de sport et activité physique. Planification stratégique, levée de fonds et gestion des événements pour divers types d'organisations.


APA5705 POLITIQUE CANADIENNE EN MATIÈRE DE SPORT ET D'ACTIVITÉ PHYSIQUE (3cr.) Analyse critique du rôle de l'État dans le développement des politiques en matière de sport et d'activité physique. Analyse de ces politiques dans le contexte des différents organismes de sport amateur et professionnel au Canada de même que des autres organismes du secteur public et privé oeuvrant dans le domaine du sport et de l'activité physique.

APA5706 SPORT ET ACTIVITÉ PHYSIQUE: ÉTHIQUE ET VALEURS (3cr.)
Examen critique de la prise de décision des professionnels et des bénévoles dans le domaine du sport et de l’activité physique. Discussion de concepts et de théories visant à encourager la pensée éthique, critique et réflexive des enjeux présentés.

**APA5707 SPORT, ACTIVITÉ PHYSIQUE ET LOI (3cr.)**
Étude des aspects juridiques du sport et de l'activité physique, y compris une introduction générale au droit et à la constitution canadienne. Les thèmes discutés comprennent: la législation relative aux programmes de sport et d'activité physique, la violence dans le sport et le droit pénal, la responsabilité civile pour des accidents sportifs et les devoirs des organisateurs et des entraîneurs, les droits des athlètes en matière de sélection et de procédures disciplinaires, les droits de la personne, et quelques aspects particuliers du sport professionnel y compris les relations de travail.

**APA5708 COMPORTEMENT ORGANISATIONNEL EN SPORT ET ACTIVITÉ PHYSIQUE (3cr.)**
Étude des comportements de groupe au sein des organismes de sport et d'activité physique. Discussion de divers enjeux tels la communication efficace, l'établissement d'objectifs, la dynamique de groupe, le développement de l'esprit d'équipe, le ressourcement collectif, les différences entre les hommes et les femmes en milieu de travail, les relations de pouvoir et la gestion des conflits.

**APA5709 CONSULTATION EN PRÉPARATION MENTALE ET EN AMÉLIORATION DE LA PERFORMANCE ET DE LA QUALITÉ DE VIE (3cr.)**
Présentation des derniers développements dans le domaine de la psychologie du sport et de la consultation dans le domaine de la préparation mentale et de l’amélioration de la performance et de la qualité de vie. Discussion de la préparation mentale des athlètes qui sont à leurs débuts et de ceux qui sont à un niveau plus élevé. Application d'aptitudes mentales reliées à l'excellence personnelle.

**APA5711 ANALYSE ET PERFECTIONNEMENT DE L'INTERVENTION DANS LE DOMAINE DU SPORT, DE L'ACTIVITÉ PHYSIQUE ET DE LA SANTÉ (3cr.)**

**APA5714 SÉMINAIRE: CONSULTATION ET INTERVENTION I (1.5cr.)**
Présentation, discussion et analyse critique d’interventions courantes et questions apparentées dans le domaine du sport, de l’activité physique et de la santé. Noté (S) satisfaisant ou (NS) non satisfaisant.

**APA5715 SÉMINAIRE: CONSULTATION ET INTERVENTION II (1.5cr.)**
Analyse critique d'interventions courantes et questions apparentées dans le domaine du sport, de l'activité physique et de la santé. Discussion de consultations. Préparation pour l'internat. Noté (S) satisfaisant ou (NS) non satisfaisant.

**APA5716 SÉMINAIRE: RECHERCHE EN ADMINISTRATION DU SPORT ET DE L’ACTIVITÉ PHYSIQUE (1.5cr.)**
Analyse critique des recherches récentes en administration du sport et de l’activité physique. Noté (S) satisfaisant ou (NS) non satisfaisant.

**APA5717 SÉMINAIRE: ENVIRONNEMENT PROFESSIONNEL (1.5cr.)**
Présentation et discussion des enjeux actuels en administration du sport et de l’activité physique. Présentations orales d’enjeux choisis et de travaux de recherche. Noté (S) satisfaisant ou (NS) non satisfaisant.

**APA5718 GESTION FINANCIÈRE DU SPORT ET DE L’ACTIVITÉ PHYSIQUE (3cr.)**
Concepts et instruments de gestion financière appliqués aux programmes de sport et d'activité physique. Sujets abordés: financement des secteurs privé et public, comptabilité et budget, études d'impact économique, études de faisabilité, stratégies d'acquisition de ressources, partenariat public privé, formes de propriété et gestion d'événements.

**APA5915 STAGE EN ADMINISTRATION DU SPORT ET DE L’ACTIVITÉ PHYSIQUE / INTERNSHIP IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY**
Entraînement pratique d'une durée de 360 heures sous la direction d'un membre du corps professoral et d'un spécialiste travaillant au sein d'un organisme œuvrant dans le domaine du sport et/ou de l'activité physique. Préalables : APA 5504, APA 5708, APA 5716, APA 5717, APA 5505, APA 6702 ou APA 6703. / A 360-hour practical internship under the supervision of a faculty member and of a specialist in a selected organization in the field of sport and/or physical activity. Prerequisites: APA 5308, APA 5316, APA 5317, APA 5104, APA 5105, APA 6302 or APA 6303.

**APA5920 RAPPORT DE STAGE EN ADMINISTRATION DU SPORT ET DE L’ACTIVITÉ PHYSIQUE / INTERNSHIP REPORT IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY**
Rapport écrit analysant le stage pratique en administration du sport et de l’activité physique à la lumière des connaissances théoriques acquises dans les cours du programme. Préalable: APA 5915. / Major paper analyzing the internship in administration of sport and physical activity in light of the theoretical knowledge gained in program courses. Prerequisite: APA 5915.

**APA5925 STAGE EN INTERVENTION ET CONSULTATION / INTERNSHIP IN INTERVENTION AND CONSULTATION**
Entraînement pratique d'une durée de 400 heures sous la direction d'un membre du corps professoral et d'un spécialiste travaillant au sein d'un organisme dans le domaine du sport, de l'activité physique, et/ou de la santé. Préalables : APA 6905, APA 5106, APA 5507, APA 5709, APA 5706, APA 5714, APA 5715. / A 400-hour practical internship under the supervision of a faculty member and a specialist in a selected organization in the field of sport, physical activity, and/or health. Prerequisites: APA 6905, APA 5106, APA 5107, APA 5309, APA 5306, APA 5314, APA 5315.
APA5930 RAPPORT DE STAGE EN INTERVENTION ET CONSULTATION / INTERNSHIP REPORT IN INTERVENTION AND CONSULTATION

APA5997 ÉTUDES DIRIGÉES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ / DIRECTED STUDIES IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Recherche individuelle sur un problème relié au sport, à l’activité physique et/ou à la santé. Le sujet, sa portée et le plan de travail doivent être approuvés par le directeur adjoint des études supérieures. Un résumé écrit, signé par le professeur(e) est exigé. Individual research investigation of a problem related to sport, physical activity and/or health. The subject and the work plan must be approved by the Assistant Director of Graduate Studies. A written abstract, signed by the Professor is also required.

APA6100 QUALITATIVE DATA ANALYSIS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Study of the major methods (observation, interviews, textual analysis) used to collect qualitative data in sport, physical activity and health. Emphasis on developing the skills needed in the management, analysis and interpretation of qualitative data.

APA6101 QUANTITATIVE DATA ANALYSIS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Advanced statistical analysis and interpretation of data derived from experimental and quasi-experimental research. Application of analysis of variance, MANOVA and techniques of linear regression, multivariate analysis and factor analysis. Prerequisite: undergraduate statistics course is strongly recommended.

APA6302 QUALITATIVE RESEARCH METHODS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Discussion of theoretical foundations of qualitative research methods. Detailed examination of a research proposal. Critical evaluation of methodology and analysis of research related to sport, physical activity and health.

APA6303 QUANTITATIVE RESEARCH METHODS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Discussion of theoretical foundations of quantitative research methods. Detailed examination of a research proposal. Critical evaluation of methodology and analysis of research related to sport, physical activity and health.

APA6500 ANALYSE DE DONNÉES QUALITATIVES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Présentation des principales méthodes (observations, entrevues, textes) utilisées pour la collecte de données dans les recherches qualitatives en sport, activité physique et santé. Accent sur le développement des habiletés nécessaires pour la gestion, l'analyse et l'interprétation de données qualitatives.

APA6501 ANALYSE DE DONNÉES QUANTITATIVES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Analyse statistique avancée et interprétation des données de recherche dans le cadre de plans expérimentaux et quasi-expérimentaux. Application de la procédure d'analyse de la variance, d'analyse de la covariance, d'analyse MANOVA et techniques de régression linéaire, d'analyse multivariée et d'analyse factorielle. Préalable : cours de statistiques au baccalauréat est fortement recommandé.

APA6702 MÉTHODES DE RECHERCHE QUALITATIVE EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Discussion des fondements théoriques des méthodes en recherche qualitative. Examen détaillé d’une proposition de recherche. Évaluation critique de la méthodologie et analyse de la recherche dans le domaine du sport, de l’activité physique et de la santé.

APA6703 MÉTHODES DE RECHERCHE QUANTITATIVE EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Discussion des fondements théoriques des méthodes en recherche quantitative. Examen détaillé d’une proposition de recherche. Évaluation critique de la méthodologie et analyse de la recherche dans le domaine du sport, de l’activité physique et de la santé.

APA6901 THÈMES CHOISIS EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ : ÉTUDES PHYSIOLOGIQUES / SELECTED TOPICS IN SPORT, PHYSICAL ACTIVITY AND HEALTH: PHYSIOLOGICAL STUDIES (3cr.)
Analyse critique et discussion des recherches récentes publiées dans le domaine de la physiologie de l'exercice et de la santé. // Critical analysis and discussion of recent theoretical and empirical papers presented and published in the physiology of exercise and health.

APA6902 INTÉGRATION DE LA THÉORIE ET DE LA PRATIQUE / INTEGRATION OF THEORY AND PRACTICE (3cr.)

APA6903 THÈMES CHOISIS EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ : BIOMÉCANIQUE / SELECTED TOPICS IN SPORT, PHYSICAL ACTIVITY AND HEALTH: BIOMECHANICS (3cr.)
Analyse critique et discussion des recherches récentes publiées dans le domaine de développement de la biomécanique. Critical analysis and discussion of recent theoretical and empirical papers presented and published in biomechanics.

APA6904 THÈMES CHOISIS EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ: ÉTUDES SOCIOCULTURELLES / SELECTED TOPICS IN SPORT, PHYSICAL ACTIVITY AND HEALTH: SOCIOCULTURAL STUDIES (3cr.)
Students will write a grant proposal and participate in mock grant review panels.

Candidates are admitted through the master's or doctoral program either in biochemistry (BCH) or cellular and molecular medicine (CMM) or in Business Law: International Corporate Governance and Social Responsibility.

c) DCL7066 Research paper (50 to 60 pages)

Préalable: 5502)

APA6932 SÉMINAIRE / SEMINAR (1.5cr.)
Discussion et critique des écrits scientifiques récents dans le domaine du sport, de l’activité physique et de la santé. Écriture scientifique et étapes menant au dépôt d’une proposition de thèse. Noté (S) satisfaisant ou (NS) non satisfaisant. / Lectures, discussions and critiques on current research in the field of sport, physical activity and health. Scientific writing and steps toward the submission of a thesis proposal. Graded on a (S) satisfactory / (NS) not satisfactory basis.

APA6924 SÉMINAIRE / SEMINAR (1.5cr.)
Discussion et critique des écrits scientifiques récents dans le domaine du sport, de l’activité physique et de la santé. Écriture scientifique et étapes menant à la publication d’un manuscrit. Noté (S) satisfaisant ou (NS) non satisfaisant. / Lectures, discussions and critiques on current research in the field of sport, physical activity and health. Scientific writing and steps toward the publication of a manuscript. Graded on a (S) satisfactory / (NS) not satisfactory basis.

APA7120 SELECTED TOPICS (3cr.)
Selected aspects of biophysical and/or psychosocial sciences, not covered by other graduate courses. Topics vary from year to year. Students at the Master's level must obtain permission from the Assistant Director of Graduate Studies.

APA7301 CRITICAL SOCIO-CULTURAL PERSPECTIVES ON SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Critical analysis of sport, physical activity and health issues and concepts through contemporary socio-cultural theories. Application of theoretical models most relevant to the students’ areas of research to assist them as they move forward in their doctoral thesis.

APA7302 CONTEMPORARY PSYCHOLOGICAL THEORIES IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Application of the most recent theories in psychology to issues in sport, physical activity and health. Seminar course to encourage active dialogue around the application of theory to contemporary issues in the field.

APA7304 ADVANCED EXERCISE METABOLISM AND PHYSIOLOGY (3cr.)
Principles of exercise metabolism and physiology. Topics include: regulation of energy and substrate metabolism, neuroendocrine systems, adipose tissue, environmental influences, nutrition, weight control, and the impact of exercise on health and disease.

APA7305 ADVANCED TOPICS IN BIOMECHANICS AND MOTOR/CONTROL LEARNING (3cr.)
Examination of current topics in biomechanics and motor/control research, including advanced motion analysis, biomedical imaging techniques, muscle mechanics, musculoskeletal injury mechanisms, musculoskeletal modeling, neuromuscular control of movement, and/or clinical biomechanics.

APA7520 THÈMES CHOISIS (3cr.)
Aspects choisis des sciences biophysique et/ou psychosocial non traités dans d’autres cours des cycles supérieurs. Les thèmes varient d’une année à l’autre. Les étudiants à la maîtrise doivent obtenir la permission du Directeur adjoint des études supérieures.

APA7701 PERSPECTIVES CRITIQUES SOCIOCULTURELLES SUR LE SPORT, L’ACTIVITÉ PHYSIQUE ET LA SANTÉ (3cr.)
L’analyse critique d’enjeux et de concepts liés au sport, à l’activité physique et à la santé à la lumière de théories socioculturelles contemporaines. L’application
des modèles théoriques les plus pertinents aux domaines de recherche des étudiants afin d’appuyer leur travail de thèse.

**APA7702 THÉORIES PSYCHOLOGIQUES CONTEMPORAINES DU SPORT, DE L’ACTIVITÉ PHYSIQUE ET DE LA SANTÉ** (3cr.)
L’application des théories psychologiques les plus récentes au sport, à l’activité physique et à la santé. Ce cours, donné sous forme de séminaire, a pour but d’encourager le dialogue autour de l’application des théories aux enjeux contemporains propres à ce domaine.

**APA7704 PRINCIPES AVANCÉS DE LA PHYSIOLOGIE ET DU MÉTABOLISME DE L’EXERCICE** (3cr.)

**APA7705 PRINCIPES AVANCÉS DE LA BIOMÉCANIQUE ET DE L’APPRENTISSAGE DU CONTRÔLE MOTEUR** (3cr.)
Examen des thèmes actuels de la recherche sur la biomécanique et le contrôle moteur, y compris l’analyse avancée du mouvement, les techniques d’imagerie biomédicale, la mécanique des muscles, les mécanismes des traumatisms musculo-squelettiques, les modèles musculo-squelettiques, le contrôle neuromusculaire du mouvement et/ou la biomécanique clinique.

**APA6999 RECHERCHE ET THÈSE DE MAÎTRISE / MASTER’S RESEARCH AND THESIS**

**APA9997 PROJET DE THÈSE / THESIS PROPOSAL**
Les étudiants, encadrés par leur directeur de thèse, rédigent leur projet de thèse. Ils le présentent et le défendent oralement devant le CCT. Il est possible d’obtenir des renseignements supplémentaires dans le guide des études supérieures pour étudiants et superviseurs, publié sur le site Web de notre programme. Après avoir réussi la soutenance orale du projet de thèse, l’étudiant doit ensuite obtenir l’approbation du comité d’éthique (si nécessaire) avant d’entamer la collecte de données. Règle générale, le projet de thèse est défendu vers le milieu de la deuxième année, au plus tard à la fin de cette année. Un étudiant qui échoue à la première tentative peut se voir accorder la permission de la répéter une seule fois. L’échéance de la deuxième tentative mène à une note NS (non satisfaisant) et au retrait de l’étudiant du programme. Préalable : APA 9998. / Students write their thesis proposal under the guidance of their thesis supervisor and present and defend it orally before the TAC. Details are available in the Graduate Handbook for Students and Supervisors posted on our program website. After successfully defending the oral thesis proposal, the student must obtain ethics approval (if required) before proceeding to data collection. The proposal will normally have been defended towards the middle of the second year and, at the latest, by the end of that year. A student who is unsuccessful on the first attempt may be allowed to repeat it once. Failure on the second attempt leads to a grade of NS and withdrawal from the program. Prerequisite: APA 9998.

**APA9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION**
L’examen de synthèse a lieu une fois tous les cours réussis (habituellement à la fin de la première année pour les étudiants admis après l’obtention de la maîtrise). Il doit être terminé, au plus tard, avant la fin de la sixième session suivant l’inscription initiale. L’examen comporte une partie écrite et une partie orale. Le CCT en assure l’évaluation. Il est possible d’obtenir sur le site Web du programme plus de renseignements sur l’examen. La réussite de l’examen de synthèse sert de condition préalable à la présentation et à la soutenance du projet de thèse. Un étudiant qui échoue à la première tentative à l’examen peut se voir accorder la permission de le répéter une seule fois. L’échéance de la deuxième tentative mène à une note NS (non satisfaisant) et au retrait de l’étudiant du programme. / The comprehensive examination takes place after successful completion of coursework (typically by the end of the first year for students admitted with a completed master’s degree). It must be completed at the latest within two years of initial registration. It is a two-part examination (written and oral) that is overseen by the TAC. Details on the examination are available on the program website. Successful completion of the comprehensive examination is a prerequisite for the presentation and defence of the PhD thesis proposal. A student who is unsuccessful on the first attempt at the comprehensive exam may be allowed to repeat it once. Failure on the second attempt leads to a grade of NS and withdrawal from the program.

**APA9999 THÈSE DE DOCTORAT / PhD THESIS**
La thèse sera fondée sur de la recherche originale effectuée dans le cadre du programme, de même que sur l’expertise et les intérêts majeurs de l’étudiant. La thèse mènera à la création de nouvelles connaissances dans les domaines psychosocial ou biophysique des sciences de l’activité physique. La qualité de la thèse doit être telle qu’elle mérite d’être publiée. Elle devra aussi démontrer la parfaite connaissance du champ par l’étudiant ainsi que sa capacité à appliquer cette connaissance de façon autonome, à un problème précis. / The thesis will be based on original research carried out while in the program and will build on the expertise and substantive interests of the student. The thesis will involve the generation of new knowledge within the psychosocial or biophysical disciplinary areas of human kinetics and is expected to be of publishable quality. The thesis must demonstrate a detailed understanding and knowledge of the field and the ability to apply that knowledge independently to a specific problem.

### Information Studies (MIS)

The School of Information Studies, located in the Faculty of Arts, offers a graduate program leading to the degree of Master of Information Studies (MIS). Students in this program choose one of two specializations: information policy or management of information services. The program provides two options: a course-based option and a coursework plus thesis option. In addition, there is a co-operative (CO-OP) program available to students in the coursework option. The School also offers a graduate certificate in Information Studies.

The objective of the programs is to educate bilingual professionals to assume leadership responsibilities in the management of information services and / or the development of information policy, with a focus on new and emerging technologies. Career opportunities include employment in libraries, archives and information centres.

Programs will be offered partly in English, partly in French. Approximately two thirds of the courses will be taught in English and one third in French. To complete the master’s degree requirements, students must pass at least four courses (12 credits) in their second language. In
accordance with University of Ottawa policy, students have a right to produce their written work and to answer examination questions in French or in English.

The programs, offered on a full-time and part-time basis, operate within the framework of the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate programs in Information Studies is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS). Applicants must have a four year bachelor's degree with a minimum cumulative average of 70% (B) calculated in accordance with FGPS guidelines.

All applicants must be able to understand, speak and write proficiently in either English or French and have a passive knowledge (ability to understand the spoken and written word) of the other language. Proof of knowledge of the second language is required. Applicants whose first language is neither English nor French must provide proof of their abilities in both languages. The list of acceptable proofs is indicated in the "Admission" section of the General Regulations of the FGPS.

On the recommendation of the Admissions Committee, applicants who have successfully completed information studies credits or electives at the master’s level prior to admission may receive equivalencies or exemptions for courses in the Information Studies master’s program. To be eligible, the courses must have been completed with a minimum grade of 70 per cent (B), no more than five years prior to admission, and they must not have counted towards a previous degree. A maximum of 12 credits in equivalencies or exemptions can be granted in the master’s program.

Applications are evaluated based on the following criteria:

1. academic performance in previous studies as shown by official transcripts from each post-secondary institution attended;
2. an example of a written text demonstrating writing ability (at least 800 to 1000 words) in English or French;
3. proof of second language abilities in either English or French;
4. an up-to-date curriculum vitae providing evidence of relevant employment experience, leadership potential, and computer literacy.
5. the names and contact information for two people prepared to provide recommendations. One of the referees must be capable of evaluating the writing sample; the other should confirm employment experience.

Co-op work terms

Admission to the co-operative program and assignment of placements is the responsibility of the coop office.

Admission is on a competitive basis. The conditions to be met are as follows:

1. be registered full-time students in the course-based option
2. have maintained a B average in their master’s courses;
3. have completed the first session of the master’s program
4. be a Canadian citizen or permanent resident.

Program Requirements

Master's Degree Requirements

The Master of Information Studies requires 48 credits, consisting of 9 credits of compulsory core courses, 12 compulsory credits in one of the two specializations (either in Information Policy or Management of Information Services), and 27 credits of electives. In both the thesis option and the co-op program, the number of elective credits is reduced to 15. At least 12 credits must be completed in the second language.

1. Compulsory Core Courses (9 credits)

   ISIS103 MANAGEMENT FOUNDATIONS FOR THE INFORMATION PROFESSIONAL (3cr.)
   ISIS105 SOCIAL CONTEXT OF INFORMATION (3cr.)
   ISIS106 PHILOSOPHY AND PRACTICE IN THE INFORMATION PROFESSIONS (3cr.)

2. Four compulsory specialization courses (12 credits)
   
   Either four courses in the Management of Information Services specialization:
   ISIS102 ORGANIZATION OF INFORMATION (3cr.)
   ISIS104 HUMAN ASPECTS OF INFORMATION SYSTEMS (3cr.)
   ISIS120 CATALOGUES, CATALOGUING AND CLASSIFICATION (3cr.)
   ISIS121 SUBJECT ANALYSIS OF INFORMATION (3cr.)
3. Elective Courses

Electives are chosen in consultation with the student’s program advisor. Students in the master’s program may complete a maximum of 6 credits of directed readings or special topics courses to fulfill the electives requirement. In addition, relevant courses from other graduate programs at the University of Ottawa, or at another university, may be taken with the approval of the School of Information Studies Programs Committee and of the unit responsible for the course or courses in question. Students must make sure to have completed any prerequisites for the selected courses.

- Course-based Option (27 credits)
  Students in the coursework option must complete 9 three credit electives courses, in areas related to their chosen specialization.

- Thesis Option (15 credits)
  Students in the thesis option must complete 5 three credit electives courses, in areas related to their chosen specialization.

- Co-operative Program (15 credits)
  Students in the co-op program complete 5 three credit elective courses, in areas related to their chosen specialization.

4. Thesis Option (12 credits)

Students in the thesis option receive 12 credits for their thesis proposal and thesis.

ISI6998 PROPOSITION DE THÈSE DE MAÎTRISE / MASTER’S THESIS PROPOSAL
ISI6999 THÈSE DE MAÎTRISE / MASTER’S THESIS (12cr.)

Students must submit to their thesis committee, prior to completing their second session of registration in the program, a clearly defined research proposal that has been approved by their thesis supervisor. The proposal must be defended in the context of ISI 6998. Students unsuccessful on the first attempt are allowed a second attempt. A second unsuccessful attempt leads to withdrawal from the program.

The master's thesis should reveal that the candidate is able to work independently in a scholarly manner and is acquainted with the principal works published on the subject of the thesis. Insofar as possible, the thesis should be an original contribution.

Upon submission, the completed thesis is examined by a committee comprised of the thesis supervisor and at least two other professors who are members of the FGPS. For information regarding the thesis, consult section G of the "General Regulations of the FGPS” and the guide "Preparing a thesis or a Research Paper”, which are both accessible through the FGPS website at www.grad.uottawa.ca

5. Co-op work terms (12 credits)

The co-op program has the same requirements as the course-based option, except that 12 credits of electives are replaced by the co-op work terms.

ISI6001 STAGE COOP / CO-OP WORK TERM (6cr.)
ISI6002 STAGE COOP / CO-OP WORK TERM (6cr.)

Students accepted into the eight month co-op program complete two full-time paid placements in public, non-profit or private sector organizations operating in the information field. They complete a project in librarianship, information management or archival practice, which allows them to acquire experience in the practical application of research. The placements are completed in session three (spring/summer) session of the first year and session four (fall) of the second year in the program.

Student performance is assessed on a Pass/Fail (P/F) basis by a professor from the School of Information Studies based on the work performance evaluation provided by the work supervisor, and the report written by the student.

Minimum Standards

The minimum passing grade in all courses taken as part of the Information Studies programs is C+. Students who incur failures in two courses (equivalent to six credits) must withdraw from the program.

Students who fail a co-op placement are withdrawn from the co-op program and returned to the course-based option.

Duration of Program

Students admitted on a full-time basis are expected to complete all the requirements of the master’s program within two years. Students in the thesis option may require more time.

The maximum time permitted to complete the master’s program, whether full- or part-time, is four years from the date of initial registration in the program.

Courses
Tous les cours ne sont pas nécessairement offerts chaque année. Not all of the listed courses are given each year.

Les cours sont offerts dans la langue dans laquelle ils sont décrits. The course description appears in the language of instruction.

**ISI5101 RESEARCH APPLICATIONS IN INFORMATION STUDIES (3cr.)**
Quantitative and qualitative research and descriptive and inferential statistics for the investigation of both practical and theoretical problems in the information professions. Critical assessment of published research, including its data gathering and data analysis procedures.

**ISI5102 ORGANIZATION OF INFORMATION (3cr.)**
Principles and techniques for the organization and representation of information in multiple formats and across varied organizational environments are illustrated through the study of classification and indexing structures, subject representation with controlled vocabularies, bibliographic description, metadata, and taxonomies.

**ISI5103 MANAGEMENT FOUNDATIONS FOR THE INFORMATION PROFESSIONAL (3cr.)**
This survey of the role of effective administration in the provision of information services provides an introduction to selected theories, principles, administrative techniques, and issues in the management of information organizations including archives, libraries and information centres.

**ISI5104 HUMAN ASPECTS OF INFORMATION SYSTEMS (3cr.)**
The human aspects of systems and technology in contexts such as education, health, business and everyday life are introduced from the perspectives of the social, organizational, cognitive, behavioural and contextual aspects of information, the critical analysis of experimental and interview methodologies, concepts, models and frameworks relevant to studying human-information interaction, and the evaluation and design of information systems.

**ISI5105 SOCIAL CONTEXT OF INFORMATION (3cr.)**
Sociological, political and economic dimensions of an information-oriented society. Historical development of information studies, knowledge production and distribution, issues of information control (freedom of information, intellectual property and intellectual freedom) and the ethical and legal aspects of information services.

**ISI5106 PHILOSOPHY AND PRACTICE IN THE INFORMATION PROFESSIONS (3cr.)**
Overview of the library, information and archival professions and their associated intellectual, socio-political and economic challenges. Instructional project modules direct students toward their intended participation in the CO-OP program, thesis or course-based information studies specializations.

**ISI5110 HISTORY OF INFORMATION (3cr.)**
History and continuing evolution of published and unpublished information are explored in personal and public communication and government and corporate operations.

**ISI5111 PRESERVATION AND CONSERVATION OF MATERIALS (3cr.)**
Principles, methods and ethics of restoration; archival and rare book conservation practices; preservation microfilming and digitization; organization and administration of national and international efforts; emergency and disaster planning covering both restoration of the artefact and preservation of content.  
Prerequisite: ISI5102

**ISI5112 ARCHIVES AND RECORDS APPRAISAL (3cr.)**
Concrete examples of document appraisal strategy and methodology in Canada and internationally, considering personal and private as well as government, institutional and electronic records. Theoretical foundations of appraisal and the controversial responsibility of assigning cultural value to some documentary artefacts and not others within the broader contexts of history and the utility of such efforts.  
Prerequisite: ISI5102

**ISI5113 ARCHIVES: ACCESS, ADVOCACY AND OUTREACH (3cr.)**
Examination of the information requirements and behaviours of major user groups such as historians, genealogists, administrators, media specialists and students in an archival context. Principles, design, and implementation of archival access and outreach services, including remote and on-site access services that meet the needs of various groups through user education, public programming, advocacy and outreach are addressed.  
Prerequisite: ISI5104

**ISI5120 CATALOGUES, CATALOGUING AND CLASSIFICATION (3cr.)**
Presentation of library catalogues as information retrieval systems. Introduction of the principles and standards employed in the creation of catalogues and cataloguing records emphasizing a user perspective. Practice in descriptive and subject cataloguing and classification.  
Prerequisite: ISI5102

**ISI5121 SUBJECT ANALYSIS OF INFORMATION (3cr.)**
From the perspective of subject analysis and retrieval, knowledge organization using controlled vocabularies and natural language (thesauri, hypertext, expert systems) and with an emphasis on automated systems including the internet. Theories and principles, design, application and evaluation of various methods for accessing documents and information.  
Prerequisite: ISI5102
ISI5123 INFORMATION SYSTEMS PROCUREMENT (3cr.)
Study of the design, selection, negotiated acquisition, implementation and operation of automated integrated systems for information organizations. Project planning principles and documentation. Focus on present and future applications of technology, service and administrative implications. (Prerequisites: ISI5103 and ISI5104)

ISI5141 INFORMATION BEHAVIOURS AND RETRIEVAL (3cr.)
The relationships between search tools and information retrieval strategies and human behaviour. Analysis of documents and the process of leading users with specific information objectives to satisfy their particular requirements. (Prerequisite: ISI5102)

ISI5160 ETHICS, VALUES AND INFORMATION DILEMMAS (3cr.)
Major ethical concerns currently confronting our information society. Application of moral and ethical values involved in information and technology-related incidents faced by today’s information professionals and agencies.

ISI5161 INFORMATION AND THE LAW (3cr.)
Information policy issues within a Canadian legal framework relevant to library, archives and information professionals: including the regulation, ownership and access of information, information collection and utilization practices that affect the privacy of individuals (surveillance, biometric identification, data mining, unauthorized entry and use of computer systems), negligence, malpractice and human rights. (Prerequisite: ISI5105)

ISI5162 GLOBAL INFORMATION AND COMMUNICATIONS POLICY (3cr.)
Examination of the trends, issues and policies affecting the development of information agencies in such dimensions as access to information and trans-border data flow, to understand the choices and values embedded in the design and use of information, its technologies, and its communication in various cultural contexts. Implications for policy networks, professional associations, international organizations and multinational enterprises. (Prerequisite: ISI5105)

ISI5163 POLITICAL ECONOMY OF INFORMATION (3cr.)
Political interests and financial issues related to determining priorities, allocating scarce resources and monitoring expenditures in the context of budgetary practices. Consideration of concepts such as human capital, investment, entrepreneurship, efficiency, profit and equity, and the economic value of information. (Prerequisites: ISI5103 and ISI5105).

ISI5164 INFORMATION POLICY AND GOVERNMENT PUBLICATIONS (3cr.)
Bibliographic control and the use of government publications and their organization, with an emphasis on on-line government information, are examined in the context of publishing and distribution policies and practices at the federal, provincial and municipal levels in Canada and the United States. Comparisons with foreign and intergovernmental sources of information. (Prerequisite: ISI5105)

ISI5501 APPLICATIONS DE RECHERCHE EN SCIENCES DE L’INFORMATION (3cr.)

ISI5502 ORGANISATION DE L’INFORMATION (3cr.)
Les principes et techniques d’organisation et de representation de l’information, sous diverses formes et dans divers environnements de travail, sont illustres par l’étude des structures d’indexation et de classification, de la representation des sujets et matieres a l’aide de vocabulaires controlees, de la description bibliographique, des metadonnees et des taxonomies.

ISI5503 INTRODUCTION À LA GESTION POUR LES SPÉCIALISTES DE L’INFORMATION (3cr.)
L’étude du rôle d’une gestion efficace des services d’information sert d’introduction aux thèmes, principes, techniques administratifs et défis touchant la gestion des organismes d’information, y compris les archives, bibliothèques et centres d’information.

ISI5504 DIMENSIONS HUMAINES DES SYSTÈMES D’INFORMATION (3cr.)

ISI5505 CONTEXTE SOCIAL DE L’INFORMATION (3cr.)
Dimensions sociologique, politique et économique d’une société axée sur l’information. Évolution historique des sciences de l’information, production et diffusion du savoir, questions afférentes au contrôle de l’information (l’accès à l’information, la propriété intellectuelle et la liberté de pensée), et aspects éthiques et juridiques de la prestation de services d’information.

ISI5506 PHILOSOPHIE ET PRATIQUE DANS LES PROFESSIONS DE L’INFORMATION (3cr.)
Survolt des diverses professions offertes en bibliothéconomie, en archivistique et en sciences de l’information, ainsi que des défis intellectuels, sociopolitiques et économiques qui y sont associés. Des modules de projet de formation orientent les étudiants vers le programme coopératif ou vers la spécialisation en sciences de l’information, avec ou sans thèse, au choix.

ISI5510 HISTOIRE DE L’INFORMATION (3cr.)
L’histoire et l’évolution de l’information, sous forme publiée ou autre, sont examinées dans les communications personnelles et publiques, ainsi que dans les
Activités des gouvernements et des entreprises.

**ISI5511 PRÉSERVATION ET CONSERVATION DES DOCUMENTS** (3cr.)
Principes, méthodes et éthique de la restauration; pratiques de conservation des livres rares et des archives; préservation des microfilms et des documents numérisés; organisation et gestion d’initiatives nationales et internationales; dispositions relatives à la préservation et à la restauration des documents et des objets d’archives qui doivent faire partie d’une planification de mesures d’urgence. (Préalable : ISI5502)

**ISI5512 ÉVALUATION DES ARCHIVES ET DES DOCUMENTS** (3cr.)
Exemples concrets de stratégies et de méthodologies utilisées au Canada et à l’étranger pour évaluer des documents, qu’ils soient personnels et privés, ou électroniques, gouvernementaux ou institutionnels. Fondements théoriques de l’évaluation et de la tâche controversée qui consiste à attribuer une valeur culturelle à certains objets documentaires et non à d’autres dans le contexte plus large de l’histoire, et de l’utilité de ce genre de démarche. (Préalable : ISI5502)

**ISI5513 ACCÈS AUX ARCHIVES ET PROMOTION ET EXTENSION DES SERVICES** (3cr.)
Études des besoins et des comportements des principaux groupes qui utilisent les documents d’archives comme les historiens, les généalogistes, les médialogues et les étudiants. Principes, conception et mise en œuvre de l’accès aux documents d’archives, y compris les services offerts sur place et à distance pour répondre aux besoins des différents groupes par le biais de l’éducation des usagers, de programmes d’activités publiques, de campagnes de promotion et de services d’extension. (Préalable : ISI5504)

**ISI5520 CATALOGUE, CATALOGUE ET CLASSIFICATION** (3cr.)

**ISI5521 ANALYSE DOCUMENTAIRE DE L’INFORMATION** (3cr.)
En tenant compte de la perspective de l’analyse et de la récupération documentaire, organisation du suivi à l’aide de vocabulaires contrôlés et d’outils de langage naturel (thesaurus, hypertexte, systèmes experts), et en mettant l’accent sur les systèmes automatisés, dont Internet. Théories et principes qui sous-tendent diverses méthodes d’accès aux documents et à l’information. Conception, application et évaluation de ces méthodes. (Préalable : ISI5502)

**ISI5523 ACQUISITION DE SYSTÈMES D’INFORMATION** (3cr.)

**ISI5541 COMPORTEMENT HUMAIN ET STRATÉGIES D’UTILISATION ET DE RÉCUPÉRATION DE L’INFORMATION** (3cr.)
Relations entre les outils de recherche, les stratégies de récupération de l’information et le comportement humain. Analyse documentaire qui permet l’orientation des usagers vers l’information désirée. (Préalable : ISI5502)

**ISI5560 ÉTHIQUE, PRINCIPES ET DILEMMES EN MATIÈRE D’INFORMATION** (3cr.)
Principales questions éthiques qui préoccupent notre société du savoir. Principes moraux et éthiques qui s’appliquent aux problèmes liés à l’information et à la technologie, que doivent résonder les organismes et les spécialistes de l’information de demain.

**ISI5561 L’INFORMATION ET LA LOI** (3cr.)
Politique d’information au sein du cadre juridique canadien traitant de sujets d’intérêts pour les bibliothécaires, les archivistes et les spécialistes de l’information : la réglementation et la propriété de l’information et l’accès à celle-ci, la collecte de renseignements et les pratiques d’utilisation qui touchent la vie privée des usagers (caméras de surveillance, identification biométrique, exploration de données, utilisation et accès non autorisés des systèmes informatiques), la négligence, la faute professionnelle et les droits de la personne. (Préalable : ISI5505)

**ISI5562 POLITIQUE MONDIALE D’INFORMATION ET DE COMMUNICATION** (3cr.)
Examen des tendances, des questions et des politiques qui affectent le fonctionnement des organismes d’information dans des domaines tels que l’accès à l’information et le mouvement transfrontalier des données afin de comprendre les valeurs et les choix qui sous-tendent l’élaboration et l’utilisation de l’information, ses technologies et sa diffusion dans divers contextes culturels. Les implications de ces tendances sur les réseaux d’action publique, les associations professionnelles et les entreprises multinationales. (Préalable : ISI5505)

**ISI5563 ÉCONOMIE POLITIQUE DE L’INFORMATION** (3cr.)
Les intérêts politiques et les conséquences financières qui influent sur l’établissement des priorités, l’allocation de ressources limitées et le contrôle des dépenses dans le contexte des pratiques budgétaires. L’étude de divers concepts tels que le capital humain, l’investissement, l’entrepreneuriat, l’efficience, les bénéfices et l’équité, ainsi que la valeur économique de l’information. (Préalables : ISI5503 et ISI5505)

**ISI5564 POLITIQUE D’INFORMATION ET PUBLICATIONS GOUVERNEMENTALES** (3cr.)

**ISI5906 PHILOSOPHIE ET PRATIQUE DANS LES PROFESSIONS DE L’INFORMATION / PHILOSOPHY AND PROFESSIONAL
PRACTICE IN THE INFORMATION PROFESSIONS (3cr.)
Surviv des diverses professions offertes en bibliothéconomie, en archivistique et en sciences de l’information, ainsi que des défis intellectuels, sociopolitiques et économiques qui y sont associés. Des modules de projet de formation orientent les étudiants et les étudiantes vers le programme de stage coopératif ou vers la spécialisation en sciences de l’information, avec ou sans thèse, au choix. / An overview of the library, information and archival professions and their associated intellectual, socio-political and economic challenges. Instructional project modules direct students toward their intended participation in the cooperative education program, thesis or course-based study streams of the various specialized information disciplines.

ISI6001 STAGE COOP / CO-OP WORK TERM (6cr.)
Expérience en milieu de travail comprenant une application pratique de recherche. Le stage est évalué Réussite / Echec (P/F) par un professeur de l’Ecole des sciences de l’information basé sur l’évaluation fournie par le superviseur de la partie pratique du stage et sur le rapport de stage rédigé par l’étudiant. (Préalable : 5506 et permission de l’École des sciences de l’information et du bureau du programme coop.) / Experience in a workplace setting including practical application of research. Graded P (pass)/F (fail) by a professor from the School of Information Studies based on the work performance evaluation provided by the workplace supervisor and the student’s work term written report. (Prerequisite: 5106 and permission of the School of Information Studies and the CO-OP office.)

ISI6002 STAGE COOP / CO-OP WORK TERM (6cr.)
Expérience en milieu de travail comprenant une application pratique de recherche. Le stage est évalué Réussite / Echec (P/F) par un professeur de l’Ecole des sciences de l’information basé sur l’évaluation fournie par le superviseur de la partie pratique du stage et sur le rapport de stage rédigé par l’étudiant. (Préalable : 6001 et permission de l’École des sciences de l’information et du bureau du programme coop.) / Experience in a workplace setting including practical application of research. Graded P (pass)/F (fail) by a professor from the School of Information Studies based on the work performance evaluation provided by the workplace supervisor and the student’s work term written report. (Prerequisite: 6001 and permission of the School of Information Studies and the CO-OP office.)

ISI6100 SPECIAL TOPICS IN ARCHIVES, LIBRARY OR INFORMATION STUDIES (3cr.)
Particular subjects in library, archives or information studies not included or covered to the same extent in other Information Studies courses. May be repeated with distinct topics.

ISI6120 DESCRIPTIVE BIBLIOGRAPHY (3cr.)
Considering the evolution of papermaking, printing and binding prior to the twentieth century, this course covers the principles and practices associated with detailed bibliographic description. (Prerequisite: ISI5102)

ISI6121 RECORDS MANAGEMENT (3cr.)
Providing a comprehensive appreciation for the complex responsibilities associated with managing information resources in organizations, establishing information inventories, evaluating information policies, analyzing information flow and determining information life-cycles are considered in the context of a multiplicity of media formats and a variety of available records storage, retrieval and management technologies. (Prerequisite: ISI5102)

ISI6122 ELECTRONIC RECORDS MANAGEMENT (3cr.)
Examining how new information technologies challenge established definitions, identification, control, management and preservation of electronic records, this survey of the concepts, practices and tools employed in organizing electronic records also considers the various organizational, technological, regulatory and cultural factors that influence long-term preservation strategies and continuing access to electronic records. (Prerequisites: ISI5104 and ISI6121)

ISI6123 METADATA AND TAXONOMIES (3cr.)
An analysis of semantic and syntactic frameworks from administrative, structural, descriptive and information preservation perspectives, exploring the various types of metadata applications in such diverse areas as government and legal information, medicine, and socio-cultural institutions. The evolution of international metadata standards and the application of metadata systems to the development of taxonomies and content management. (Prerequisite: ISI5102)

ISI6124 ADVANCED CATALOGUING AND CLASSIFICATION (3cr.)
Analysis of cataloguing theory focusing on catalogue code design, issues associated with the use of AACR2 standards, catalogue structure and on-line bibliographic control, and the utility and limitations of bibliographic databases and network sources. Provides advanced cataloguing knowledge and skills through extensive practise in the preparation of complex bibliographic records for print, non-print and electronic media. (Prerequisites: ISI5102 and ISI5120)

ISI6125 MANAGING INFORMATION NETWORKS (3cr.)
Analyzing current and emerging telecommunication capabilities and their relationship to information transfer in the context of evolving societal expectations and continuing technological developments, this presentation of the principles and techniques applicable to the management of operations as diverse as local intranet and international internet systems also includes a comprehensive assessment of the technical, regulatory and organizational issues associated with managing voice, data and media telecommunications. (Prerequisite: ISI5104)

ISI6126 INFORMATION RETRIEVAL SYSTEMS AND ARCHITECTURE (3cr.)
Examining the nature of information systems in their organizational contexts, this course includes an assessment of evolving systems technology, systems specifications, the interaction between system components and managerial issues, systems development, modelling, systems analysis and evaluation of performance. (Prerequisites: ISI5102, ISI6123 and ISI5124)

ISI6127 ADVANCED WEB MANAGEMENT AND DESIGN (3cr.)
Considering planning, technical, production and management issues involved in the operations of major World Wide Web sites, this course provides an
ISI6128 DATABASE MANAGEMENT AND DESIGN (3cr.)
Focusing on the theoretical and practical aspects of relational database design, this course covers development from conception to implementation with an emphasis on the representation of content and issues of standardization and security, and considering data modelling, including the entity-relationship data model, data normalization and structured query language. (Prerequisites: ISI5102 and ISI5104)

ISI6129 SOCIAL MEDIA AND GAMES IN AN INFORMATION CONTEXT (3cr.)
The popularity of computer games, virtual worlds and social networking is changing the way we learn, communicate and produce information. Students will explore these emerging technologies, analyzing implications and creating applications for innovative information services and programs. (Prerequisites: ISI5104 and ISI5105)

ISI6130 THE PUBLISHING BUSINESS: PAST, PRESENT AND FUTURE (3cr.)
Examining the historical and evolving nature of the book trade and publishing business, the industry is considered from the perspectives of its cultural contribution and profit generation. Subjects covered include the evolution of privately owned enterprises into publicly-traded and multinational corporations, the impact of new technologies, the growth of global markets, and the corporate health of Canadian publishing and its international relationships.

ISI6131 MANAGING DIGITAL COLLECTIONS (3cr.)
Covering all features of digital collection management and development, including definitions, digital object formats and standards, metadata, trends, evaluation of material, intellectual property issues, search and retrieval systems, content management systems and functional compatibility, the course also considers digitization/conversion project management, including proposal development, planning and evaluation. (Prerequisite: ISI5102)

ISI6132 EVALUATION OF INFORMATION PROGRAMS AND SERVICES (3cr.)
Employing a managerial framework, this course introduces the concepts, procedures and standards of professional practice involved in program evaluation. It critiques selected evaluation strategies and their applicability to operations in information organizations, using models from management and information science theory.

ISI6133 CRITICAL APPROACHES TO INFORMATION SOURCES (3cr.)
Analyzing the information mediation process, which involves determining information needs, searching for, and evaluating and presenting selected results, this course assesses the modalities of service delivery, examining associated concepts, processes, and information retrieval skills, as well as the creation, production, distribution, selection, and collection of information, and the provision of services to facilitate information access. (Prerequisite: ISI5102)

ISI6140 ORGANIZATIONAL ECOLOGY OF INFORMATION AGENCIES (3cr.)
The principles and practice of leadership, governance and change as applied to information agencies are introduced. Organizational structures, planning processes, decision-making models, and cultural characteristics of effective organizations are also covered. (Prerequisites: ISI5103 and ISI5105)

ISI6141 ENTREPRENEURIAL ASPECTS OF INFORMATION MANAGEMENT (3cr.)
Preparing for the challenges involved in starting a business or consulting in the information industry, development of a business plan that could direct a new commercial enterprise or service and encourage investors to provide the required venture capital. (Prerequisite: ISI5103)

ISI6142 MARKETING AND ADVOCACY FOR INFORMATION ORGANIZATIONS (3cr.)
Exploring market research, user studies, costing, development, pricing, promotion, and delivery in the profit and non-profit sectors, this course on marketing information products and services, and on their providers, focuses on the role of the information professional in meeting client expectations. (Prerequisites: ISI5103, ISI5105 and ISI163)

ISI6143 BUDGETING AND FINANCIAL MANAGEMENT (3cr.)
Considering the principles and practice of advanced financial management in information organizations, this course includes budget forecasting, cost-benefit analysis, fiscal control of operating and capital budgets, investment and endowment planning, and strategies for managing cut-backs and expansion. (Prerequisite: ISI5103)

ISI6144 HUMAN RESOURCE MANAGEMENT (3cr.)
Examining human relations in the employment of personnel in information organizations, this course addresses recruitment, position description, evaluation and classification, performance assessment, salaries and benefits, motivation, collective bargaining, supervision, professional development, team building, discipline, termination, leadership and organizational change. (Prerequisite: ISI5104)

ISI6145 LEARNING AND KNOWLEDGE TRANSFER (3cr.)
Employing a variety of learning theory perspectives, models and promotional strategies for information literacy and bibliographic instruction programs are critiqued. (Prerequisites: ISI5103 and ISI5105)

ISI6146 FACILITY MANAGEMENT (3cr.)
The management of the physical infrastructure and allied resources supporting information organizations is analyzed from the perspectives of building development and renovation project planning, form vs. function considerations, on-going and deferred maintenance, capital improvement expenditures, health
and safety issues, access for the physically challenged, public consultation requirements, and the employment of architectural, engineering and consultant expertise. ( Préalable : ISI5103)

ISI6147 INFORMATION PARTNERSHIPS AND CONSORTIA (3cr.)
The development of partnerships, cooperative efforts and consortia in public, private and joint venture initiatives to expand access to information content, new technologies and specialized services are presented from a management perspective highlighting goals, governance, deliverables, financial advantages and operational considerations. ( Préalable : ISI5103)

ISI6148 COLLECTION MANAGEMENT (3cr.)
Considering traditional and emerging electronic formats, this survey of collection development theories and methodologies presents issues associated with evaluation, acquisition policies, budget allocation, and vendor, donor and user relations. ( Préalable : ISI5102)

ISI6500 THÉMES CHOISIS EN ARCHIVISTIQUE, EN BIBLIOTHÉCOCRÉÉV ÉO OU EN SCIENCES DE L’INFORMATION (3cr.)
Ce cours porte sur des sujets particuliers en bibliothéconomie, en archivistique ou en sciences de l’information n’ayant pas été traités, ou l’ayant été de façon sommaire, dans les autres cours du programme. Peut être répété si les sujets diffèrent.

ISI6520 BIBLIOGRAPHIE ANALYTIQUE (3cr.)
En faisant un survol de l’évolution de la fabrication du papier, de l’impression et de la reliure au cours des siècles passés, ce cours traite des pratiques et des principes associés à une description bibliographique détaillée. ( Préalable : ISI5502)

ISI6521 GESTION DES DOCUMENTS (3cr.)
Ce cours vise à fournir un aperçu global des responsabilités complexes associées à la gestion des ressources documentaires d’information dans les organismes, à examiner l’élaboration des inventaires d’information et l’évaluation des politiques d’information, et à analyser le mouvement de l’information et l’établissement de ses cycles de vie dans un contexte où on retrouve une multiplicité de formes médiatiques et de technologies de gestion, de récupération et de stockage des données. ( Préalable : ISI5502)

ISI6522 GESTION DES DOCUMENTS ÉLECTRONIQUES (3cr.)
Regard sur la façon dont les nouvelles technologies de l’information bousculent les définitions, l’identification, le contrôle, la gestion et la préservation des données informatiques. Ce survol des concepts, des pratiques et des outils utilisés pour l’organisation des documents électroniques s’attarde également à l’étude des facteurs organisationnels, technologiques, réglementaires et culturels qui affectent les stratégies de conservation à long terme et l’accès sur une base continue. ( Préalables : ISI5504 et ISI6521)

ISI6523 MÉTADONNÉES ET TAXONOMIES (3cr.)
Analyse des cadres sémantiques et syntaxiques à partir des perspectives de l’administration, de la structure, de la description et de la préservation de l’information. Explorations diverses applications des métadonnées et leur utilisation dans des domaines aussi variés que l’information gouvernementale et juridique, la médecine et les établissements socioculturels. Étude des normes internationales sur les métadonnées et utilisation de systèmes de métadonnées pour élaborer des taxonomies et gérer des contenus. ( Préalable: ISI5502)

ISI6524 CATALOGAGE AVANCÉ ET CLASSIFICATION (3cr.)
Analyse des théories du catalogage mettant l’accent sur la conception de règles catalographiques, sur les questions associées à l’utilisation des normes AACR2, sur la structure de classification, sur le contrôle bibliographique en ligne et sur l’utilité et les limites des bases de données bibliographiques et des ressources électroniques. Acquisition de connaissances et compétences approfondies en catalogage par des exercices répétés d’élaboration de documents bibliographiques complexes pour divers médias (imprimés, électroniques et autres), ( Préalables : ISI5502 et ISI5520)

ISI6525 GESTION DES RÉSEAUX D’INFORMATION (3cr.)
Analyse des capacités actuelles et emergentes en télécommunication et de leur lien avec le transfert de l’information, et ce, dans le contexte d’attentes sociétales en évolution et de progrès technologiques continus. Survol des principes et des techniques applicables à la gestion d’activités aussi variées que les intranets et les systèmes Internet internationaux. Évaluation globale des questions organisationnelles, réglementaires et techniques associées à la gestion de télécommunications vocales, de contenus médiatiques et de données. ( Préalable : ISI5504)

ISI6526 SYSTÈMES ET STRUCTURE DE RÉCUPÉRATION DE L’INFORMATION (3cr.)
Tout en examinant la nature des systèmes d’information dans leur contexte organisationnel, ce cours évalue l’évolution technologique des systèmes, de leurs spécifications, de l’interaction entre leurs composantes et les impératifs de gestion, du développement et de l’analyse des systèmes, de la modélisation et de l’évaluation de la performance. ( Préalables : ISI5502, ISI6523 et ISI6524)

ISI6527 CONCEPTION ET GESTION AVANCÉES DE SITES WEB (3cr.)
Tout en explorant les questions de planification, de technologie, de production et de gestion qui sont associées au fonctionnement d’importants sites Web, ce cours offre une approche axée sur la structuration de l’information dans la gestion du développement de sites Web complexes. Il examine d’une façon plus particulière l’organisation et la conception de l’information, les innovations en matière d’équipement, les logiciels de pointe, l’utilisation des sites Web comme sources d’information, et le rôle que jouent les auteurs de sites Web en tant que gestionnaires de ressources documentaires. ( Préalables : ISI5502 et ISI5504)

ISI6528 CONCEPTION ET GESTION DE BASE DE DONNÉES (3cr.)
En mettant l’accent sur les aspects théoriques et pratiques de la conception de bases de données relationnelles, ce cours examine le développement des bases de données, de la création jusqu’à la mise en œuvre. Il traite aussi de la représentation des contenus et des questions de normalisation et de sécurité, des
modèles de données, y compris les modèles entité-association, de la normalisation des données et du langage relationnel SQL. (Préalables : ISI5502 et ISI5504)

**ISI6529 MÉDIA SOCIAL ET JEUX DANS LE CONTEXTE DE L’INFORMATION** (3cr.)
La popularité du jeu électronique, du monde virtuel et des réseaux sociaux sur internet change notre manière d’apprendre, de communiquer et de produire l’information. Explorer ces technologies émergentes, les étudiants en analyseront les implications et produiront des programmes et des services innovateurs d’application d’information. (Préalables : ISI5504 et ISI5505)

**ISI6530 L’INDUSTRIE DE L’ÉDITION : HIER, AUJOURD’HI ET DEMAIN** (3cr.)
À travers l’histoire et l’évolution de l’édition et du commerce du livre, ce cours examine l’industrie du point de vue de son apport culturel et de sa rentabilité. Les sujets traités comprennent le passage des maisons d’édition privées en multinationales dont les actions sont cotées en bourse, l’impact des nouvelles technologies, la croissance des marchés mondiaux et la vitalité de l’industrie canadienne et ses relations internationales.

**ISI6531 GESTION DES COLLECTIONS NUMÉRIQUES** (3cr.)
Étude de tous les aspects de l’établissement et de la gestion de collections numériques, y compris les définitions et les formes d’objets numériques, les normes qui régissent leur élaboration, les métadonnées, les tendances, l’évaluation de documents, les questions de propriété intellectuelle, les systèmes de recherche et de récupération de l’information, et les systèmes de gestion de contenus et leur compatibilité fonctionnelle. Analyse des diverses étapes de la gestion des projets de conversion et de numérisation, y compris leur élaboration, leur planification et leur évaluation. (Préalable : ISI5502)

**ISI6532 ÉVALUATION DES PROGRAMMES ET DES SERVICES D’INFORMATION** (3cr.)
Par le biais d’un cadre administratif, ce cours initie aux concepts, processus et normes de pratique professionnelle associés à l’évaluation des programmes. Analyse critique des stratégies d’évaluation choisies et de leur faisabilité aux activités des organismes d’information à l’aide de modèles s’appuyant sur des théories de gestion et de sciences de l’information.

**ISI6533 DÉMARCHES CRITIQUES EN MATIÈRE DE SOURCES D’INFORMATION** (3cr.)
Par le biais de l’analyse du processus de médiation de l’information qui comprend la détermination des besoins, ainsi que la recherche, l’évaluation et la présentation de résultats choisis, ce cours décrit les modalités de la prestation des services ainsi que les capacités de récupération, les concepts et les processus qui y sont associés. Il examine en outre les mécanismes de la création, de la production, de la diffusion, de la sélection et de la collecte de l’information, de même que la prestation de services d’accès à l’information. (Préalable : ISI5502)

**ISI6540 ÉCOLOGIE ET STRUCTURE DES ORGANISMES D’INFORMATION** (3cr.)
Ce cours offre une initiation aux principes et à la pratique du leadership, de la gouvernance et du changement dans les organismes d’information. Il traite également des structures organisationnelles, des processus de planification, des modèles de prise de décisions et des caractéristiques culturelles des organismes efficaces. (Préalables : ISI5503 et ISI5505)

**ISI6541 DIMENSION ENTREPREUNIALE DE LA GESTION DE L’INFORMATION** (3cr.)
Afin de surmonter les défis liés au démarrage d’une entreprise ou d’un cabinet-conseil dans l’industrie de l’information, élaboration d’un plan d’affaires susceptible d’encourager les investisseurs à prêter le capital de risque nécessaire pour créer une nouvelle société commerciale. (Préalable : ISI5503)

**ISI6542 COMMERCIALISATION ET PROMOTION DES SERVICES D’UN ORGANISME D’INFORMATION** (3cr.)
Dans le cadre d’un examen des études de marché et de la clientèle, de l’établissement des coûts, de l’élaboration, de la promotion et de la prestation de services dans les secteurs commercial et sans but lucratif, ce cours portant sur la commercialisation des produits et services d’information, et sur leurs fournisseurs, mettra l’accent sur le rôle que le spécialiste de l’information doit jouer pour répondre aux attentes des clients. (Préalables : ISI5503, ISI5505 et ISI5563)

**ISI6543 BUDGÉTISATION ET GESTION FINANCIÈRE** (3cr.)
Tout en décrivant les principes et la pratique d’une gestion financière de pointe au sein d’un organisme d’information, ce cours examine les prévisions budgétaires, l’analyse coûts-avantages, la vérification des budgets de fonctionnement et d’immobilisation, la planification des investissements et des fonds de dotation, et les stratégies de gestion en période de compression ou de croissance. (Préalable : ISI5503)

**ISI6544 GESTION DES RESSOURCES HUMAINES** (3cr.)
Dans le cadre d’un survol des relations humaines au sein des organismes d’information, ce cours aborde diverses questions de nature administrative comme le recrutement, la description des tâches, l’appréciation et la classification, l’évaluation du rendement, les salaires et avantages sociaux, la motivation, les négociations collectives, la supervision du travail, le perfectionnement professionnel, la promotion du travail d’équipe, la discipline, la cessation d’emploi, le leadership et le changement organisationnel. (Préalable : ISI5504)

**ISI6545 TRANSFERT DU SAVOIR ET DES APPRENTISSAGES** (3cr.)
En se servant de diverses théories sur l’apprentissage, analyse critique des modèles et des stratégies promotionnelles applicables aux programmes de culture informationnelle et de formation à l’utilisation des services bibliographiques. (Préalable : ISI5503 et ISI5505)

**ISI6546 GESTION DES INSTALLATIONS** (3cr.)
Ce cours porte sur la gestion des infrastructures physiques et des ressources auxiliaires nécessaires au fonctionnement des organismes d’information. Divers aspects sont traités : la planification des projets de construction et de rénovation de bâtiments, l’étude de la forme par rapport à la fonction des installations, l’entretien continu et différé, les dépenses au chapitre de l’apport d’améliorations aux immobilisations, les questions de santé et de sécurité, l’accès pour les
personnel, les exigences en matière de consultation publique et l’embauche d’architectes, d’ingénieurs et de consultants. (Préalable : ISI5503)

ISI6547 PARTENARIATS ET CONSORTIUMS D’INFORMATION (3cr.)
Ce cours traite du développement de partenariats, de consortiums et d’initiatives de collaboration visant à permettre la réalisation de projets publics, privés et conjoints qui élargissent l’accès à l’information. Il examine également les nouvelles technologies et les services spécialisés selon le point de vue de la gestion, mettant l’accent sur les objectifs, la gouvernance, les produits livrables, les avantages financiers et les questions d’ordre opérationnel. (Préalable : ISI5503)

ISI6548 GESTION DES COLLECTIONS (3cr.)
Dans le contexte des supports traditionnels et des supports électroniques émergents, ce cours fait le survol des théories et méthodologies associées à l’élaboration de collections et exploite diverses questions liées à l’évaluation, aux politiques d’acquisitions, à l’allocation budgétaire, et aux rapports avec les vendeurs, les donateurs et les usagers. (Préalable : 5502)

ISI6997 LECTURES DIRIGÉES EN SCIENCES DE L’INFORMATION / DIRECTED READINGS IN INFORMATION STUDIES (3cr.)
Études personnelles supervisées sur des sujets qui n’ont pas été traités, ou l’ont été de façon sommaire, dans les autres cours du programme. Peut être répété si les sujets diffèrent. (Préalable : Permission de l’École des sciences de l’information.) Supervised specialized study of subjects not included or covered to the same extent in available Information Studies courses. May be repeated with distinct subjects. (Prerequisite: Permission of the School of Information Studies)

ISI6998 PROPOSITION DE THÈSE DE MAÎTRISE / MASTER’S THESIS PROPOSAL

ISI6999 THÈSE DE MAÎTRISE / MASTER’S THESIS (12cr.)
La thèse de maîtrise doit révéler que le candidat possède une méthode de travail scientifique et est au courant des principaux ouvrages sur le sujet de sa thèse. Autant que possible, la thèse doit être une contribution originale. Pour de plus amples renseignements, veuillez consulter la Section G des Règlements Généraux de la FESP et le guide « Préparer sa thèse ou son mémoire », qui se trouvent sur le site internet de la FESP (www.etudesup.uottawa.ca). Évaluer S/NS./ The master’s thesis should reveal that the candidate is able to work in a scholarly manner and is acquainted with the principal works published on the subject of the thesis. Insofar as it is possible, the thesis should be an original contribution. For additional information, please consult section G of the General Regulations of the FGPS and the guide “Preparing a Thesis or a Research Paper”, which can be found in the website of the FGPS (www.grad.uottawa.ca). Evaluated S/NS.

Law (LLM)

Reflecting Canada’s bilingual and trijuridical legal system, as well as its location in Canada’s Capital, the University of Ottawa’s graduate studies in law is a joint endeavour of the Common Law andCivil Law Sections. We welcome law graduates from both legal systems and from countries around the world. Courses are offered in English or in French, and occasionally in both languages. Students may readily complete their graduate studies while learning something of Canada’s other legal and linguistic traditions.

For the Master of Laws degree (LL.M.), we offer both a thesis option and a research paper option. While students can pursue these options in any subject, we particularly emphasize the following two fields as well as the fields associated with our six concentrations described below:

- International law; and
- Human rights law.

In the context of the master’s with research paper, there are six specialized concentration programs:

- International Humanitarian and Security Law;
- Global Sustainability and Environmental Law;
- Law and Social Justice;
- Law and Technology;
- Droit notarial; and
- International trade and foreign investment law.

In addition, the Faculty of Law offers a combined program:

- LL.M. avec concentration en droit notarial / MBA;

We also participate in the collaborative Master’s program in Women’s Studies:

- LL.M. with Specialization in Women’s Studies.

Please see our website for further information.

Admission

Master’s Program
The Master's program consists of a master's with research paper or with thesis.

Admission

In order to be considered for admission to the master of laws program, applicants should have an undergraduate law degree from a Canadian university with an average of at least 70 per cent (B), calculated in accordance with the Faculty of Graduate and Postdoctoral Studies (FGPS) guidelines, or an equivalent foreign law degree with comparable results. Particular attention is paid to relevant legal experience, prior research and letters of reference.

Please review our website for further details and deadlines.

Language of Instruction

Courses are offered in English or in French, and occasionally in both languages.

Financial Support

Internal Scholarships

The Faculty of Graduate and Postdoctoral Studies in conjunction with the Faculty of Law provides a number of scholarships per year to LLM or PhD students and a further scholarship in conjunction with the Human Rights Research and Education Centre. Please note that students do not need to apply for these scholarships. Recommendations are made to the Faculty of Graduate and Postdoctoral Studies by the admissions committee in law.

Several other named special scholarships have been provided by generous donors to LLM and PhD students with the Faculty. Further details are available through our website.

External Scholarships

For a comprehensive list of scholarships and awards offered by outside agencies, and details regarding application, please visit the following website: www. grad.ottawa.ca or contact:

Awards Office
Faculty of Graduate and Postdoctoral Studies
University of Ottawa
115 Séraphin Marion
Ottawa ON K1N 6N5

Applicants are encouraged to seek scholarships and financial assistance from other sources in Canada and, abroad if applicable.

Program Requirements

Master's with Thesis

Title of degree: Masters of Laws

Degree Requirements

a) Three compulsory courses:
   DCL 5501 or DCL 5301 Legal Research Methodology;
   One legal theory course;
   DCL 7033 Directed Research (40 pages).

b) DCL 7999 Thesis (100 to 130 pages)
   The master's thesis should show that the candidate is able to work in a scholarly manner and is acquainted with the principal works published on the subject of the thesis. It must be of publishable quality and make a significant and original contribution to legal scholarship. The thesis has to satisfy a jury of at least two members proposed by the Co-Director and approved by the Faculty of Graduate and Postdoctoral Studies.

Residence

The residence requirement for students admitted to the master's program is three sessions.

Time limit

Full-time: 5 sessions

Status

Full-time only

Master's with Research Paper
**A. Master of Laws without Concentration**

Title of degree: Master of Laws

**Degree Requirements**

a) Two compulsory courses:
   - DCL 5501 or DCL 5301 Legal Research Methodology;
   - One legal theory course (chosen from a selection of courses varying from year to year);

b) Three elective courses.

c) Research paper - DCL 7066 (50 to 60 pages)

**Residence**

The residence requirement for students admitted full-time to the master’s program is three sessions.

**Time limit**

Full-time: 4 sessions
Part-time: 8 sessions

**Status**

Full-time or part-time

**B. Master of Laws with Concentration**

Six concentrations are offered within the master of laws with research paper, which have specific requirements and which lead to a specific reference to the concentration on the transcript and degree.

1. **Master of Laws with Concentration in International Humanitarian and Security Law**

Title of degree: Master of Laws with Concentration in International Humanitarian and Security Law

**Degree Requirements**

a) Three compulsory courses (3 credits each):
   - DCL 5301 LEGAL RESEARCH METHODOLOGY (3cr.)
   - DCL 6126 INTERNATIONAL HUMANITARIAN LAW: CONTEMPORARY CHALLENGES (3cr.)
   - DCL 6130 NATIONAL SECURITY LAW (3cr.)

b) Two optional courses of three credits each from the following list:
   - DCL 5120 ADVANCED HUMAN RIGHTS (3cr.)
   - DCL 5121 STUDIES IN HUMAN RIGHTS I (3cr.)
   - DCL 5122 STUDIES IN HUMAN RIGHTS II (3cr.)
   - DCL 5123 STUDIES IN HUMAN RIGHTS III (3cr.)
   - DCL 6121 STUDIES IN INTERNATIONAL LAW I (3cr.)
   - DCL 6122 STUDIES IN INTERNATIONAL LAW II (3cr.)
   - DCL 6123 INTERNATIONAL HUMAN RIGHTS (3cr.)
   - DCL 6127 LAW AND DEVELOPING COUNTRIES (3cr.)
   - DCL 6128 LAW, POLITICS AND ECONOMICS IN INTERNATIONAL AFFAIRS (3cr.)
   - DCL 6150 INTERNATIONAL HUMANITARIAN AND SECURITY LAW INTERNSHIP (3cr.)

c) DCL 7066 Research paper

**Residence**

The residence requirement for students admitted full-time to the master's program is three sessions.

**Time limit**

Full-time: 4 sessions
Part-time: 8 sessions

**Status**

Full-time or part-time

2. **Master of Laws with Concentration in Global Sustainability and Environmental Law**

Title of degree: Masters of Laws with Concentration in Global Sustainability and Environmental Law

**Degree Requirements**

a) Two compulsory courses (3 credits each):
   - DCL 5301 LEGAL RESEARCH METHODOLOGY (3cr.)
   - DCL 5340 SUSTAINABILITY AND LAW (3cr.)
b) Three optional courses of three credits each from the following list:
DCL5341 COMPARATIVE ENVIRONMENTAL LAW (3cr.)
DCL5342 GLOBAL ENVIRONMENTAL GOVERNANCE (3cr.)
DCL5343 ENVIRONMENTAL LAW INTERNSHIP (3cr.)
DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)

c) DCL 7066 Research Paper

Residence
The residence requirement for students admitted full-time to the master's program is three sessions.

Time limit
Full-time: 4 sessions
Part-time: 8 sessions

Status
Full-time or part-time

3. Master of Laws with Concentration in Law and Social Justice

Title of degree: Master of Laws with Concentration in Law and Social Justice

Degree Requirements
a) Two compulsory courses (3 credits each):
- DCL 5301 Legal Research Methodology or DCL 5338 Action Research Methodology in Law;
- DCL 5337 Critical Legal Theories;

b) Three elective courses of three credits each from the Law following list:
DCL5120 ADVANCED HUMAN RIGHTS (3cr.)
DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)
DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)
DCL5123 STUDIES IN HUMAN RIGHTS III (3cr.)
DCL5125 ISSUES IN ABORIGINAL LAW (3cr.)
DCL5303 STUDIES IN LEGAL THEORY I (3cr.)
DCL5304 STUDIES IN LEGAL THEORY II (3cr.)
DCL5305 FEMINIST ANALYSIS OF LAW (3cr.)
DCL5309 LEGAL THEORY SEMINAR (3cr.)
DCL6120 ADVANCED INTERNATIONAL LAW (3cr.)
DCL6121 STUDIES IN INTERNATIONAL LAW I (3cr.)
DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)
DCL6123 INTERNATIONAL HUMAN RIGHTS (3cr.)

c) DCL 7066 Research paper

Residence
The residence requirement for students admitted full-time to the master's program is three sessions.

Time limit
Full-time: 4 sessions
Part-time: 8 sessions

Status
Full-time or part-time

4. Master of Laws with Concentration in Law and Technology

Title of degree: Master of Laws with Concentration in Law and Technology

Degree Requirements
a) Two compulsory courses (3 credits each):
DCL7300 TECHNOPRUDENCE : LEGAL THEORY IN THE INFORMATION AGE (3cr.)
DCL7310 TECHNOPOLICY : INTERPLAY BETWEEN TECHNOLOGIES AND EXISTING LEGAL RULES (3cr.)

b) Two elective, three credit courses from the list of Law and Technology courses.
Students may seek authorization to take an additional or alternative elective. They may also elect to supplement their legal research skills by enrolling in Legal Research Methodology / Méthodologie de la recherche juridique (DCL 5301/DCL 5501). DCL 5301/5501 does not count towards the fulfilment of the requirement to complete two elective courses.

c) DCL 7304 Technology Law Internship
d) i) DCL 7066 Research paper
or
ii) DCL 7366 Technology Law Project

Residence
The residence requirement for students admitted full-time to the master's program is three sessions.

Time limit
Full-time: 4 sessions
Part-time: 8 sessions

Status
Full-time or part-time

5. Maîtrise en droit avec concentration en droit notarial

Titre du grade: Maîtrise en droit avec concentration en droit notarial

Exigences du grade

Session Été
DCL5521 INITIATION À LA RÉDACTION D'ACTES ET À LA PROFESSION NOTARIALE (3cr.)
DCL5522 STAGE DE DROIT NOTARIAL (3cr.)
DCL5524 RELATIONS FAMILIALES (3cr.)
DCL5523 PUBLICITÉ DES DROITS ET PROPRIÉTÉ (3cr.)

Session Automne
DCL5526 ENGAGEMENTS FINANCIERS (3cr.)
DCL5527 DÉCÈS ET TRANSMISSION DES BIENS (3cr.)
DCL5525 NÉGOCIATION ET TRANSFERTS DE PROPRIÉTÉ (3cr.)
DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)

Session Hiver
DCL5528 EXAMEN DES TITRES IMMOBILIERS (3cr.)
DCL5529 DROIT DES SOCIÉTÉS (3cr.)
Deux cours optionnels (3 crédits chaque) ou mémoire (6 crédits)

Résidence
L'exigence de résidence à la maîtrise pour les étudiants admis à temps plein est de trois sessions

Limite de temps
Temps plein : 4 sessions

Statut
Temps plein seulement

6. LLM with concentration in international trade and foreign investment law

Title of degree: LLM with concentration in international trade and foreign investment law

Degree Requirements

a) Four (4) compulsory courses of 3 credits each:
DCL5301 LEGAL RESEARCH METHODOLOGY (3cr.)
DCL6125 INTERNATIONAL TRADE REGULATION (3cr.)
DCL6300 INTERNATIONAL INVESTMENT LAW (3cr.)
DCL6319 ADVANCED INTERNATIONAL ECONOMIC LAW (3cr.)

b) One (1) optional course from the following list of courses (not all courses will be offered in every year). DCL 6350 – International Economic Law Case Studies is highly recommended.

Optional courses
DCL5120 ADVANCED HUMAN RIGHTS (3cr.)
DCL5735 PROBLÈMES CHOISIS DE DROITS DE LA PERSONNE IV (3cr.)
DCL6121 STUDIES IN INTERNATIONAL LAW I (3cr.)
DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)
DCL6123 INTERNATIONAL HUMAN RIGHTS (3cr.)
DCL6127 LAW AND DEVELOPING COUNTRIES (3cr.)
DCL6128 LAW, POLITICS AND ECONOMICS IN INTERNATIONAL AFFAIRS (3cr.)
DCL6350 INTERNATIONAL ECONOMIC LAW CASE STUDIES (3cr.)
DCL6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)
DCL6732 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL II (3cr.)
DCL6733 DROIT COMMERCIAL INTERNATIONAL (3cr.)
DCL6735 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL III (3cr.)
DCL7511 ÉTUDES EN PROPRIÉTÉ INTELLECTUELLE ET INDUSTRIELLE (3cr.)
CML4107 Studies in Business Law: International Corporate Governance and Social Responsibility

c) DCL7066 Research paper (50 to 60 pages)

Residence
The residence requirement for students admitted full-time to the master's program is three sessions.

Time limit
Full-time: 4 sessions
Part-time: 8 sessions

Status
Full-time or part-time

Programme combiné Maîtrise en droit avec concentration en droit notarial / MBA

Le programme combiné de Maîtrise en droit avec concentration en droit notarial et MBA est un programme unique qui permettrait aux étudiant(e)s d’ajouter, à leur formation notariale classique, un approfondissement dans des matières de pointe comme la fiscalité, la planification financière et la gestion.

Le programme combiné est construit sur une base de deux maîtrises distinctes : la maîtrise en droit (concentration en droit notarial) et le programme français de MBA.

Exigences du programme (75 crédits)

Session Printemps 1 (12 crédits)
DCL5521 INITIATION À LA RÉDACTION D’ACTES ET À LA PROFESSION NOTARIALE (3cr.)
DCL5522 STAGE DE DROIT NOTARIAL (3cr.)
DCL5524 RELATIONS FAMILIALES (3cr.)
DCL5523 PUBLICITÉ DES DROITS ET PROPRITÉ (3cr.)

Session Automne 1 (18 crédits)
MBA5610 RELATIONS ENTRE LES ENTREPRISES ET LE GOUVERNEMENT (1.5cr.)
MBA5635 HABILETÉS DE GESTION 1 (1.5cr.)
MBA5641 COMPTABILITÉ ET STRATÉGIE (1.5cr.)
MBA5660 L’UNIVERS DU DIRECTEUR GÉNÉRAL ET LE MANAGEMENT STRATÉGIQUE (1.5cr.)
MBA5665 GESTION DE LA PERFORMANCE (1.5cr.)
MBA5670 TECHNOLOGIES DE L’INFORMATION ET DES COMMUNICATIONS POUR GESTIONNAIRES (1.5cr.)
MBA5700 ANALYSE DE DONNÉES EN GESTION (3cr.)
MBA5730 COMPORTEMENTS ORGANISATIONNELS ET GESTION DES RESSOURCES HUMAINES (3cr.)
MBA5740 INFORMATION COMPTABLE ET DÉCISION (3cr.)

Session Hiver (18 crédits)
MBA5636 LEADERSHIP ET GESTION (1.5cr.)
MBA5720 GESTION STRATÉGIQUE DE MARKETING (3cr.)
MBA5750 GESTION FINANCIÈRE D’ENTREPRISE (3cr.)
MBA5755 PRINCIPES D’ÉCONOMIE POUR LES GESTIONNAIRES D’ENTREPRISES INTERNATIONALES (3cr.)
MBA5669 CONSULTATION EN GESTION (1.5cr.)
DCL5528 EXAMEN DES TITRES IMMOBILIERS (3cr.)
DCL5529 DROIT DES SOCIÉTÉS (3cr.)

Session Printemps 2 (15 crédits)
MBA6899 PROJET MBA DE CONSULTATION (4.5cr.)
MBA6611 GOUVERNANCE D’ENTREPRISE ET ÉTHIQUE (1.5cr.)
MBA6637 GESTION DU CHANGEMENT (1.5cr.)
MBA5760 FORMULATION ET DÉPLOIEMENT DE LA STRATÉGIE (3cr.)
MBA5780 GESTION DES OPÉRATIONS (3cr.)
- Cours au choix du MBA (niveau 6000)

Session Automne 2 (12 crédits)
DCL5526 ENGAGEMENTS FINANCIERS (3cr.)
DCL5527 DÉCÈS ET TRANSMISSION DES BIENS (3cr.)
DCL5525 NÉGOCIATION ET TRANSFERTS DE PROPRITÉ (3cr.)
DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)

Résidence
Le programme se complète en cinq sessions consécutives (début en mai, fin en décembre de l’année suivante, soit 20 mois), pour une moyenne de 15 crédits (l’équivalent de 5 cours) par session. L’étudiant sera inscrit au maîtrise en droit avec concentration en droit notarial aux sessions Été 1 et Automne 2 et inscrit au M.B.A. aux sessions Automne 1, Hiver et Été 2.

Limite de temps
Temps plein : 5 sessions

Statut
Temps plein seulement

Master of Laws with Specialization in Women's Studies

Title of degree: Master of Laws with Specialization in Women's Studies.

The Faculty of Law is a participating unit in the collaborative master's program in Women's Studies. This program has been established for students wishing to enrich their training in Law by including an interdisciplinary component in Women's Studies.

Students should normally apply for acceptance in the women's studies collaborative program at the same time as they apply for admission to the master's program in Law. For further details, please consult the Women's Studies program description below or our web site.

Degree Requirements (with Research Paper)

a) Two compulsory law courses:
- DCL 5301 or DCL 5501 Legal Research Methodology
- One legal theory course (chosen from a selection of courses varying from year to year);

b) Two compulsory courses in Women's Studies:
FEM 5300 or FEM 5700 Feminist Theories
FEM 5103 or FEM 5503 Feminist Methodologies

c) One elective law course.

d) Research Paper - DCL 7066 (50 to 60 pages).
The research paper must focus on a legal issue related to women's studies. Written under the supervision of a faculty member or other suitable expert appointed by the Co-Director of Graduate Studies in Law, it should advance a thesis, propose a solution to a problem, or present a critical analysis of an area of law related to women's studies. The paper is evaluated on a “satisfactory” or “not satisfactory” basis by the supervisor and one other expert selected by the Director of the Women's Studies Graduate Committee.

Residence
The residence requirement for students admitted full-time to the master's program is three sessions.

Time limit
Full-time: 4 sessions
Part-time: 8 sessions

Status
Full-time or part-time

Degree requirements (with thesis)

a) Two compulsory law courses:
- DCL 5301 or DCL 5501 Legal Research Methodology
- One legal theory course (chosen from a selection of courses varying from year to year);

b) Two compulsory courses in women's studies:
- FEM 5300 or FEM 5700 Feminist Theories
- FEM 5300 or FEM 5700 Feminist Methodologies

c) Thesis - DCL 7999 (100 to 130 pages).
The thesis must focus on a legal issue related to women's studies. It must show that the candidate is able to work in a scholarly manner and is acquainted with the principal works published on the subject of the thesis. It must make a significant and original contribution to the combined fields of studies and should be of such quality as to merit publication without the need for major revision. The thesis has to satisfy a three-member jury approved by the Faculty of Graduate and Postdoctoral Studies. At least one jury member is selected by the Women's Studies Graduate Committee. The other members are selected by the Co-Director of Graduate Studies in Law.

Residence
The residence requirement for students admitted to the master's program is three sessions.
Particular Regulations

These particular regulations supplement the document entitled “General Regulations of the Faculty of Graduate and Postdoctoral Studies” which can be consulted on the University of Ottawa web site at www.grad.uOttawa.ca.

Part-time Registration

A part-time student may not, except with the permission of the Co-Director of Graduate Studies in Law, take more than one course in a given session.

Courses in Other Faculties

With the approval of the Assistant Dean of Graduate Studies in Law, a candidate may be allowed to take a limited number of courses in other faculties.

Grading of Courses

The passing grade in all courses is C+. A student who fails in a course must either repeat it or take another course approved by the Assistant Dean of Graduate Studies in Law. A student who has two failures must withdraw from the program.

Language of Instruction

Courses are offered in English or in French, and occasionally in both languages. Students may complete the course requirements of their program in either English or French or a combination of both, subject to the availability of the courses required for the program in question.

Courses

Cours obligatoires / Compulsory Courses

DCL5301 LEGAL RESEARCH METHODOLOGY (3cr.)
Review of basic legal research techniques, legal resource materials and legal citation.

DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)
Rédaction des techniques de recherche, des sources du droit et des méthodes d'analyse.

Général / General

DCL5336 LEGAL RESEARCH SEMINAR (3cr.)
This seminar explores alternative teaching styles for legal education. Students will be presenting their research projects.

DCL5736 SÉMINAIRE DE RECHERCHE JURIDIQUE (3cr.)
Ce séminaire explore les différentes méthodes d'enseignement du droit. Les étudiants présenteront leurs projets de recherche.

Théorie juridique / Legal Theory

DCL5302 PHILOSOPHY OF LAW (3cr.)
Examination of topics, theories, writers in philosophy of law. May include comparative or critical materials.

DCL5303 STUDIES IN LEGAL THEORY I (3cr.)
Survey of current theories of law. May be organized around a particular problem of writer or perspective. May include interdisciplinary materials.

DCL5304 STUDIES IN LEGAL THEORY II (3cr.)
Exploration of a particular theme or problem from a theoretical point of view, eg. legal education, professional responsibility, law and sociology. May include interdisciplinary materials.

DCL5305 FEMINIST ANALYSIS OF LAW (3cr.)
Exploration of feminist perspectives, theories and themes and the application of these to particular problems or issues. Development of techniques for analyzing social meaning of law.
DCL5307 INTRODUCTION TO CIVIL LAW (3cr.)
Survey of basic concepts of Civil Law, including codification, law of the person, obligations, property. Exploration of legal reasoning in civilian context.

DCL5308 COMPARATIVE LAW (3cr.)
Exploration of issues, legal institutions, legal rules in context of different jurisdictions. May include theory of comparative law.

DCL5309 LEGAL THEORY SEMINAR (3cr.)
Examination of current legal issues in their legal, historical and social context.

DCL5337 CRITICAL LEGAL THEORIES (3cr.)
This course examines contemporary approaches to and debates in critical legal theory, law and society, feminist jurisprudence, critical race theory, and post-colonial theory, including critiques of essentialist theory and models of interdisciplinary analysis.

DCL5340 SUSTAINABILITY AND LAW (3cr.)
This course provides theoretical perspectives on alternative approaches to environmental policy emphasizing ethical and economic perspectives.

DCL5502 PHILOSOPHIE DU DROIT (3cr.)
Définition du droit et de la philosophie du droit; les buts du droit; les concepts juridiques; le raisonnement du droit; le language du droit; les philosophies et les théories du droit.

DCL5503 THÉORIES CONTEMPORAINES DU DROIT (3cr.)
Introduction à l'étude des différentes théories contemporaines du droit, telles la théorie marxiste, l'analyse économique, l'approche féministe, le positivisme, le droit naturel, etc.

DCL5504 SOCIOLOGIE DU DROIT (3cr.)

DCL5505 ANALYSE FÉMINISTE DU DROIT (3cr.)
Statut juridique, droits et obligations des femmes dans les domaines de la santé, de la famille, du travail, de la criminalité, de la fiscalité, du commerce, etc. Analyse critique du droit à partir d'une perspective féministe. Étude des différentes théories féministes du droit.

DCL5508 DROIT COMPARÉ (3cr.)
Définition et méthode du droit comparé. Étude sommaire des grands systèmes de droit contemporains, et comparaison de leurs fondements. Étude de certaines institutions juridiques dans le contexte de ces divers systèmes.

DCL5509 PROBLÈMES THÉORIQUES CHOISIS DE DROIT PUBLIC (3cr.)
Étude critique, d'ordre fondamental ou méthodologique, de notions, de mécanismes ou d'institutions de droit public.

DCL5510 PROBLÈMES THÉORIQUES CHOISIS DE DROIT PRIVÉ (3cr.)
Étude critique, d'ordre fondamental ou méthodologique, de notions, de mécanismes ou d'institutions de droit privé.

DCL5610 INTERPRÉTATION DES LOIS (3cr.)

DCL5737 THÉORIES CRITIQUES DU DROIT (3cr.)
Ce cours examine des approches contemporaines aux diverses analyses critiques de droit telles que le droit et la société, l'analyse féministe du droit, l'analyse ethique du droit, l'analyse post-coloniale du droit ainsi que les théories essentialistes et les modes d'analyse interdisciplinaire.

DCL5740 LA DURABILITÉ ET LE DROIT (3cr.)
Ce cours examine d'un point de vue théorique les perspectives éthiques et économiques de diverses approches relatives au développement de la politique environnementale.

DCL6126 INTERNATIONAL HUMANITARIAN LAW: CONTEMPORARY CHALLENGES (3cr.)
The philosophy, principles and practical application of International Humanitarian Law (IHL) in both historic and contemporary contexts.

DCL6720 DROIT INTERNATIONAL APPROFONDI (3cr.)

DCL7300 TECHNOPRUDENCE : LEGAL THEORY IN THE INFORMATION AGE (3cr.)
Seminar examining the impact that cyberspace and other technologies utilized in the so-called information revolution might have on traditional legal theory and doctrine.

DCL7313 STATUTORY INTERPRETATION (3cr.)

DCL7500 TECHNO-ThÉORIE : THÉORIE DU DROIT À L’ÈRE DE L’INFORMATION (3cr.)
Séminaire consacré à l’étude des incidences du cyberspace et des autres technologies de la soi-disant révolution de l’information sur la théorie et la doctrine traditionnelles.

**Cours au choix / Electives**

**Droit international / International Law**

DCL6120 ADVANCED INTERNATIONAL LAW (3cr.)

DCL6121 STUDIES IN INTERNATIONAL LAW I (3cr.)

DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)

DCL6123 INTERNATIONAL HUMAN RIGHTS (3cr.)

DCL6124 INTERNATIONAL BUSINESS TRANSACTIONS (3cr.)

DCL6125 INTERNATIONAL TRADE REGULATION (3cr.)

DCL6126 INTERNATIONAL HUMANITARIAN LAW: CONTEMPORARY CHALLENGES (3cr.)

The philosophy, principles and practical application of International Humanitarian Law (IHL) in both historic and contemporary contexts.

DCL6127 LAW AND DEVELOPING COUNTRIES (3cr.)

The role of domestic and international law in developing countries including historical, economic and critical (feminist and post-colonial) perspectives on law in the process of development; assessing the impact of law on developments regarding the environment, international trade, democratic and human rights, markets and investment, ethnic conflict, governance and corruption, technology development, and aid to developing countries.

DCL6128 LAW, POLITICS AND ECONOMICS IN INTERNATIONAL AFFAIRS (3cr.)

The linkages and differences between the disciplines of law, political science and economics as they relate to international affairs, including an in-depth exploration of the underlying assumptions of each discipline and how they interact in international affairs.

DCL6300 INTERNATIONAL INVESTMENT LAW (3cr.)

Study of the international law applicable to the promotion and protection of foreign investment. Origins, evolution and sources; treatment and protection principles; settlement of investment disputes.

DCL6319 ADVANCED INTERNATIONAL ECONOMIC LAW (3cr.)

This seminar explores theoretical and systemic issues of international economic law.

DCL6350 INTERNATIONAL ECONOMIC LAW CASE STUDIES (3cr.)

This seminar uses case studies to explore theoretical issues of international economic law in the context of actual disputes.

DCL6700 DROIT INTERNATIONAL DES INVESTISSEMENTS ÉTRANGERS (3cr.)

Etude du régime juridique international de promotion et de protection des investissements étrangers. Origines, évolution et sources ; principes de traitement et de protection ; règlement des différends liés aux investissements.

DCL6719 DROIT INTERNATIONAL ÉCONOMIQUE AVANCÉ (3cr.)

Ce séminaire explore les questions théoriques et systémiques liées au droit international économique.

DCL6720 DROIT INTERNATIONAL APPROFONDI (3cr.)

DCL6728 DROIT INTERNATIONAL PRIVÉ (3cr.)

DCL6730 ASPECTS INTERNATIONAUX DE LA PROPRIÉTÉ INTELLECTUELLE (3cr.)

DCL6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)

DCL6732 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL II (3cr.)

DCL6733 DROIT COMMERCIAL INTERNATIONAL (3cr.)

DCL6734 ORGANISATION INTERNATIONALE DU COMMERCE (3cr.)

DCL6735 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL III (3cr.)
DCL6736 DROIT INTERNATIONAL HUMANITAIRE (3cr.)
Le droit international humanitaire est la branche du droit international public qui régit les conséquences humanitaires de conflits armés. Le cours a pour but de familiariser les étudiants et étudiantes avec les sources du droit international humanitaire, ses principes et ses règles fondamentaux.

DCL6737 JUSTICE ET VIOLENCES POLITIQUES EXTREMYES : LA REPONSE DU DROIT INTERNATIONAL (3cr.)
La multiplication, dans le monde contemporain, de situations de violences politiques extrêmes, oblige le droit et la justice à s’adapter et à trouver de nouvelles réponses à ces types de violations systématiques et radicales. Il s’agira, dans le cadre de ce cours, de réfléchir sur la nature, le rôle, la place, le fonctionnement, les forces et les limites de la justice, ainsi que les attentes qu’elle suscite et les défis qu’il lui faut relever dans des contextes de sortie de périodes de génocides et/ou crimes contre l’humanité.

DCL6738 REPRESSION PENALE INTERNATIONALE (3cr.)
Les origines de la responsabilité pénale individuelle, les tribunaux pénaux internationaux, mixtes et autres mécanismes alternatifs de justice seront étudiés notamment le Tribunal pénal international pour l’ex-Yougoslavie, le Tribunal pénal international pour le Rwanda, la Cour spéciale pour la Sierra Leone et la Cour pénale internationale. Le fondement juridique de la création de ces tribunaux, leurs compétences, leurs structures, ainsi que l’apport de la jurisprudence au droit international humanitaire et au droit international des droits de la personne seront examinés.

DCL6750 ETUDE DE CAS EN DROIT INTERNATIONAL ECONOMIQUE (3cr.)
Ce séminaire explore, par le biais d’études de cas, les questions théoriques liées au droit international économique dans le contexte de différends actuels.

Droits de la personne / Human Rights
DCL5120 ADVANCED HUMAN RIGHTS (3cr.)
DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)
DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)
DCL5123 STUDIES IN HUMAN RIGHTS III (3cr.)
DCL5125 ISSUES IN ABORIGINAL LAW (3cr.)
Examination of the unique legal position of the Indian, Metis and Inuit peoples in Canadian law. Specific issues to include the land claims process and agreements; aboriginal and treaty rights; administrative arrangements and other related issues.

DCL5126 COMPARATIVE INDIGENOUS RIGHTS (3cr.)
Critical issues affecting indigenous people arising within Canada, the United States, Australia, New Zealand and other countries in which the similarities and differences in domestic law and indigenous aspirations are explored in detail from a comparative perspective.

DCL5127 CONSTITUTIONAL EQUALITY LAW AND THEORY (3cr.)
Examination of different models of equality rights and of rights adjudication that shape Canadian constitutional jurisprudence with the goal of developing a critical understanding of the social, political and legal possibilities, risks and limitations of attempting to advance equality claims through constitutional rights litigation.

DCL5531 LES DROITS DE L’ENFANT - UNE APPROCHE INTERDISCIPLINAIRE (3cr.)
Étude de questions spécifiques reliées aux principaux aspects des droits de l'enfant: la personne de l'enfant; la vie familiale de l'enfant, la protection de l'enfant et les droits économiques, sociaux et culturels de l'enfant. Adoptant une perspective interdisciplinaire et alliant pratique et théorie, ce cours sera dispensé par un groupe de professeurs rattachés à diverses facultés à l'Université d'Ottawa.

DCL5721 PERSPECTIVES FÉMINISTES DU DROIT (3cr.)
DCL5726 PROBLÈMES CHOISIS DE DROIT DES PEUPLES AUTOCHTONES (3cr.)
DCL5730 ASPECTS INTERNATIONAUX DES DROITS DE LA PERSONNE (3cr.)
DCL5731 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE I (3cr.)
DCL5732 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE II (3cr.)
DCL5733 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE III (3cr.)
DCL5734 PERSPECTIVES AUTOCHTONES DU DROIT (3cr.)
Concentrations

Droit humanitaire et droit de la sécurité internationale / International Humanitarian and Security Law

DCL5120 ADVANCED HUMAN RIGHTS (3cr.)

DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)

DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)

DCL5123 STUDIES IN HUMAN RIGHTS III (3cr.)

DCL5301 LEGAL RESEARCH METHODOLOGY (3cr.)
Review of basic legal research techniques, legal resource materials and legal citation.

DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)
Révision des techniques de recherche, des sources du droit et des méthodes d'analyse.

DCL5730 ASPECTS INTERNATIONAUX DES DROITS DE LA PERSONNE (3cr.)

DCL5731 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE I (3cr.)

DCL5732 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE II (3cr.)

DCL5733 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE III (3cr.)

DCL6121 STUDIES IN INTERNATIONAL LAW I (3cr.)

DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)

DCL6123 INTERNATIONAL HUMAN RIGHTS (3cr.)

DCL6126 INTERNATIONAL HUMANITARIAN LAW: CONTEMPORARY CHALLENGES (3cr.)
The philosophy, principles and practical application of International Humanitarian Law (IHL) in both historic and contemporary contexts.

DCL6127 LAW AND DEVELOPING COUNTRIES (3cr.)
The role of domestic and international law in developing countries including historical, economic and critical (feminist and post-colonial) perspectives on law in the process of development; assessing the impact of law on developments regarding the environment, international trade, democratic and human rights, markets and investment, ethnic conflict, governance and corruption, technology development, and aid to developing countries.

DCL6128 LAW, POLITICS AND ECONOMICS IN INTERNATIONAL AFFAIRS (3cr.)
The linkages and differences between the disciplines of law, political science and economics as they relate to international affairs, including an in-depth exploration of the underlying assumptions of each discipline and how they interact in international affairs.

DCL6130 NATIONAL SECURITY LAW (3cr.)
This course examines international, Canadian and comparative laws governing efforts to preserve “national security.” “National security” has been defined as the protection and preservation of a state’s values, institutions and the well-being of its citizens - it is an expansive concept that, in colloquial terms, has a strong association with military preparedness and law enforcement and that sometimes co-exists uncomfortably with the “rule of law.”

DCL6150 INTERNATIONAL HUMANITARIAN AND SECURITY LAW INTERNSHIP (3cr.)
Internship with a governmental or non-governmental organization in order to enhance the student's practical experience in international humanitarian and security law issues. Students will be required to submit a written report relating to the work accomplished during the internship. The internship assessment, which will be based on this written report, will be conducted by the internship Faculty supervisor on a “satisfactory” or “not-satisfactory” (S/N) basis.

DCL6530 LE DROIT DE LA SÉCURITÉ NATIONALE (3cr.)
Ce cours examine le droit international, le droit canadien et le droit comparé concernant les stratégies proposées afin de protéger la "sécurité nationale". La "sécurité nationale" se définit comme la protection des valeurs, des institutions et de la sécurité des citoyens d'un état donné; le concept de sécurité nationale est souvent associé à la protection militaire ou policière. Ce concept et la règle de droit coexistent parfois difficilement.
DCL6550 STAGE EN DROIT HUMANITAIRE ET EN DROIT DE LA SÉCURITÉ INTERNATIONALE (3cr.)
Stage en milieu gouvernemental ou non-gouvernemental dans le but d'offrir à l'étudiant une expérience pratique en droit humanitaire et en droit de la sécurité internationale. Les étudiants devront soumettre un rapport écrit fondé sur le travail effectué durant le stage, et ils seront notés "satisfaisant" ou "non-satisfaisant" (S/NS) par le professeur agissant à titre de directeur de stage sur la base de ce rapport écrit.

DCL6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)

DCL6732 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL II (3cr.)

DCL6737 JUSTICE ET VIOLENCES POLITIQUES EXTRÊMES : LA RÉPONSE DU DROIT INTERNATIONAL (3cr.)
La multiplication, dans le monde contemporain, de situations de violences politiques extrêmes, oblige le droit et la justice à s'adapter et à trouver de nouvelles réponses à ces types de violations systématiques et radicales. Il s'agira, dans le cadre de ce cours, de réfléchir sur la nature, le rôle, la place, le fonctionnement, les forces et les limites de la justice, ainsi que les attentes qu'elle suscite et les défis qu'il lui faut relever dans des contextes de sortie de périodes de génocides et/ou crimes contre l'humanité.

DCL6738 RÉPRESSION PÉNALE INTERNATIONALE (3cr.)
Les origines de la responsabilité pénale individuelle, les tribunaux pénaux internationaux, mixtes et autres mécanismes alternatifs de justice seront étudiés notamment le Tribunal pénal international pour l'ex-Yugoslavie, le Tribunal pénal international pour le Rwanda, la Cour spéciale pour la Sierra Leone et la Cour pénale internationale. Le fondement juridique de la création de ces tribunaux, leurs compétences, leurs structures, ainsi que l’apport de la jurisprudence au droit international humanitaire et au droit international des droits de la personne seront examinés.

Droit de l'environnement et du développement durable / Global Sustainability and Environmental Law

DCL5301 LEGAL RESEARCH METHODOLOGY (3cr.)
Review of basic legal research techniques, legal resource materials and legal citation.

DCL5340 SUSTAINABILITY AND LAW (3cr.)
This course provides theoretical perspectives on alternative approaches to environmental policy emphasizing ethical and economic perspectives.

DCL5341 COMPARATIVE ENVIRONMENTAL LAW (3cr.)
This course offers comparative analysis of legal approaches to environmental law from civil, common, Islamic, socialist, and aboriginal law perspectives.

DCL5342 GLOBAL ENVIRONMENTAL GOVERNANCE (3cr.)
This course examines the responsibilities and operation of a number of organizations with significant environmental responsibilities operating at the global level. The development of international environmental law and the implementation of international development goals will also be studied.

DCL5343 ENVIRONMENTAL LAW INTERNSHIP (3cr.)
Internship with a governmental or non-governmental organization or research institution in order to enhance the student's practical experience in applied research or environmental law practice. Students will be required to submit a written report relating to the work accomplished during the internship. The internship assessment, which will be based on this written report, will be conducted by the internship Faculty supervisor on a "satisfactory" or "not-satisfactory" (S/NS) basis.

DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)
Révision des techniques de recherche, des sources du droit et des méthodes d'analyse.

DCL5740 LA DURABILITÉ ET LE DROIT (3cr.)
Ce cours examine d'un point de vue théorique les perspectives éthiques et économiques de diverses approches relatives au développement de la politique environnementale.

DCL5741 DROIT DE L'ENVIRONNEMENT COMPARÉ (3cr.)
Ce cours favorise une étude comparée des approches du droit civil, de la common law, du droit islamique, du droit socialiste et du droit autochtone en matière d'environnement.

DCL5742 ENVIRONNEMENT ET GOUVERNANCE MONDIALE (3cr.)
Ce cours examine les responsabilités et le fonctionnement de diverses organisations internationales ayant un mandat lié à l’environnement au niveau mondial. Le développement du droit international de l’environnement et la mise en œuvre des objectifs internationaux en la matière seront également étudiés.

DCL5743 STAGE EN DROIT DE L'ENVIRONNEMENT (3cr.)
Stage en milieu gouvernemental ou non-gouvernemental avec un institut de recherche dans le but d'offrir à l'étudiant une expérience pratique en recherche appliquée ou en pratique du droit de l'environnement. Les étudiants devront soumettre un rapport écrit fondé sur le travail effectué durant le stage, et seront notés « satisfaisant » ou « non-satisfaisant » (S/NS) par le professeur agissant à titre de directeur de stage sur la base de leur rapport écrit.
DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)
DCL6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)

Droit et justice social / Law and Social Justice
DCL5120 ADVANCED HUMAN RIGHTS (3cr.)
DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)
DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)
DCL5123 STUDIES IN HUMAN RIGHTS III (3cr.)
DCL5125 ISSUES IN ABORIGINAL LAW (3cr.)
Examination of the unique legal position of the Indian, Metis and Inuit peoples in Canadian law. Specific issues to include the land claims process and agreements; aboriginal and treaty rights; administrative arrangements and other related issues.
DCL5301 LEGAL RESEARCH METHODOLOGY (3cr.)
Review of basic legal research techniques, legal resource materials and legal citation.
DCL5303 STUDIES IN LEGAL THEORY I (3cr.)
Survey of current theories of law. May be organized around a particular problem of writer or perspective. May include interdisciplinary materials.
DCL5304 STUDIES IN LEGAL THEORY II (3cr.)
Exploration of a particular theme or problem from a theoretical point of view, eg. legal education, professional responsibility, law and sociology. May include interdisciplinary materials.
DCL5305 FEMINIST ANALYSIS OF LAW (3cr.)
Exploration of feminist perspectives, theories and themes and the application of these to particular problems or issues. Development of techniques for analyzing social meaning of law.
DCL5309 LEGAL THEORY SEMINAR (3cr.)
Examination of current legal issues in their legal, historical and social context.
DCL5337 CRITICAL LEGAL THEORIES (3cr.)
This course examines contemporary approaches to and debates in critical legal theory, law and society, feminist jurisprudence, critical race theory, and post-colonial theory, including critiques of essentialist theory and models of interdisciplinary analysis.
DCL5338 ACTION RESEARCH METHODOLOGY IN LAW (3cr.)
This course addresses issues of research ethics, accountability and partiality. It is also an introduction to research tools and methods of particular importance to studies related to social justice research and law.
DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)
Rèvision des techniques de recherche, des sources du droit et des méthodes d'analyse.
DCL5503 THÉORIES CONTEMPORAINES DU DROIT (3cr.)
Introduction à l'étude des différentes théories contemporaines du droit, telles la théorie marxiste, l'analyse économique, l'approche féministe, le positivisme, le droit naturel, etc.
DCL5504 SOCIOLOGIE DU DROIT (3cr.)
DCL5505 ANALYSE FÉMINISTE DU DROIT (3cr.)
Statut juridique, droits et obligations des femmes dans les domaines de la santé, de la famille, du travail, de la criminalité, de la fiscalité, du commerce, etc. Analyse critique du droit à partir d’une perspective féministe. Étude des différentes théories féministes du droit.
DCL5721 PERSPECTIVES FÉMINISTES DU DROIT (3cr.)
DCL5726 PROBLÈMES CHOISIS DE DROIT DES PEUPLES AUTOCHTONES (3cr.)
DCL5730 ASPECTS INTERNATIONAUX DES DROITS DE LA PERSONNE (3cr.)
University of Ottawa, which are posted on the FGPS website. The program operates within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the process. Creative problem-solving techniques. Entrepreneurship. Organizational climate for stimulating invention. Management of research and development.

Préalable : approbation du directeur du programme sur recommandation du directeur de thèse de l'étudiant. / activités de recherche et à rédiger un rapport individuellement ou au sein d'une équipe, selon les besoins de l'organisme et l'étendu du projet. Préalable :

Ce cours donné sous forme de séminaire porte sur des questions et des sujets de recherche d'actualité dans le domaine de la gestion. Les sujets traités dans ce séminaire sont nouveaux et pertinentes pour le développement d'une carrière professionnelle. (3cr.)

MGT5502 MÉTHODES DE RECHERCHE QUALITATIVES

Management program director, and the appropriate program director in the case of courses in other academic units, faculties and institutions.

DCL5731 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE I (3cr.)
DCL5732 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE II (3cr.)
DCL5733 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE III (3cr.)
DCL5734 PERSPECTIVES AUTOCHTONES DU DROIT (3cr.)

DCL5737 THÉORIES CRITIQUES DU DROIT (3cr.)
Ce cours examine des approches contemporaines aux diverses analyses critiques de droit telles que le droit et la société, l'analyse féministe du droit, l'analyse ethnique du droit, l'analyse post-coloniale du droit ainsi que les théories essentialistes et les modes d'analyse interdisciplinaire.

DCL5738 MÉTHODOLOGIE DE LA RECHERCHE ACTION DANS LE DOMAINE JURIDIQUE (3cr.)
Ce cours traite de questions d'éthique en recherche, des responsabilités des chercheurs et de la partialité. Il offre également une initiation aux outils et méthodes de recherche ayant une importance particulière en justice sociale et en droit.

DCL6120 ADVANCED INTERNATIONAL LAW (3cr.)
DCL6121 STUDIES IN INTERNATIONAL LAW I (3cr.)
DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)
DCL6123 INTERNATIONAL HUMAN RIGHTS (3cr.)
DCL6720 DROIT INTERNATIONAL APPROFONDI (3cr.)
DCL6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)
DCL6732 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL II (3cr.)

Droit et technologie / Law and Technology
DCL7300 TECHNOPRUDENCE : LEGAL THEORY IN THE INFORMATION AGE (3cr.)
Seminar examining the impact that cyberspace and other technologies utilized in the so-called information revolution might have on traditional legal theory and doctrine.

DCL7301 REGULATION OF INTERNET COMMERCE (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the traditional commercial law framework. Topics include intellectual property issues, on-line contracts, digital signatures, taxation, securities regulation, and the provision of online legal services.

DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the rights of free speech and privacy. Topics include online obscenity, hate speech, defamation, as well as national and international approaches to data privacy protection.

DCL7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
Practice-oriented seminar analyzing the legal issues and implications of electronic commerce. Topics include licensing, privacy and acceptable use policies, Web development agreements, and regulatory issues.

DCL7304 TECHNOLOGY LAW INTERNSHIP (3cr.)
Co-operative and clinical work study program in technology law. Student placement at a technology-focused government department or a technology corporation’s in-house legal department. Pass / Fail grade, to be based on the grades obtained for the written report as well as on the evaluations of the employer. Prerequisite: At least one Intellectual Property or Internet Law course.

DCL7305 STUDIES IN INTERNET LAW (3cr.)
Selected problems in the emerging intersection of law and technology.

DCL7306 LEGAL PERSPECTIVES ON CYBERFEMINISM (3cr.)
This course analyses issues relating to application of feminist principles to the legal regulation of communication technologies. Topics covered include the gendered dynamics of networked capitalist society; women's relationships with communication technologies; technology's potential impact on equality for women; and questions surrounding whether and how to legally regulate communication technologies.
DCL7307 DIGITAL MUSIC LAW (3cr.)
This course addresses legal, cultural, economic and technological aspects of digital music around the world. Topics include the music industry; copyright protection; infringement and limitation issues; and new business strategies.

DCL7310 TECHNOPOLICY : INTERPLAY BETWEEN TECHNOLOGIES AND EXISTING LEGAL RULES (3cr.)
Seminar examining the application of traditional legal analysis to difficult policy questions arising from the advent of information technologies.

DCL7311 STUDIES IN INTELLECTUAL AND INDUSTRIAL PROPERTY (3cr.)
Trademarks, registration, the torts of passing off and misappropriation of personality; trade names; copyright, the protection of computer software, arts and entertainment industries; trade secrets, confidential information; patents; industrial designs, related competitive torts. Canadian and international perspectives.

DCL7312 COMPETITION LAW (3cr.)
Restrictive trade practices and competition policy.

DCL7315 PATENT LAW (3cr.)
Law of patents, both national and international. Procurement, licensing and enforcement of patents.

DCL7316 STUDIES IN BUSINESS LAW : COPYRIGHT LAW (3cr.)
Law and policy relating to copyright law.

DCL7317 COMMUNICATIONS LAW (3cr.)
Examination of the regulatory framework governing communications in Canada. Three industry sectors (telecommunications, broadcasting and cable television) be examined with particular attention to the legal, policy, administrative and practical constraints which affect their activities.

DCL7366 TECHNOLOGY LAW PROJECT
Technology-based project which will integrate legal content, usually within a piece of software, machine code or a web-based application. The project must incorporate a substantive legal dimension in order to satisfy the research requirement. A project that does not have a built-in substantive legal dimension must be accompanied by a written report outlining the legal significance of the project. Technology law projects will be evaluated on a Pass/Fail basis by the supervisor and one other person appointed by the Co-Director of Graduate Studies in Law.

DCL7500 TECHNO-THÉORIE : THÉORIE DU DROIT À L'ÈRE DE L'INFORMATION (3cr.)
Séminaire consacré à l’étude des incidences du cyberspace et des autres technologies de la soi-disant révolution de l’information sur la théorie et la doctrine traditionnelles.

DCL7501 RÉGLEMENTATION DU CYBERCOMMERCE (3cr.)
Séminaire consacré à l’étude des défis juridiques que pose l’Internet en matière du droit commercial traditionnel. Les sujets à l’étude sont la propriété intellectuelle, les contrats en ligne, les signatures numériques, les impôts, la réglementation des valeurs mobilières et la prestation de services juridiques en ligne.

DCL7502 RÉGLEMENTATION DES CYBERCOMMUNICATIONS (3cr.)
Séminaire consacré à l’étude des défis juridiques que pose l’Internet en matière de liberté d’expression et du droit à la vie privée. Certains sujets à l’étude sont l’obscénité, le discours haineux, la diffamation, les mécanismes pour la protection des renseignements personnels, à l’échelle nationale et à l’échelle internationale.

DCL7503 PRATIQUE DU COMMERCE ÉLECTRONIQUE (3cr.)
Séminaire pratique pour l’approfondissement de diverses questions et implications juridiques du commerce électronique. Certains sujets à l’étude sont l’attribution de licences, les politiques relatives à la protection des renseignements personnels et à la négligence, les ententes pour le développement du Web et les questions de réglementation.

DCL7504 STAGE EN DROIT DE LA HAUTE TECHNOLOGIE (3cr.)
Stage professionnel auprès d’un ministère gouvernementale ou d’un service du contentieux d’une entreprise se spécialisant en droit de la haute technologie. Noté S (satisfaisant) ou N/S (non satisfaisant) selon les résultats du rapport écrit et de l’évaluation de l’employeur. Préalable : au moins un cours dans le domaine de la propriété intellectuelle ou du droit d’Internet.

DCL7505 ÉTUDES EN DROIT D’INTERNET (3cr.)
Études de problèmes d'actualité pour l'approfondissement des interactions croissantes entre le droit et la technologie.

DCL7506 DROIT DE LA COMMUNICATION DANS LE CYBERESPACE (3cr.)
Dans un contexte de droit civil, étude des problèmes juridiques liés à la réglementation du contenu d’Internet et à la protection de la vie privée des Internautes, envisagés dans divers domaines du droit, tels les communications, la pornographie, la criminalité, la protection des renseignements personnels et les libertés publiques.

DCL7507 DROIT INTERNATIONAL D’INTERNET : L’INTÉGRATION DES DIFFÉRENTS SYSTÈMES JURIDIQUES (3cr.)
Dans un contexte de droit civil, étude des solutions proposées par les différents intervenants du cyberspace, tels les gouvernements, les organismes non-gouvernementaux, l’industrie et les utilisateurs pour la résolution des divers problèmes juridiques, à caractère international, reliés à l’utilisation d’Internet,
notamment dans les domaines de droit suivants : la réglementation, la propriété intellectuelle, les noms de domaines, la compétence des tribunaux et la résolution des conflits.

**DCL 5078 PROBLÈMES CHOSIS DE PROPRIÉTÉ INTELLECTUELLE ET INDUSTRIELLE** *(3cr.)*
Dans un contexte de droit civil, étude approfondie de certains problèmes contemporains en droit de la propriété intellectuelle et industrielle.

**DCL 5079 ÉTUDES APPROFONDIES DU DROIT DE LA CONCURRENCE** *(3cr.)*
Dans un contexte de droit civil, étude des législations en droit de la concurrence; structure administrative; étude des règles portant sur les ententes restreignant la concurrence, les fusions, l’abus de position dominante, les pratiques restrictives, etc.; aspects internationaux du droit de la concurrence.

**DCL 5120 TECHNO-RÉGULATION : INTERACTION ENTRE LES TECHNOLOGIES ET L’ÉTAT ACTUEL DU DROIT** *(3cr.)*
Séminaire consacré à l’application des règles traditionnelles de l’analyse juridique aux difficultes questions de politiques soulevées par les nouvelles technologies de l’information.

**DCL 5111 ÉTUDES EN PROPRIÉTÉ INTELLECTUELLE ET INDUSTRIELLE** *(3cr.)*
Dans un contexte de common law, études des sujets suivants : marques de commerce; système d’enregistrement; délits de commercialisation trompeuse et d’usurpation d’identité; noms commerciaux; droit d’auteur; protection des logiciels; domaine des arts et de l’industrie du spectacle; droit des secrets commerciaux et des renseignements confidentiels; droit des brevets; dessin industriel et tout délit en matière de concurrence. Perspective canadienne et internationale.

**DCL 5160 PROJET EN DROIT DE LA TECHNOLOGIE**
Projet à contenu juridique qui peut prendre la forme d’un logiciel, d’un code machine ou d’une application sur l’Internet. Pour satisfaire aux exigences de recherche de la maîtrise, le contenu juridique doit être substantiel; à défaut d’un tel contenu, un rapport écrit décivant la portée juridique du projet doit accompagner ce dernier. L’évaluation du projet est faite par la personne qui l’a dirigée et une autre personne désignée par la Direction des études supérieures en droit. Cette évaluation est sanctionnée uniquement par la mention « Réussite » ou « Échec ».

**DCL 7706 PERSPECTIVES JURIDIQUES SUR LE CYBERFÉMINISME** *(3cr.)*
Ce cours analyse les questions liées à l’application de principes féministes à la réglementation juridique des technologies de communication. Les sujets abordés incluent les dynamiques liées au genre dans le contexte des technologies de communication et les femmes, l’impact sur l’égalité des femmes et le débat concernant le bien fondé de la réglementation juridique des technologies de la communication et les modalités de mise en oeuvre de cette réglementation.

**DCL 7707 LE DROIT DE LA MUSIQUE NUMÉRIQUE** *(3cr.)*
Ce cours s’intéresse aux aspects juridiques, culturels, économiques et techniques de la musique numérique dans le monde. Les sujets suivants seront discutés : l’industrie de la musique, les droits d’auteur, la violation du droit d’auteur, la prescription des recours et les nouvelles stratégies commerciales.

**DCL 7712 PROBLÈMES CHOISIS DE DROIT ET TECHNOLOGIE** *(3cr.)*
Étude approfondie de problèmes contemporains dans le domaine du droit et de la technologie.

**DCL 7717 DROIT DES COMMUNICATIONS** *(3cr.)*
Structure de l’industrie des communications au Canada et description de la technologie. Partage des pouvoir législatifs, organismes de réglementation et contrôle administratif, analyse de la réglementation des entreprises de communications.

**Droit notarial**

**DCL 5321 INTRODUCTION TO LEGAL DRAFTING AND THE PROFESSION OF NOTARY** *(3cr.)*
Introduction to preventive legal drafting (legal opinions, notarized writings and non-litigious proceedings). Introduction to the profession of notary throughout the world. Duties and organization of the profession. Ethical obligations. Writing samples and interpretation analysis.

**DCL 5521 INITIATION À LA RÉDACTION D’ACTES ET À LA PROFESSION NOTARIALE** *(3cr.)*
Introduction à la profession notariale et au droit préventif (le rôle, les devoirs et la responsabilité du notaire; les actes notariés, leur communication et leur conservation). Règles et techniques de rédaction d’une opinion juridique, d’un acte notarié et d’un acte de procédure non contentieuse. Introduction à la rédaction préventive et aux conventions de règlement de conflits. Exercices d’analyse, d’interprétation et de rédaction des actes concernés.

**DCL 5522 STAGE DE DROIT NOTARIAL** *(3cr.)*
Travail à la clinique de droit notarial, en pratique privée ou au gouvernement sous la supervision d’un notaire. Rapport de stage supervisé par un membre de la Faculté de droit.

**DCL 5523 PUBLICITÉ DES DROITS ET PROPRIÉTÉ** *(3cr.)*
Règles régissant la publicité des droits (domaine, modalités et effets de la publicité des droits, immatriculation des immeubles, radiation des droits). Initiation aux modes d’accès aux registres et aux documents à distance. Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : modalités du droit de propriété (copropriété et propriété superficielle); démembrements du droit de propriété (emphytôése, usufruit, usage et servitudes) et publicité des droits.

**DCL 5524 RELATIONS FAMILIALES** *(3cr.)*
Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : régimes matrimoniaux; conventions matrimoniales; union civile; union de fait; dissolution et liquidation du régime matrimonial et conséquences fiscales; projets d’accord en matière de séparation et de divorce; droit international privé; adoption; régimes de protection des personnes inaptes ou absentes (tutelle, curatellle, conseiller, mandat d’inaptitude) et administration du bien d’autrui. Initiation à la médiation familiale.

**DCL5525 NÉGOCIATION ET TRANSFERTS DE PROPRIÉTÉ (3cr.)**
Initiation aux règles de la négociation. Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : avant-contrats; contrats translatifs de propriété (promesse de vente, vente, vente d’un immeuble à usage d’habitation, vente d’entreprise, vente de créance, échange, dation de paiement, donation, etc.); patrimoines d’affectation; reconnaissance judiciaire du droit de propriété; publicité des droits; lois fiscales applicables et conséquences fiscales; restrictions ou autorisations résultants de lois particulières (Loi sur la protection du territoire agricole, Loi sur l’acquisition de terres agricoles par des non-résidents, Loi sur les biens culturels, Loi sur la Régie du logement.

**DCL5526 ENGAGEMENTS FINANCIERS (3cr.)**
Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : obligations; reconnaissance de dette; sûretés (priorités, hypothèques, garantie bancaire, cautionnement); garanties particulières (vente à tempérament, faculté de rachat, clause résolutoire, fiducie); publicité des droits; procédure particulière à la vente du bien d’autrui; ordre de collocation; droit international privé; droit comparé (garanties mobilières de common law) et faillite et insolvabilité.

**DCL5527 DÉCÈS ET TRANSMISSION DES BIENS (3cr.)**
Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : testaments; donation à cause de mort; assurance de personnes; substitution et fiducie testamentaire; jugement déclaratif de décès; règlement des successions; conséquences fiscales; devoirs, pouvoirs et responsabilité du liquidateur; administration du bien d’autrui; gestion fiduciare; planification successorale; droit international privé et droit comparé (testament étranger, biens situés à l’étranger, etc.).

**DCL5528 EXAMEN DES TITRES IMMOBILIERS (3cr.)**

**DCL5529 DROIT DES SOCIÉTÉS (3cr.)**
Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : constitution, fonctionnement, financement, réorganisation, fusion et liquidation des sociétés par actions; distribution et attribution de bénéfices, surplus, biens ou avantages aux actionnaires; sociétés de personnes; lois fiscales et lois connexes; planifications financières, corporatistes et fiscales.

**DCL5530 DROIT DES ENTREPRISES RÉGLEMENTÉES (3cr.)**

**Recherche / Research**
**DCL7033 RECHERCHE DIRIGÉE / DIRECTED RESEARCH (3cr.)**
**DCL7066 MÉMOIRE DE RECHERCHE / RESEARCH PAPER**
**DCL7999 RECHERCHE ET THÈSE DE MAÎTRISE / RESEARCH AND MASTER'S THESIS**

**DCL8090 LECTURES DIRIGÉES / DIRECTED READINGS**
Lectures dirigées, choisies en consultation avec le Comité d’accompagnement, visant à permettre à l’étudiant d’acquérir les fondements théoriques dans son domaine de recherche. L’étudiant devra soumettre un travail écrit aux membres du Comité d’accompagnement à la fin de la 3e session d’inscription (noté S/NS). / Directed readings program, chosen in consultation with the Thesis Committee, allowing the student to acquire the theoretical foundations in his field of research. Students must submit a paper to the members of their Thesis Committee at the end of the third session of registration (graded S/NS).

**DCL8330 LEGAL RESEARCH METHODOLOGY AND THEORY (3cr.)**
The course will examine epistemology and methodology issues arising in the field of legal research.

**DCL8730 MÉTHODOLOGIE ET THÉORIE DU DROIT (3cr.)**
Examen des questions épistémologiques et méthodologiques entourant la recherche en droit.

**DCL9997 PROJET DE THÈSE / THESIS PROPOSAL**
Examen au cours duquel l’étudiant expose, par écrit et oralement, son projet de thèse. L’étudiant doit soumettre une proposition de recherche, un plan détaillé ainsi qu’une bibliographie exhaustive. / The student presents, in writing and orally, his or her thesis proposal. The student must submit a research proposal, a detailed plan and a comprehensive bibliography.
DCL9988 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAM
Examen au cours duquel l’étudiant est évalué oralement sur ses connaissances des fondements dans son domaine de recherche. / During this examination the student will be assessed orally on his or her knowledge of legal foundations in his or her field of research.

DCL9999 THÈSE DE DOCTORAT / PhD THESIS

Lettres françaises (M.A.)
Le Département de français offre la maîtrise ès arts (avec mémoire et avec thèse) et le doctorat (Ph.D.) en lettres françaises. Le Département participe aux deux programmes pluridisciplinaires suivants : études des femmes (au niveau de la maîtrise) et études canadiennes (au niveau du doctorat) ce qui permet aux érudits d’acquérir une spécialisation dans l’un ou l’autre domaine. Les champs de recherche au niveau des études supérieures sont : création littéraire, littérature française (du Moyen Âge à nos jours) et littérature québécoise (des origines au XXIe siècle). Ce dernier champ comprend aussi la littérature canadienne-française (Acadie, Ontario, Ouest). Quant à la littérature francophone, elle se greffe au champ de la littérature française. Pour de plus amples renseignements, veuillez consulter le site Internet du Département de français.

Le programme de maîtrise est offert à temps plein ou à temps partiel.

Admission

Tout candidat doit détenir un baccalauréat avec spécialisation en Lettres françaises ou l'équivalent, obtenu avec une moyenne minimale de 70 % (B).

Le candidat à l'admission au champ en création littéraire doit en outre présenter un dossier de textes représentatifs de son écriture.

Dans certains cas, un candidat sera plutôt admis à un programme de propédeutique. Ce programme visera à donner la formation requise pour poursuivre des études de maîtrise en Lettres françaises. Ayant réussi ce programme en obtenant une moyenne de 70 % (B) ou plus, le candidat pourra demander son admission à la maîtrise.

Programme pluridisciplinaire en études des femmes au niveau de la maîtrise

Ce programme permet d'obtenir une maîtrise en Lettres françaises avec spécialisation en études des femmes

Maîtrise avec mémoire

La scolarité de la maîtrise avec mémoire comprend quatre séminaires en Lettres françaises, un atelier de méthodologie (FRA 5590) et deux cours en études des femmes (soit 21 crédits, l'atelier de méthodologie et chaque séminaire équivalent à 3 crédits).

Le mémoire doit porter sur un sujet littéraire, traité selon une perspective féministe.

Maîtrise avec thèse

La scolarité de la maîtrise avec thèse comprend trois séminaires en Lettres françaises, un atelier de méthodologie (FRA 5590) et deux cours en études des femmes (soit 18 crédits, l'atelier de méthodologie et chaque séminaire équivalent à 3 crédits).

La thèse doit porter sur un sujet littéraire, traité selon une perspective féministe.

Pour de plus amples renseignements, veuillez vous reporter à la section de l'annuaire de la Faculté des études supérieures et postdoctorales consacrée au programme pluridisciplinaire en études des femmes.

Program Requirements

Exigences de la maîtrise

1. Scolarité

1. La scolarité de la maîtrise avec thèse comprend 15 crédits : quatre séminaires et un atelier de méthodologie (FRA 5590), chaque séminaire équivalent à 3 crédits.
2. La scolarité de la maîtrise avec mémoire comprend 21 crédits : six séminaires et un atelier de méthodologie (FRA 5590), chaque séminaire équivalant à 3 crédits.

Les étudiants qui, au cours de leur baccalauréat, ont obtenu d'excellents résultats (M.P.C. 8,5) et qui, dans chacun des quatre séminaires de maîtrise, ont mérité la note de 85 % (A) ou plus peuvent demander la permission d'accéder directement au programme de doctorat.

L'adoption de cette voie d'accélération exige la recommandation expresse du Comité des études supérieures du Département. Le passage doit avoir lieu avant la fin du quatrième trimestre d'inscription au programme.

2. Thèse

L'étudiant à la maîtrise avec thèse doit faire approuver le choix de son directeur ainsi que son sujet de thèse avant de se réinscrire à son troisième trimestre d'études.

1. La thèse peut être de type traditionnel : travail de recherche selon des méthodes d'analyse et de synthèse critiques. Elle peut également être en création littéraire.

2. Dans le cas d'une thèse en création littéraire, celle-ci doit être le lieu d'une réflexion sur une pratique personnelle de la création littéraire. La thèse se compose donc de deux parties qui peuvent prendre des formes variées; ces parties sont d'égale importance mais non nécessairement de même longueur :
   - un texte de création littéraire inédit : poèmes, contes, nouvelles, roman, pièce de théâtre, essai;
   - une réflexion sur cette création : analyse personnelle des justifications théoriques, considérations esthétiques, problèmes techniques, formes et genres impliqués, etc.; cette analyse doit s'appuyer sur une bonne connaissance théorique de la question (étude des auteurs ayant traité de la création, de la théorie des genres, etc.)

Dans tous les cas, la thèse doit correspondre aux critères habituels: originalité, traitement adéquat du sujet, rigueur de la méthode ou de la technique, etc. La thèse de maîtrise sera d'une centaine de pages.

3. Mémoire

L'étudiant doit faire approuver le nom de son directeur ainsi que son sujet avant de se réinscrire à son troisième trimestre d'études. Le mémoire, d'une cinquantaine de pages, se prépare sous la responsabilité d'un professeur. Terminé, le mémoire sera approuvé par le professeur responsable, et noté par deux autres professeurs.

4. Limite de temps

On s'attend à ce que les étudiants à temps plein remplissent toutes les exigences dans une période de deux ans. Le délai maximum permis est de quatre ans à partir de la date initiale d’inscription au programme.

Courses

Tous les cours, à l'exception de FRA 7997, 7999, 8590, 9998, 9999, valent trois crédits.

Certains cours ne sont pas offerts chaque année.

Approches critiques
FRA5501 POÉTIQUE ET INTERTEXTUALITÉ (3cr.)
FRA5502 LECTURES FÉMINISTES (3cr.)
FRA5503 SOCIOCRITIQUE ET SOCIOLOGIE DE LA LITTÉRATURE (3cr.)
FRA5505 LITTÉRATURE ET PHILOSOPHIE (3cr.)
FRA5507 ENJEUX DE LA LITTÉRATURE (3cr.)
FRA5508 APPROCHES PHILOLOGIQUES DES TEXTES (3cr.)
FRA5560 ANALYSE DU DISCOURS (3cr.)
FRA5570 RHÉTORIQUE ET PRAGMATIQUE (3cr.)
FRA5590 ATELIER DE MÉTHODOLOGIE (3cr.)
FRA5760 TEXTOLOGIE ET CRITIQUE GÉNÉTIQUE (3cr.)
FRA5770 LITTÉRATURE COMPARÉE (3cr.)
FRA5790 LITTÉRATURE ET AUTRES ARTS (3cr.)
FRA6755 LECTURES POSTCOLONIALES (3cr.)

Siècles
FRA6701 LITTÉRATURE DU MOYEN ÂGE (3cr.)
FRA6702 LITTÉRATURE DE LA RENAISSANCE (3cr.)
FRA6703 LITTÉRATURE DU XVIIe SIÈCLE (3cr.)
FRA6704 LITTÉRATURE DU XVIIIe SIÈCLE (3cr.)
FRA6741 LITTÉRATURE DU XIXe SIÈCLE I (3cr.)
FRA7706 LITTÉRATURE DU XIXe SIÈCLE II (3cr.)
FRA6742 LITTÉRATURE DU XXe SIÈCLE I (3cr.)
FRA7705 LITTÉRATURE DU XXe SIÈCLE II (3cr.)
FRA7707 LITTÉRATURE DU XXe SIÈCLE III (3cr.)
FRA7745 LITTÉRATURE ACTUELLE (3cr.)

Genres
FRA5504 FRONTIÈRES DES GENRES (3cr.)
FRA5509 CRÉATION LITTÉRAIRE (3cr.)
FRA6751 ROMAN ET AUTRES GENRES NARRATIFS I (3cr.)
FRA7755 ROMAN ET AUTRES GENRES NARRATIFS II (3cr.)
FRA6752 POÉSIE I (3cr.)
FRA7756 POÉSIE II (3cr.)
FRA6753 THÉÂTRE I (3cr.)
FRA7757 THÉÂTRE II (3cr.)
FRA6754 ESSAI ET PROSE D'IDÉES (3cr.)
FRA7765 GENRES BREFS (3cr.)

Cotes générales
(réservées au programme de maîtrise)
FRA5590 ATELIER DE MÉTHODOLOGIE (3cr.)
FRA7997 MÉMOIRE
Linguistics (MA)

The Department of Linguistics offers graduate programs leading to the degrees of MA in linguistics and PhD in linguistics. It is possible, through the selection of relevant courses, to specialize in a variety of areas of linguistic research. These include the following: theoretical linguistics (phonetics, phonology, morphology, syntax, semantics), first and second language acquisition, psycholinguistics, neurolinguistics and sociolinguistics. Detailed information about the programs, for instance, the research areas of professors, course descriptions, and student advising arrangements is provided in the department's student handbook.

Admission

The BA with honours in linguistics (or the equivalent) is required for admission to the master's program.

Applicants to the master’s program whose BA with honours is in an area other than linguistics may be admitted to a qualifying program which will be established for each student, taking previous preparation into account. This program will comprise up to 30 credits to ensure coverage of all the major areas of linguistics. After the requirements of the qualifying program have been satisfactorily fulfilled, students may apply for admission to the regular master's program.

The M.A. in Linguistics (or the equivalent) is required for admission to the doctoral program.

Language Requirements

Candidates must have an adequate knowledge of both French and English, and they must be prepared to take courses in both languages.

Program Requirements

Master's Degree Requirements

Full-time students will normally be able to complete the master's in one year (three sessions).

1. Eighteen credits (six courses) at the graduate level to be chosen as follows:

   a) LIN 5915 Phonology I, LIN 5917 Syntax I, LIN 5918 Semantics I (9 credits)

   b) Three courses encompassing at least two of the following sub-areas: bilingualism, experimental phonetics, first language acquisition, historical linguistics, neurolinguistics, psycholinguistics, second language acquisition and sociolinguistics.

2. Research Paper

   Students must successfully complete a research paper of approximately 50 pages in length. Students will normally register for the research paper (LIN 7997) upon the completion of all courses. The research paper must be approved by two faculty members, one of whom also serves as the supervisor. The paper is graded S (satisfactory) or NS (not satisfactory).

Courses
LIN5902 TECHNIQUES DE LABORATOIRE : LOGICIELS, SIGNAUX ET STIMULI / LABORATORY TECHNIQUES: SOFTWARE, SIGNALS AND STIMULI (3cr.)

LIN5903 SOCIOLINGUISTIQUE I / SOCIOLINGUISTICS I (3cr.)

LIN5904 PSYCHOLINGUISTIQUE / PSYCHOLINGUISTICS (3cr.)

LIN5908 BILINGUISME / BILINGUALISM (3cr.)

LIN5909 HISTOIRE DE LA LINGUISTIQUE / HISTORY OF LINGUISTICS (3cr.)

LIN5910 DIALECTOLOGIE / DIALECTOLOGY (3cr.)

LIN5915 PHONOLOGIE I / PHONOLOGY I (3cr.)

LIN5916 THÉORIES DU LANGAGE / THEORIES OF LANGUAGE (3cr.)

LIN5917 SYNTAXE I / SYNTAX I (3cr.)

LIN5918 SÉMANTIQUE I / SEMANTICS I (3cr.)

LIN5919 LINGUISTIQUE HISTORIQUE / HISTORICAL LINGUISTICS (3cr.)

LIN5920 LINGUISTIQUE ET PHILOSOPHIE / LINGUISTICS AND PHILOSOPHY (3cr.)

LIN5921 RECHERCHE EN LINGUISTIQUE FRANÇAISE (3cr.)

LIN5922 RECHERCHE EN LINGUISTIQUE FRANCO-CANADIENNE (3cr.)

LIN5923 RESEARCH IN ENGLISH LINGUISTICS (3cr.)

LIN5924 RECHERCHE EN SOCIOLINGUISTIQUE / RESEARCH IN SOCIOLINGUISTICS (3cr.)

LIN5998 TRAVAUX PRATIQUES I / GUIDED RESEARCH I (3cr.)

LIN5999 TRAVAUX PRATIQUES II / GUIDED RESEARCH II (3cr.)

LIN6901 PHONÉTIQUE EXPÉRIMENTALE : LA PHYSIOLOGIE / EXPERIMENTAL PHONETICS: PHYSIOLOGY (3cr.)

LIN6902 PHONÉTIQUE EXPÉRIMENTALE : L'ACOUSTIQUE / EXPERIMENTAL PHONETICS: ACOUSTICS (3cr.)

LIN6915 PHONOLOGIE II / PHONOLOGY II (3cr.)
Préalable : LIN5915 ou l'équivalent / Prerequisite: LIN 5915 or equivalent.

LIN6917 SYNTAXE II / SYNTAX II (3cr.)
Préalable : LIN5917 ou l'équivalent / Prerequisite: LIN 5917 or equivalent.

LIN6918 SÉMANTIQUE II / SEMANTICS II (3cr.)
Préalable : LIN5918 ou l'équivalent / Prerequisite: LIN 5918 or equivalent.

LIN7903 LE "TESTING" / TEST CONSTRUCTION (3cr.)

LIN7910 SÉMINAIRE I / SEMINAR I (3cr.)

LIN7911 SÉMINAIRE II / SEMINAR II (3cr.)

LIN7912 SÉMINAIRE III / SEMINAR III (3cr.)

LIN7913 SÉMINAIRE IV / SEMINAR IV (3cr.)

LIN7919 ACQUISITION DE LA LANGUE MATERNELLE I / FIRST LANGUAGE ACQUISITION I (3cr.)

LIN7920 ACQUISITION DE LA LANGUE SECONDE I / SECOND LANGUAGE ACQUISITION I (3cr.)
**LIN7921 COURS DE PRATIQUE PSYCHOLINGUISTIQUE / PRACTICUM IN PSYCHOLINGUISTICS** (3cr.)

**LIN7922 RECHERCHE EN LINGUISTIQUE APPLIQUÉE / RESEARCH IN APPLIED LINGUISTICS** (3cr.)

**LIN7923 LINGUISTIQUE APPLIQUÉE À L’ENSEIGNEMENT DES LANGUES SECONDES / LINGUISTICS APPLIED TO SECOND LANGUAGE TEACHING** (3cr.)

**LIN7925 PROBLÈMES THÉORIQUES EN LINGUISTIQUE APPLIQUÉE / THEORETICAL ISSUES IN APPLIED LINGUISTICS** (3cr.)

**LIN7930 PROBLÈMES DE LINGUISTIQUE THÉORIQUE I / TOPICS IN THEORETICAL LINGUISTICS I** (3cr.)

**LIN7931 PROBLÈMES DE LINGUISTIQUE THÉORIQUE II / TOPICS IN THEORETICAL LINGUISTICS II** (3cr.)

**LIN7932 SÉMINAIRE EN LINGUISTIQUE THÉORIQUE I / SEMINAR IN THEORETICAL LINGUISTICS I** (3cr.)

**LIN7933 SÉMINAIRE EN LINGUISTIQUE THÉORIQUE II / SEMINAR IN THEORETICAL LINGUISTICS II** (3cr.)

**LIN7940 ACQUISITION DE LA LANGUE SECONDE II / SECOND LANGUAGE ACQUISITION II** (3cr.)

**LIN7941 PSYCHOLINGUISTIQUE II / PSYCHOLINGUISTICS II** (3cr.)

**LIN7942 SOCIOLINGUISTIQUE II / SOCIOLINGUISTICS II** (3cr.)

**LIN7943 NEUROLINGUISTIQUE / NEUROLINGUISTICS** (3cr.)

**LIN7950 PROBLÈMES DE LINGUISTIQUE APPLIQUÉE I / TOPICS IN APPLIED LINGUISTICS I** (3cr.)

**LIN7951 PROBLÈMES DE LINGUISTIQUE APPLIQUÉE II / TOPICS IN APPLIED LINGUISTICS II** (3cr.)

**LIN7952 SÉMINAIRE EN LINGUISTIQUE APPLIQUÉE I / SEMINAR IN APPLIED LINGUISTICS I** (3cr.)

**LIN7953 SÉMINAIRE EN LINGUISTIQUE APPLIQUÉE II / SEMINAR IN APPLIED LINGUISTICS II** (3cr.)

**LIN7997 MÉMOIRE DE MÂTRISE / M.A. RESEARCH PAPER**

**LIN8998 SÉMINAIRE DE DOCTORAT / DOCTORAL SEMINAR**

**LIN9998 EXAMEN DE CANDIDATURE DU DOCTORAT / PhD QUALIFYING EXAMINATION**

**LIN9999 RECHERCHE ET THÈSE DE DOCTORAT / PhD THESIS RESEARCH**

**Management (MSc)**

The Telfer School of Management offers a graduate program leading to the degree of Master of Science (MSc) in Management. The program is designed to train experts who can contribute to academic excellence and influence change in society by undertaking and disseminating rigorous academic, applied and policy research in management, particularly in the fields of innovation management and entrepreneurship. Students in the program may opt to complete a concentration in either one of these two fields. The concentration appears on the transcript. The program operates under the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS), accessible at www.grad.uOttawa.ca. It is offered in both English and French, primarily on a full-time basis.

**Admission**

Applicants who have a four-year undergraduate (honours) degree in management, in science, computer science, economics, social sciences or engineering, with the equivalent of the University of Ottawa “Minor in Administration” or “Engineering Management and Entrepreneurship Option” are eligible for admission to the MSc in Management program. To be considered, applicants must have at least a 75 per cent (B+) cumulative grade point average (CGPA), calculated in accordance with FGPS guidelines. Students lacking academic background in management may be required to complete prerequisite coursework as a condition of admission. The specific requirements of the qualifying program will be determined by the admissions committee based on the academic and professional profile of the applicant.

Applicants to the program must have achieved at least a 50th percentile score on either the GMAT (General Management Admission Test) or GRE (Graduate Record Examinations), and submit at least two letters of recommendation and a statement of research interest of between 800-
1000 words. The research statement is a letter of intent stating the applicant’s motivation for studying in the MSc in Management program, their commitment to conducting research, and outlining their preferred areas of research interest. Applicants should indicate whether or not they wish to complete one of the two concentrations and they are encouraged to identify a possible research supervisor as part of the application process.

Applicants who have successfully completed compulsory credits or their equivalents prior to admission will be granted an exemption, that is, they will be permitted, on the advice of their supervisor, to replace those credits with elective credits in the program. To be eligible for exemption, the credits must have been completed with a grade of 70 per cent (B) or better no more than five years prior to admission to the MSc. The maximum number of credits for which an exemption can be granted is six. No exemption will be given for the course MGT 5300 Foundations of Management Theory. The general regulations of the FGPS, section B 2.7, apply for transfer of credits.

Students are normally admitted to the Program on a full-time basis and are required to register full-time for at least three sessions. Applicants applying to be admitted on a part-time basis may be considered, provided they have demonstrated a clear commitment and plan for completing their degree requirements in a timely way.

Language Requirements

Applicants must be able to understand, speak and write either English or French fluently and they must indicate in their application the language in which they intend to take their courses. Those whose first language is neither English nor French are required, at the time of application, to provide evidence of proficiency in one of these languages. Applicants whose first language is not English and who intend to study in English are required to provide one of the following as evidence of proficiency in English (the test scores cannot be more than two years old as of September 1 of the year of potential entry into the program):

1. A score of at least 250 on the Test of English as a Foreign Language (TOEFL), with a score of at least 5 on the Test of Written English (TWE) and a score of at least 50 on the Test of Spoken English (TSE). The TOEFL is administered by Educational Testing Service, Box 899, Princeton, New Jersey, USA, 08540; see also www.ets.org

2. A score of at least 7 in at least three of the four International English Language Testing System (IELTS) tests (Reading, Listening, Writing, Speaking) and at least 6 in the fourth. The IELTS is administered by the British Council: www.ielts.org

3. A score of at least 14 on the CANTTEST, administered by the University of Ottawa, with no individual test score below 4.0, along with a score of 4.5 on the oral component of the test.

4. Proof of completion within the last five years, of a previous degree program in an English language university.

5. Proof of recent prolonged residence and exercise of a profession in an English speaking country (normally at least four years of the last six years).

Candidates applying to study in French must submit one of the following to confirm their French proficiency:

1. A score of at least 14 on the TESTCAN, administered by the University of Ottawa, with no individual test score below 4.0, along with a score of 4.5 on the oral component of the test.

2. Proof of completion, within the last five years, of a previous degree program in a French language university.

3. Proof of recent prolonged residence and exercise of a profession in a French-speaking country (normally at least four years over the last six years).

Considering the significant amount of management research that is published in English, particularly in the fields of innovation management and entrepreneurship, all applicants need the ability to read and understand written English; proof of this ability may be required.

Minimum Standards

The minimum passing grade in all courses taken as part of the program is 66 per cent (C+). Students who incur failures in two courses (equivalent to six credits) or whose thesis proposal is rejected twice (NS grade in MGT 6991) must withdraw.

Language of Instruction

All core courses and some of the electives are offered in both French and English. Some of the seminars in the Management Research Seminar Series will be delivered in English and some in French so that the requirement may be completed fully in either language. There are sufficient elective courses in both languages for students to complete the elective requirements in either French or English. As per University of Ottawa policy, students can complete major assignments, examinations and their thesis in either English or French. This also applies to the oral presentations given by the students in the Management Research Seminar Series. Opportunities exist for students to use French or English as a primary language of communication as they conduct their research.

Duration of Program

The program can be completed in six sessions or approximately 24 months, but may be completed more quickly. Students admitted full-time must register full-time for at least three sessions. The maximum time allowed for completion of the program is four years.

Program Requirements
Students must complete 30 credits consisting of 18 credits of coursework, comprised of 9 credits of core courses and 9 credits of elective courses, and 12 credits for a thesis. In addition, they must attend the Management Research Seminar Series (MGT 6991), and present their thesis proposal at one of the MRSS seminars (see point 3 below). Students who complete all three electives within one field and who complete a thesis in the same field will be awarded a concentration in that field.

1. Core Courses (9 credits)

MGIT5100 RESEARCH DESIGN METHODOLOGIES AND THE CONDUCT OF RESEARCH (3cr.)
MGIT5300 FOUNDATIONS OF MANAGEMENT (3cr.)
MGIT6991 SÉMINAIRES SUR LA RECHERCHE EN GESTION / MANAGEMENT RESEARCH SEMINAR SERIES

Either:

MGIT5101 MULTIVARIATE RESEARCH METHODS (3cr.)
OR
MGIT5102 QUALITATIVE RESEARCH METHODS (3cr.)

2. Electives

Students, in consultation with their thesis supervisor, select 9 credits from the list of elective courses in areas generally related to their chosen concentration and to their research topic.

Innovation Management

MGIT6160 SYSTEMS OF INNOVATION (3cr.)
MGIT6161 MANAGING CORPORATE INNOVATIONS (3cr.)
MGIT6169 RECENT TOPICS IN INNOVATION MANAGEMENT (3cr.)

Entrepreneurship Field

MGIT6110 ENTREPRENEURIAL PROCESS AND OPPORTUNITY RECOGNITION (3cr.)
MGIT6111 VENTURE CAPITAL AND PRIVATE EQUITY (3cr.)
MGIT6112 SOCIAL ENTREPRENEURSHIP (3cr.)

Other Courses

MGIT6190 RESEARCH TOPICS IN MANAGEMENT (3cr.)
MGIT6990 STAGE DE RECHERCHE / RESEARCH PRACTICUM (3cr.)
MGIT6998 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)

Students can register to at most 3 credits of directed readings. In addition to the above courses, relevant courses from the MHA, MBA, and EMP programs, or from other graduate programs at the University of Ottawa or at another university, could be taken with the approval of the thesis supervisor, the MSc in Management program director, and the appropriate program director in the case of courses in other academic units, faculties and institutions.

3. Management Research Seminar Series (MGT 6991)

Students must register continuously in MGT 6991 Management Research Seminar Series from the beginning of their program and must attend at least six seminars in the series. The notation “CTN” (for continuing activity) will be entered for each session until successful completion of the seminar requirements. The thesis supervisor, in the annual progress report of the student, will confirm attendance and active participation. Students must present and defend their thesis proposal at one of the seminars. A student whose proposal is not approved on the first attempt may be permitted to submit and present a second proposal. Failure to obtain approval following the second submission will result in a grade of NS and withdrawal from the MSc program.

4. MSc Thesis (12 credits)

MGIT7999 THÈSE DE M.Sc. / MSc THESIS (12cr.)

Students must submit to their thesis committee, before the end of the second session of registration in the program, a clearly defined research proposal that has been approved by their thesis supervisor. Program approval of the proposal must be obtained as part of the Management Research Seminar Series (see point 3 above).

The master's thesis should reveal that the candidate is able to work independently in a scholarly manner and is acquainted with the principal works published on the subject of the thesis. Insofar as possible, the thesis should be an original contribution. Theses will comprise theoretical and/or empirical research contributions applying a wide range of data collection methodologies, and modeling and analysis techniques based on appropriate software applications. Data collection methodologies will include the gathering of secondary data from published or archived sources, and/or primary data through interviews, surveys, and ethnographic studies. Topics for thesis research may include managements issues identified in the academic literature or real challenges faced by organizations or a combination of these.

Upon submission, the completed thesis is examined by a committee comprised of the thesis supervisor and at least two other professors who are members of the FGPS and approved by the MSc in Management program committee. For information regarding the thesis, consult section G of the General Regulations of the FGPS and the guide Preparing a thesis or a Research Paper, which are both accessible through the FGPS Web site at www.grad.uottawa.ca
Courses

MG5100 RESEARCH DESIGN METHODOLOGIES AND THE CONDUCT OF RESEARCH (3cr.)
Introduction to research and scientific inquiry in order to foster a better understanding of the research discovery process. Planning, designing, and conducting a research project; detailed discussion of the research methods and techniques available; selecting research methods and techniques appropriate for the nature of the problem and the objectives of the project. Exposure to various research methodologies including paradigms of social phenomena modeling, qualitative research, mathematical modeling methods, and experimental design approaches including randomized control trials (RCT) design principles.

MG5101 MULTIVARIATE RESEARCH METHODS (3cr.)
Analysis of the basic multivariate techniques that are often used in the social and life sciences in order to enable students to apply the correct technique to any given set of data, properly interpret the output of statistical computer packages, and understand and critique scientific papers that use these techniques. Topics will include principal components analysis, factor analysis, multivariate analysis of variance, multiple and logistic regression, log-linear analysis, and introduction to structural equation modeling.

MG5102 QUALITATIVE RESEARCH METHODS (3cr.)
Designing qualitative studies, collecting and analyzing qualitative data, attaining research credibility, and writing a qualitative research report. Topics will include the case study, ethnography, phenomenology and grounded theory. Introduction to the use of qualitative data analysis software (such as N-Vivo). Critical evaluation of qualitative studies.

MG5300 FOUNDATIONS OF MANAGEMENT (3cr.)
Primary focus on building a strong foundation of the theories and practice of management. Exposure to current research issues and scholarly literature in management. Relevance and application of the various theories to the fields of innovation and entrepreneurship.

MG5500 RECHERCHE ET MÉTHODOLOGIES DE RECHERCHE (3cr.)
Introduction à la recherche et aux travaux scientifiques afin de mieux comprendre la démarche propre aux travaux de recherche. Planification, conception et réalisation d’une étude, l’accent étant mis sur le processus de recherche, examen détaillé des méthodes et techniques de recherche pouvant être utilisées à chaque stade de la recherche tout en liant le choix de ces méthodes et techniques à la nature du problème et aux objectifs de l’étude. Présentation de méthodologies de recherche variées comprenant les paradigmes des sciences sociales pour la modélisation de phénomènes sociaux, les méthodes de recherche qualitatives, les méthodes de modélisation mathématique et la conception d’expériences incluant les principes de conception d’essais contrôlés et randomisés (ECR).

MG5501 MÉTHODES DE RECHERCHE MULTIDIMENSIONNELLES (3cr.)
Ce cours porte sur les diverses techniques multidimensionnelles de base qui sont souvent utilisées en sciences sociales et en sciences de la vie pour permettre à l’étudiant d’apporter la technique appropriée à un ensemble de données, d’interpréter correctement le produit des progiciels statistiques ainsi que de bien comprendre et analyser les rapports scientifiques qui utilisent ces techniques. Les sujets abordés comprennent notamment l’analyse en composantes principales, l’analyse factorielle, l’analyse multidimensionnelle de la variance, la régression multiple et logarithmique, l’analyse linéaire logarithmique et l’introduction à la modélisation par équation structurelle.

MG5502 MÉTHODES DE RECHERCHE QUALITATIVES (3cr.)
Conception de recherche qualitative, collecte et analyse de données qualitatives, crédibilité dans les travaux de recherche, rédaction de rapports de recherche qualitative. Les sujets abordés sont, entre autres, la phénoménologie, la théorie à base empirique, l’ethnographie et l’étude de cas; l’utilisation de progiciels statistiques permettant d’analyser des données qualitatives (comme N-Vivo); évaluation critique d’études qualitatives.

MG5700 THÉORIE DE LA GESTION (3cr.)

MG6110 ENTREPRENEURIAL PROCESS AND OPPORTUNITY RECOGNITION (3cr.)
Current state of research in entrepreneurship, synthesis of scholarly literature, identifying priorities for future research. Topics will include entrepreneurial processes, opportunity and the nature of exploitation, the emergence of new ventures, financing new ventures, entrepreneurship, economic growth and policy.

MG6111 VENTURE CAPITAL AND PRIVATE EQUITY (3cr.)
Role of venture capital and private equity in the enterprise development process and in the commercialization of innovation. Examination of the following: assembly and investment of early-stage risk capital; operation of venture capital firms’ equity and that of private firms; evaluation of investments; portfolio management; non-financial forms of value added provided by venture capital funds. Theory and practical exercises.

MG6112 SOCIAL ENTREPRENEURSHIP (3cr.)
Role of social entrepreneurs as change agents striving to create social value through entrepreneurship. Study of the emerging area of social entrepreneurship and
related areas where social and economic goals and means are combined. Introduction to the concepts, practices, opportunities, and challenges of social entrepreneurship and related areas. Frameworks and tools for operating effectively in areas of nontraditional entrepreneurship. Engagement of students in a joint learning process to create a deeper understanding of these changing fields.

**MGT6160 SYSTEMS OF INNOVATION (3cr.)**
Examination of the context in which firms and other organizations operate and of the nature and evolution of industries. Survey of research on the nature and evolution of national and regional systems of innovation, and on politically and geographically defined systems that influence the competitiveness of firms and the prosperity of citizens.

**MGT6161 MANAGING CORPORATE INNOVATIONS (3cr.)**
Strategies and practices of innovation at the corporate level. Topics will include innovation processes and practices, R&D (research and development) management, organizational contexts of innovation management; firm-level theories of innovation management and firm performance; relationships between resources, capabilities, knowledge and skills and innovation, and the nature and influence of inter-organizational relationships (e.g., alliances, joint ventures, acquisitions, networks, ecosystems, etc.) on firms' innovative capacity.

**MGT6169 RECENT TOPICS IN INNOVATION MANAGEMENT (3cr.)**
Seminar course focusing on specific emerging themes in innovation management. Current themes of interest include: commercialization of innovations; inter-organizational collaborations and relationships in innovation management; impact of globally distributed innovation systems on innovation management, innovation performance, and competitiveness.

**MGT6190 RESEARCH TOPICS IN MANAGEMENT (3cr.)**
Seminar course focusing on current research issues and topics in management. Topics may change from year to year.

**MGT6512 ENTREPRENEURIAT SOCIAL (3cr.)**
Les entrepreneurs sociaux sont des agents du changement qui s’efforcent de créer une valeur sociale par l’entrepreneuriat. Étude du nouveau domaine qu’est l’entrepreneuriat social et d’autres domaines connexes où les objectifs et les moyens sociaux et économiques s’entremêlent. Introduction aux concepts, pratiques, possibilités et défis propres à l’entrepreneuriat social et aux domaines qui s’y rattachent. Cadres et outils qui permettent de réussir dans des secteurs non traditionnels de l’entrepreneuriat. Participation des étudiants à une initiative d’apprentissage en commun pour leur permettre de mieux comprendre ces secteurs en évolution.

**MGT6560 SYSTÈMES D’INNOVATION (3cr.)**
Examen du contexte dans lequel entreprises et organismes exercent leurs activités et de la nature et de l’évolution des industries. Survol de la recherche sur la nature et l’évolution des systèmes d’innovation régionaux et nationaux, systèmes dont le cadre politique et géographique est bien défini et qui ont une incidence sur la compétitivité des entreprises et la prospérité des citoyens.

**MGT6590 SUJETS DE RECHERCHE EN GESTION (3cr.)**
Ce cours donné sous forme de séminaire porte sur des questions et des sujets de recherche d’actualité dans le domaine de la gestion. Les sujets traités dans ce cours peuvent changer d’année en année.

**MGT6990 STAGE DE RECHERCHE / RESEARCH PRACTICUM (3cr.)**
Ce stage s’adresse aux étudiants qui désirent effectuer un projet de recherche auprès d’un organisme comme une entreprise, un ministère ou organisme public, une association à but non lucratif, un groupe de réflexion ou un établissement de recherche. Il a pour but de donner aux étudiants intéressés l’occasion d’appliquer les compétences en recherche acquises dans le cadre de ce programme. Ce stage oblige les étudiants à effectuer au cours d’une session des activités de recherche et à rédiger un rapport individuellement ou au sein d’une équipe, selon les besoins de l’organisme et l’étendue du projet. Préalable : L’inscription au stage doit être approuvée par le directeur du programme. Noté S (satisfaisant) ou NS (non satisfaisant). / Completion of a research project with an organization such as a company, a government department or agency, a non-profit organization, a think-tank, and other research institutions. Application of research skills acquired during the program. Practicum to be completed over one session, either individually or within a small group of students, depending on the needs of the particular organization and the scope of the project. Written paper required. Prerequisite: approval by the program director. Graded S (Satisfactory) or NS (Not Satisfactory).

**MGT6991 SÉMINAIRES SUR LA RECHERCHE EN GESTION / MANAGEMENT RESEARCH SEMINAR SERIES**
Cette activité comprend deux types de séminaires de recherche : ceux donnés par des conférenciers invités et ceux animés par des étudiants qui présenteront leurs projets de thèse. Les étudiants doivent assister à au moins six des séminaires donnés par des conférenciers invités pendant toute la durée du programme d’études. Les projets de thèse et résultats préliminaires des recherches des étudiants sont normalement présentés lors de la session du printemps (session III) ou celle d’automne (session IV). Noté S (satisfaisant) ou NS (non satisfaisant). / Research seminar series with some invited speakers and some consisting of student presentations of their thesis proposals. Students are expected to attend at least six of the invited speakers’ seminars over the duration of their program. Students are normally expected to present their proposal and preliminary research results in the spring (session III) or fall (session IV) of the Management Research Seminar Series. Graded S (Satisfactory) or NS (Not Satisfactory).

**MGT6998 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)**
Études avancées dans un domaine de gestion sous la direction d’un professeur et aboutissant à un rapport écrit. L’étudiant peut proposer un sujet de recherche. Préalable : approbation du directeur du programme sur recommandation du directeur de thèse de l’étudiant. / Advanced study in an area of management under the supervision of a professor and leading to a major written report. Students may propose research topics. Prerequisite: approval by the program director on the recommendation of the student’s thesis supervisor.
Mathematics and Statistics (MSc)

Ottawa-Carleton Joint Program

Established in 1984, the Ottawa-Carleton Institute of Mathematics and Statistics (OCIMS) combines the research strengths of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Mathematics and Statistics.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in three main research fields: pure mathematics; applied mathematics; probability and statistics. Additional information is posted in the departmental website.

The Institute is a participating unit in the following collaborative programs: the Bioinformatics program (at the master’s level) and the Biostatistics program (at the master’s level).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The program operates within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the General Regulations of the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the
University of Ottawa, which are posted on the FGPS website.

**Admission**

Admission to the graduate program in mathematics and statistics is governed by the General Regulations of the Ottawa-Carleton Institute of Mathematics and Statistics (OCIIMS) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a bachelor's degree with a specialization or a major in mathematics and statistics (or equivalent) with a minimum average of 75% (B+);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

**Collaborative Programs**

The Department of Mathematics and Statistics is a participating unit in the collaborative programs in Bioinformatics and in Biostatistics. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, see the description of the program posted on the FGPS website.

**Program Requirements**

**A- Master's degree with thesis**

1. 12 credits at the 5000 level or more in mathematics or in other related disciplines approved by the Department of Mathematics and Statistics;
2. Presentation and defense of a thesis (MAT7999) based on an original research carried out under the direct supervision of a faculty member of the Department.

**B- Master's degree with project**

1. 18 credits at the 5000 level or more in mathematics or in other related disciplines approved by the Department of Mathematics and Statistics;
2. Project (MAT6997).

**C- Master's degree by coursework**

- 24 credits at the 5000 level or above in mathematics or in related disciplines approved by the Department of Mathematics and Statistics.

**Residence**

All students must complete a minimum of three sessions of full-time registration.

**Minimum Standards**

The passing grade in all courses is B. Students who fail two courses (equivalent to 6 credits), or the thesis proposal, or whose progress is deemed unsatisfactory are required to withdraw.

**Duration of the program**

The requirements of the program are usually fulfilled within two years. The maximum time permitted is four years from the date of initial registration.

**Transfer from Master’s to PhD Program**

Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional
Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d’Ottawa correspond à un cours de 0,5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

MAT5105 (MATH5817) DISCRETE APPLIED MATHEMATICS I: GRAPH THEORY (3cr.)
Paths and cycles, trees, connectivity, Euler tours and Hamilton cycles, edge colouring, independent sets and cliques, vertex colouring, planar graphs, directed graphs. Selected topics from one or more of the following areas: algebraic graph theory, topological theory, random graphs.

MAT5106 (MATH5808) COMBINATORIAL OPTIMIZATION (3cr.)
Network flow theory and related material. Topics will include shortest paths, minimum spanning trees, maximum flows, minimum cost flows. Optimal matching in bipartite graphs.

MAT5107 (MATH 5819) DISCRETE APPLIED MATHEMATICS II: COMBINATORIAL ENUMERATION (3cr.)
Ordinary and exponential generating functions; product formulas; permutations; partitions; rooted trees; cycle index; WZ method. Lagrange Inversions; singularity analysis of generating functions and asymptotics. Selected topics from one or more of the following areas: random graphs, random combinatorial structures, hypergeometric functions.

MAT5121 (MATH 5009) INTRODUCTION TO HILBERT SPACE (3cr.)

MAT5122 (MATH 5003) BANACH ALGEBRAS (3cr.)

MAT5125 (MATH 5007) REAL ANALYSIS I (Measure theory and integration) (3cr.)
General measure and integral, Lebesgue measure and integration on R, Fubini's theorem, Lebesgue-Radon-Nikodym theorem, absolute continuity and differentiation, Lp-Spaces. Selected topics such as: Daniell-Stone theory. Prerequisite(s): Permission of the Program Director.

MAT5126 (MATH 5008) REAL ANALYSIS II (Functional analysis) (3cr.)

MAT5127 (MATH 5005) COMPLEX ANALYSIS (3cr.)

MAT5131 (MATH 5405) ORDINARY DIFFERENTIAL EQUATIONS (3cr.)

MAT5133 (MATH 5406) PARTIAL DIFFERENTIAL EQUATIONS (3cr.)
First-order equations, characteristics method, classification of second-order equations, separation of variables, Green's functions. Lp and Sobolev spaces, distributions, variational formulation and weak solutions, Lax-Milgram theorem, Galerkin approximation, Parabolic PDes. Wave equations, hyperbolic systems, nonlinear PDes, reaction diffusion equations, infinite-dimensional dynamical systems, regularity. Prerequisite: An intermediate level course on Ordinary Differential Equations such as MAT3130 Dynamical Systems or equivalent, or the permission of the School or Department.

MAT5134 (MATH 5407) TOPICS IN DIFFERENTIAL EQUATIONS (3cr.)

MAT5141 (MATH 5107) ALGEBRA I (3cr.)
Groups, Sylow subgroups, finitely generated abelian groups. Rings, field of fractions, principal ideal domains, modules. Polynomial algebra, Euclidean algorithm,
MAT5142 (MATH 5109) ALGEBRA II (3cr.)
Field theory, algebraic and transcendental extensions, finite fields, Galois groups. Modules over principal ideal domains, decomposition of a linear transformation, Jordan normal form. Prerequisite: MAT 5141 (MATH 5107).

MAT5143 (MATH 5104) LIE ALGEBRAS (3cr.)

MAT5145 (MATH 5106) GROUP THEORY (3cr.)

MAT5146 (MATH 5103) RINGS AND MODULES (3cr.)

MAT5147 (MATH 5108) HOMOLOGICAL ALGEBRA AND CATEGORY THEORY (3cr.)

MAT5148 (MATH 5102) GROUP REPRESENTATIONS AND APPLICATIONS (3cr.)

MAT5150 (MATH 5201) TOPICS IN GEOMETRY (3cr.)

MAT5151 (MATH 5205) TOPOLOGY I (3cr.)
Topological spaces, product and identification topologies, countability and separation axioms, compactness, connectedness, homotopy, fundamental group, net and filter convergence. Prerequisite: MAT 3153 (MATH 3001).

MAT5152 (MATH 5206) TOPOLOGY II (3cr.)
Covering spaces, homology via the Eilenberg-Steenrod axioms, applications, construction of a homology functor. Prerequisites: MAT 3143 and MAT 5151 (MATH 3100 and MATH 5205).

MAT5155 (MATH 5208) DIFFERENTIABLE MANIFOLDS (3cr.)

MAT5158 (MATH 6104) LIE GROUPS (3cr.)

MAT5160 (MATH 5300) MATHEMATICAL CRYPTOGRAPHY (3cr.)
Analysis of cryptographic methods used in authentication and data protection, with particular attention to the underlying mathematics, e.g. Algebraic Geometry, Number Theory, and Finite Fields. Advanced topics on Public-Key Cryptography: RSA and integer factorization, Diffie-Hellman, discrete logarithms, elliptic curves. Topics in current research. Prerequisites: undergraduate honours algebra, including group theory and finite fields.

MAT5161 (MATH 5301) MATHEMATICAL LOGIC (3cr.)
A basic graduate course in mathematical logic. Propositional and Predicate logic, Proof theory, Gentzen's Cut-Elimination, Completeness, Compactness, Henkin models, model theory, arithmetic and undecidability. Special Topics (time permitting) depending on interests of instructor and audience. Prerequisites: honours undergraduate algebra, analysis and topology (or permission of the instructor).

MAT5162 (MATH 6807) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE (3cr.)
Foundations of functional languages, lambda calculi (typed, polymorphically typed, untyped), Curry-Howard Isomorphism, proofs-as-programs, normalization and rewriting theory, operational semantics, type assignment, introduction to denotational semantics of programs, fixed-point programming. Topics chosen from: denotational semantics for lambda calculi, models of programming languages, complexity theory and logic of computation, models of concurrent and distributed systems, etc. Prerequisites: honours undergraduate algebra and either topology or analysis. Some acquaintance with Logic useful.

MAT5163 (MATH 5305) ANALYTIC NUMBER THEORY (3cr.)

MAT5164 (MATH 5306) ALGEBRAIC NUMBER THEORY (3cr.)

MAT5165 (MATH 5605) THEORY OF AUTOMATA (3cr.)

MAT5167 (MATH/COMP 5807) FORMAL LANGUAGE AND SYNTAX ANALYSIS (3cr.)

MAT5168 (MATH 5202) HOMOLOGY THEORY (3cr.)

MAT5169 (MATH 5207) FOUNDATIONS OF GEOMETRY (3cr.)

MAT5170 (STAT 5708) PROBABILITY THEORY I (3cr.)
Probability spaces, random variables, expected values as integrals, joint distributions, independence and product measures, cumulative distribution functions and extensions of probability measures, Borel-Cantelli lemmas, convergence concepts, independent identically distributed sequences of random variables. Prerequisites: Permission of Program Director.

MAT5171 (MATH 5709) PROBABILITY THEORY II (3cr.)
Laws of large numbers, characteristic functions, central limit theorem, conditional probabilities and expectation, basic properties and convergence theorems for martingales, introduction to Brownian motion. Prerequisite: MAT 5170 (STAT 5708).

MAT5172 (STAT 5508) TOPICS IN STOCHASTIC PROCESSES (3cr.)
Brownian motion, continuous martingales and stochastic integration.

MAT5174 (STAT 5704) NETWORK PERFORMANCE (3cr.)
The course will focus on advanced techniques in performance evaluation of large complex networks. Topic may include classical queueing theory and simulation analysis; models of packet networks; loss and delay systems; blocking probabilities. Prerequisites: Some familiarity with probability and stochastic processes and queueing, or permission of the instructor.

MAT5175 (STAT 5506) ROBUST STATISTICAL INference (3cr.)
Pure significance tests; uniformly most powerful unbiased and invariant tests; asymptotic comparison of tests; confidence intervals; large sample theory of likelihood ratio and chi-square tests; likelihood inference; Bayesian inference. Topics such as empirical Bayes inference, fiducial and structural inference, resampling methods. Prerequisites: MAT 4170 or equivalent and MAT 5191.

MAT5177 (STAT 5500) MULTIVARIATE NORMAL THEORY (3cr.)
Asymptotic methods of applied mathematics (3cr.)

MAT5180 (MATH 5806) NUMERICAL ANALYSIS FOR DIFFERENTIAL EQUATIONS (3cr.)

MAT5182 (STAT 5702) MODERN APPLIED / COMPUTATIONAL STATISTICS (3cr.)
Sampling and computer intensive methods: bootstrap, jackknife with applications to bias estimation, variance estimation, confidence intervals, and regression analysis. Smoothing methods in curve estimation; Statistical classification and pattern recognition: error counting methods, optimal classifiers, bootstrap estimates of the bias of the misclassification error.

MAT5185 (MATH 5408) ASYMPTOTIC METHODS OF APPLIED MATHEMATICS (3cr.)
Asymptotic methods of applied mathematics (3cr.)
Asymptotic methods of applied mathematics (3cr.)

MAT5190 (STAT 5500) MATHEMATICAL STATISTICS I (3cr.)
Statistical decision theory; likelihood functions; sufficiency; factorization theorem; exponential families; UMVU estimators; Fisher's information; Cramer-Rao lower bound; maximum likelihood and moment estimation; invariant and robust point estimation; asymptotic properties; Bayesian point estimation. Prerequisites: MAT 3172 and MAT 3375.

MAT5191 (STAT 5501) MATHEMATICAL STATISTICS II (3cr.)
Confidence intervals and pivotal; Bayesian intervals; optimal tests and Neyman-Pearson theory; likelihood ratio and score tests; significance tests; goodness-of-fit tests; large sample theory and applications to maximum likelihood and robust estimation. Prerequisite: MAT 5190.

MAT5192 (STAT 5502) SAMPLING THEORY AND METHODS (3cr.)
Unequal probability sampling with and without replacement; unified theory of standard errors; prediction approach; ratio and regression estimation; stratification and optimal designs; multistage cluster sampling; double sampling; domains of study; post-stratification; non-response; measurement errors. Related topics. Prerequisite: (MATH 4502).

MAT5193 (STAT 5503) LINEAR MODELS (3cr.)
Theory of non-full-rank linear models: estimable functions, best linear unbiased estimators, hypothesis testing, confidence regions; multi-way classification; analysis of covariance; variance component models: maximum likelihood estimation, MINQUE, ANOVA methods. Miscellaneous topics. Prerequisite: MAT 4175 (MATH 4500) or MAT 5190 (STAT 5600).

MAT5194 (STAT 5504) STOCHASTIC PROCESSES AND TIME SERIES ANALYSIS (3cr.)
The Department of Music offers the Master of Music (MMus) and the MA in Music. There are two streams, one leading to performance, the other to music and teaching. The MA in Music is designed for music educators who wish to pursue a career in music education, while the MMus degree offers a more rigorous study of performance and research. Candidates who hold an honours bachelor's degree (or equivalent) with the required average in a discipline other than Mission Studies and related fields are eligible to apply. To those already initiated into this intercultural, interreligious and missionary reflection, this graduate program offers the opportunity of further research.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MUS5900</td>
<td>Seminar in Research Interdisciplinary/Interdisciplinary Research Seminar</td>
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<tr>
<td>MAT5195</td>
<td>Design of Experiments</td>
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<td>MAT5196</td>
<td>Multivariate Analysis</td>
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<td>MAT5197</td>
<td>Stochastic Optimization</td>
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<tr>
<td>MAT5198</td>
<td>Stochastic Models</td>
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<td>MAT5301</td>
<td>Topics in Combinatorial Mathematics</td>
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<td>MAT5303</td>
<td>Linear Optimization</td>
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<td>MAT5304</td>
<td>Nonlinear Optimization</td>
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<td>MAT5307</td>
<td>Topics in Operations Research</td>
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<td>MAT5308</td>
<td>Topics in Algorithm Design</td>
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<td>MAT5309</td>
<td>Harmonic Analysis on Groups</td>
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<td>MAT5312</td>
<td>Topics in Topology</td>
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<td>MAT5313</td>
<td>Topics in Probability and Statistics</td>
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<td>MAT5314</td>
<td>Topics in Probability and Statistics</td>
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<td>MAT5315</td>
<td>Advanced Design of Surveys</td>
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<td>MAT5317</td>
<td>Analysis of Categorical Data</td>
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<td>MAT5318</td>
<td>Reliability and Survival Analysis</td>
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<td>MAT5319</td>
<td>Topics in Probability and Statistics</td>
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<td>MAT5324</td>
<td>Game Theory</td>
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<td>MAT5325</td>
<td>Topics in Information and Systems Science</td>
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<td>MAT5326</td>
<td>Topics in Analysis</td>
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<td>MAT5327</td>
<td>Topics in Algebra</td>
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<td>MAT5330</td>
<td>Topics in Algebra</td>
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<td>MAT5331</td>
<td>Topics in Algebra</td>
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<tr>
<td>MAT5341</td>
<td>Quantum Computing</td>
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To be offered alternate years subject to sufficient demand.

**Program Requirements**

The courses covered in the following sections are designed to provide a comprehensive understanding of specific areas in music and music education. The Program Requirements include a selection of courses within the Department of Music and跨学科课程, providing a foundation for advanced research and professional development. The courses are designed to develop skills in analysis, composition, and performance, as well as critical thinking and research methods. The choice of elective credits is subject to the approval of the thesis supervisor. The program culminates in the writing of an in-depth report (approx. 30-40 pages) and examination by the thesis supervisor and another professor.
MAT5343 MATHEMATICAL ASPECTS OF WAVELETS AND DIGITAL SIGNAL PROCESSING (3cr.)
Lossless compression methods. Discrete Fourier transform and Fourier-based compression methods. JPEG and MPEG. Wavelet analysis. Digital filters and discrete wavelet transform. Daubechies wavelets. Wavelet compression. Prerequisites: Linear algebra and Fourier series, or permission of the School or Department.

MAT5361 (MATH 6806) TOPICS IN MATHEMATICAL LOGIC (3cr.)

MAT5375 (STAT 5610) MATHEMATICAL STATISTICS (3cr.)
Limit theorems; sampling distributions; parametric estimation; concepts of sufficiency and efficiency; Neyman-Pearson paradigm, likelihood ratio tests; parametric and non-parametric methods for two-sample comparisons; notions of experimental design, categorical data analysis, the general linear model, decision theory and Bayesian inference. Prerequisites: MAT2121, (MAT2141 or MAT2342), MAT2375. Exclusion: Students in the MSc program cannot combine this course with MAT5190 (STAT5600) for credit towards the master's program.

MAT5505 (MATH 5817) MATHEMATIQUES DISCRÊTES APPLIQUÉES I : THÉORIES DES GRAPHES (3cr.)

MAT5506 (MATH 5818) OPTIMISATION COMBINATOIRE (3cr.)
Théorie des flots et thèmes voisins. On traitera parmi d'autres les sujets suivants : chemins minimaux, arbres générateurs de coût minimal, flots de coût maximal, flots de coût minimal. Couplage optimal dans les graphes bipartis.

MAT5507 (MATH 5819) MATHEMATIQUES DISCRÊTES APPLIQUÉES II : ÉNUMÉRATION COMBINATOIRE
Fonctions génératrices ordinaires et exponentielles; formules de produit; permutations; partitions; arborescences; indice de cycle; méthode WZ. Inversion de Lagrange; analyse des singularités des fonctions génératrices et leur comportement asymptotique. Sujets choisis parmi les thèmes suivants : graphes aléatoires, structures combinatoires aléatoires, fonctions hypergéométriques.

MAT5521 (MATH 5009) INTRODUCTION AUX ESPACES HILBERTIENS (3cr.)

MAT5522 (MATH 5003) ALGÈBRES DE BANACH (3cr.)

MAT5525 (MATH 5007) ANALYSE RÉELLE I (Théorie des mesures et intégration) (3cr.)

MAT5526 (MATH 5008) ANALYSE RÉELLE II (Analyse fonctionnelle) (3cr.)
Espaces de Banach et de Hilbert, opérateurs linéaires bornés, espaces duals. Chapitres choisis parmi les suivants : topologies faibles, théorème d'Alaoglu, opérateurs compacts, calcul différentiel dans les espaces de Banach, théorèmes de représentation de Riesz. Préalable : MAT 5525 (MATH 5007).

MAT5527 (MATH 5005) ANALYSE COMPLEXE (3cr.)

MAT5531 (MATH 5405) ÉQUATIONS DIFFÉRENTIELLES ORDINAIRES (3cr.)

MAT5533 (MATH 5406) ÉQUATIONS AUX DÉRIVÉES PARTIELLES (3cr.)

MAT5534 (MATH 5407) ÉQUATIONS DIFFÉRENTIELLES : CHAPITRES CHOISIS (3cr.)

MAT5541 (MATH 5107) ALGÈBRE I (3cr.)

MAT5542 (MATH 5109) ALGÈBRE II (3cr.)

MAT5543 (MATH 5104) ALGÈBRES DE LIE (3cr.)

MAT5545 (MATH 5106) THÉORIE DES GROUPES (3cr.)

MAT5546 (MATH 5103) ANNEAUX ET MODULES (3cr.)

MAT5547 (MATH 5108) ALGÈBRE HOMOLOGIQUE ET THÉORIE DES CATÉGORIES (3cr.)

MAT5548 (MATH 5102) REPRÉSENTATION DE GROUPES : APPLICATIONS (3cr.)
MAT5551 (MATH 5205) TOPOLOGIE I (3cr.)
Espaces topologiques; topologie produit et topologie quotient; axiomes de dénombrabilité et axiomes de séparation; espaces compacts, connexes; homotopie, groupe fondamental; convergence des filtres et des suites généralisées. Préalable(s) : MAT 3553 (MATH 3001).

MAT5552 (MATH 5206) TOPOLOGIE II (3cr.)
Revêtements, homologie (axiomes d'Eilenberg-Steenrod), applications, construction d'une théorie de l'homologie. Préalables : MAT 3543 et MAT 5551 (MATH 3100 et MATH 5205).

MAT5555 (MATH 5208) VARIÉTÉS DIFFÉRENTIELLES (3cr.)

MAT5558 (MATH 6104) GROUPE DE LIE (3cr.)

MAT5565 (MATH 5605) THÉORIE DES AUTOMATES (3cr.)

MAT5567 (MATH/COMP 5807) LANGUAGES FORMELS ET ANALYSE SYNTACTIQUE (3cr.)

MAT5568 (MATH 5202) HOMOLOGIE (3cr.)

MAT5570 (STAT 5708) THÉORIE DES PROBABILITÉS I (3cr.)
Espaces probabilisés, variables aléatoires, l'espoirance mathématique définie comme une intégrale, lois conjointes, indépendance et mesure produit, répartitions et extensions de mesures de probabilité, lemmes de Borel-Cantelli, notions de convergence, suites de variables aléatoires indépendantes et équidistribuées. Préalables : MAT 3525 et MAT 3572 (MATH 3001, MATH 3002 et MATH 3500).

MAT5571 (STAT 5709) THÉORIE DES PROBABILITÉS II (3cr.)
Lois des grands nombres, fonctions caractéristiques, théorème-limite central, probabilité et espérance conditionnelles, propriétés élémentaires et théorèmes de convergence des martingales, introduction au mouvement brownien. Préalable : MAT 5570 (STAT 5708).

MAT5572 (STAT 5508) PROCESSUS STOCHASTIQUES : CHAPITRES CHOISIS (3cr.)

MAT5576 (STAT 5507) INFÉRENCE STATISTIQUE AVANCÉE (3cr.)
Tests de signification pure; tests uniformément les plus puissants sans biais et sans variance; comparaison asymptotique des tests; intervalles de confiance; théorie des grands échantillons et tests du carré chi; inférence de la vraisemblance; inférence de Bayes; inférence empirique de Bayes; induction fiduciaire et structurale; méthodes de répétition de l'échantillonnage. Préalables : MAT 4170 ou l'équivalent, et MAT 5191.

MAT5577 (STAT 5500) ANALYSE MULTIVARIÉE NORMALE (3cr.)

MAT5580 (MATH 5806) ANALYSE NUMÉRIQUE POUR LES ÉQUATIONS DIFFÉRENTIELLES (3cr.)
Arithmétique des nombres à virgule flottante; solution numérique des équations différentielles ordinaires; méthode des différences finies pour les équations aux dérivées partielles; stabilité, consistance et convergence; analyse de von Neumann, condition de Courant-Friedrichs-Lewy, théorème de Lax; méthode des éléments finis : problèmes aux limites et équations aux dérivées partielles elliptiques; méthodes Spectrale et Pseudo-Spectrale. Préalables : MAT2724 et MATH3708.

MAT5591 (STAT 5501) INFÉRENCE STATISTIQUE (3cr.)

MAT5593 (STAT 5503) MODÈLES LINÉAIRES (3cr.)
Théorie des modèles linéaires des rangs non-exhaustifs : fonctions estimables, meilleurs estimateurs linéaires sans biais, vérification des hypothèses, régions de confiance; classification multidimensionnelle; analyse de la covariance; modèles de composantes de variance; méthode du maximum de vraisemblance; méthode MINQUE, ANOVA; sujets divers. Préalable : MAT 4175 (MATH 4500 ou STAT 5600).

MAT5595 (STAT 5505) PLAN D'EXPÉRIENCES (3cr.)
Aperçu de la théorie du modèle linéaire; orthogonalité; blocs complets avec randomisation totale, plans split plot; plans de carré latin; théorie du caractère aléatoire; plans de blocs incomplets; expériences factorielles; la théorie de la randomisation; les effets confondus et la replication fractionnelle; méthodologie de la surface de réponse; sujets divers. Préalables : MAT 3375 et MAT 3376 (STAT 3305, STAT 4500 et STAT 5600).

MAT5596 (STAT 5509) ANALYSE MULTIVARIÉE (3cr.)
Cours visant à donner à l'étudiant la possibilité d'entreprendre de la recherche mathématique dans le contexte d'un projet en collaboration avec un organisme parallèlement des secteurs public ou privé. Inclut des séminaires sur des sujets pertinents au projet de l'étudiant. Note finale (S satisfaisant) ou NS (non satisfaisant) décidée par le professeur responsable du cours en consultation avec le superviseur du stage, fondée sur le contenu mathématique et sur la présentation orale et écrite des résultats. / Project-oriented course affording students the opportunity to undertake research in applied mathematics as a cooperative project with governmental or industrial sponsors. Project work and seminars on related topics. Grade (S (Satisfactory) or NS(Non-satisfactory)) to be assigned based upon the mathematical content as well as upon the oral and written presentation of results, and to be determined by the professor in charge of the course in consultation with the internship supervisor.
MAT5597 (STAT 5601) OPTIMISATION STOCHASTIQUE (3cr.)

MAT5598 (MATH 5701) MODÈLES STOCHASTIQUES (3cr.)

MAT5709 (MATH 6002) ANALYSE HARMONIQUE SUR LES GROUPES (3cr.)

MAT5712 (MATH 6201) TOPOLOGIE : CHAPITRES CHOISIS (3cr.)

MAT5713 (MATH 6507) THÉORIE DES PROBABILITÉS ET STATISTIQUE : CHAPITRES CHOISIS (3cr.)

MAT5714 (MATH 6508) THÉORIE DES PROBABILITÉS ET STATISTIQUE : CHAPITRES CHOISIS (3cr.)

MAT5715 PLANIFICATION DES SONDAGES (3cr.)

MAT5719 (MATH 6507) THÉORIE DES PROBABILITÉS ET STATISTIQUE : CHAPITRES CHOISIS

MAT5726 (MATH 6008) ANALYSE : CHAPITRES CHOISIS (3cr.)

MAT5727 (MATH 6101) ALGÈBRE : CHAPITRES CHOISIS (3cr.)

MAT5728 (MATH 6008) ANALYSE : CHAPITRES CHOISIS (3cr.)

MAT5729 (MATH 6009) ANALYSE : CHAPITRES CHOISIS (3cr.)

MAT5730 (MATH 6102) ALGÈBRE : CHAPITRES CHOISIS (3cr.)

MAT5731 (MATH 6103) ALGÈBRE : CHAPITRES CHOISIS (3cr.)

MAT5761 (MATH 6806) LOGIQUE MATHEMATIQUE : CHAPITRES CHOISIS (3cr.)

MAT5775 STATISTIQUES EN MATHEMATIQUES (3cr.)

L'inference statistique; distributions des statistiques classiques et les théorèmes central limites qui s'y rapportent; estimation paramétrique; statistique suffisante; estimateur efficace; paradigme Neyman-Pearson, tests de rapport de vraisemblance; méthodes paramétrique et non paramétrique pour la comparaison de deux échantillons; planification des expériences, analyse des données catégoriques, modèles linéaires généralisés, théorie de la décision et inférence Baysienne.

Préalables: MAT2521, (MAT2541 ou MAT2742), MAT2775. Exclusion : les cours MAT5775 et MAT5190 (STAT5600) sont mutuellement exclusifs pour les étudiants inscrits au programme de maîtrise en mathématiques et statistique.

MAT5990 (MATH 5900) SÉMINAIRE / SEMINAR (3cr.)

MAT5991 (MATH 5901) TRAVAUX DIRIGÉS / DIRECTED STUDIES (3cr.)

MAT5996 (MATH 5906) STAGE DE RECHERCHE / RESEARCH INTERNSHIP (3cr.)

Cours visant à donner à l'étudiant la possibilité d'entreprendre de la recherche mathématique dans le contexte d'un projet en collaboration avec un organisme parrain des secteurs public ou privé. Inclut des séminaires sur des sujets pertinents au projet de l'étudiant. Note finale S (satisfaisant) ou NS (non satisfaisant), à décider par le professeur responsable du cours en consultation avec le superviseur du stage, fondée sur le contenu mathématique et sur la présentation orale et écrite des résultats. Préalable : Permission de l'Institut. / Project-oriented course affording students the opportunity to undertake research in applied mathematics as a cooperative project with governmental or industrial sponsors. Project work and seminars on related topics. Grade S (satisfactory) or NS (not satisfactory) to be assigned based upon the mathematical content as well as upon the oral and written presentation of results, and to be determined by the professor in charge of the course in consultation with the internship supervisor. Prerequisite: Permission of the Institute.

MAT6990 (MATH 6900) SÉMINAIRE / SEMINAR (3cr.)

MAT6991 (MATH 6901) TRAVAUX DIRIGÉS / DIRECTED STUDIES (3cr.)

MAT6997 (MATH5910) PROJET EN MATHEMATIQUES ET STATISTIQUE / PROJECT IN MATHEMATICS AND STATISTICS (6cr.)

Projet en mathématiques et statistique dirigé par un professeur approuvé par le directeur des études supérieures et donnant lieu à la rédaction d'un rapport approfondi (30-40 pages approx). Note S (satisfaisant) ou NS (non satisfaisant) par le directeur du projet et un autre professeur nommé par le directeur des études supérieures en mathématiques et statistique. Le projet est normalement complété en une session. Préalable : approbation du directeur des études supérieures en mathématiques et statistique. / Project in mathematics and statistics supervised by a professor approved by the director of graduate studies and leading to the writing of an in-depth report (approx. 30-40 pages). Graded S (satisfactory) or NS (not satisfactory) by the supervisor and by another professor appointed by the director of graduate studies in mathematics and statistics. The project will normally be completed in one session. Prerequisite: approval of director of graduate studies in mathematics and statistics.

MAT7999 THÈSE DE MAÎTRISE / MSc THESIS
Mechanical Engineering (MEng / MASc)

Ottawa-Carleton Joint Program

General Information

Established in 1983, the Ottawa-Carleton Institute for Mechanical and Aerospace Engineering (OCIMAE) combines the research strengths of the Department of Mechanical Engineering at the University of Ottawa and the Department of Mechanical and Aerospace Engineering at Carleton University. The Institute offers graduate programs leading to the degrees of Master of Applied Science (MASc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Mechanical Engineering and in Advanced Materials and Manufacturing.

Members of the Institute are involved in six main research fields: thermal and fluid engineering; solid mechanics and design; materials and manufacturing; controls and robotics; biomedical engineering; aeronautical and space engineering. Further information is posted on the departmental websites.

Most of the courses in the graduate programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate program in mechanical engineering is governed by the General Regulations of the Ottawa-Carleton Institute for Mechanical and Aerospace Engineering (OCIMAE) and by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Be the holder of a bachelor's degree with a specialization, or a major in mechanical engineering (or equivalent) with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who are familiar with the applicant’s work;
4. Provide a statement of purpose indicating their career goals and interests in the proposed research area;
5. For admission to the MASc, identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Program Requirements

A - Master of Applied Science (MASc)

The requirements of the program are as follows:

1. Successful completion of 15 course credits at the 5000 level or above approved by the thesis supervisor and the Department;
2. Participation in the Mechanical and Aerospace Engineering departmental seminar series;
3. Presentation and defence of a thesis (MCG7999) based on original research carried out under the direct supervision of a research faculty member in the Department.

Residence
All students must complete a minimum of three sessions of full-time registration.

**Minimum Standards**

The passing grade in all courses is 70% (B). Students who fail six credits, the thesis proposal, the thesis or whose research progress report is deemed unsatisfactory are required to withdraw from the program.

**Duration of the program**

The requirements of the program are usually fulfilled within two years of full-time studies. The maximum time permitted is four years.

**B - Master of Engineering (MEng)**

1. **Project Option**

   The requirements of the program are as follows:
   
   1. Successful completion of 24 course credits at the 5000 level or above approved by the Department;
   2. Participation in the Mechanical and Aerospace Engineering departmental seminar series;
   3. Completion of a mechanical engineering project (MCG6998).

2. **Course Work Option**

   The requirements of the program are as follows:
   
   1. Successful completion of 30 course credits at the 5000 level or above approved by the Department;
   2. Participation in the Mechanical and Aerospace Engineering departmental seminar series.

**Note:** In accordance with FGPS regulation B.2.7 regulation all students are normally expected to complete the major part of their program requirements while registered in the program at the University of Ottawa.

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**Courses**

Les étudiants peuvent, avec l'approbation de leur directeur de recherche ou du comité consultatif, choisir des cours supérieurs offerts dans l'une ou l'autre université. Les cours du programme d'études supérieures sont énumérés ci-dessous. Les descriptions de cours figurent dans les sections relatives aux départements concernés dans les annuaires appropriés. Tous les cours durent une session. Les cours des deux départements sont identifiés par les préfixes suivants :

**MCG 5XXX** Département de génie mécanique, Université d'Ottawa

**MAAJ XXXX** Département de génie mécanique et aérospatial, Carleton University

Tous les cours énumérés ne sont pas offerts tous les ans.

In all programs, the student may choose graduate courses from either university with the approval of the Advisor or Advisory Committee. The available graduate courses are listed below. Course descriptions are to be found in the departmental section of the calendar concerned. All courses are of one session duration. Courses of each department are indicated by the prefix of the first number given as follows:

**MCG 5XXXX** Department of Mechanical Engineering, University of Ottawa

**MAAJ XXXX** Department of Mechanical and Aerospace Engineering, Carleton University

The following courses are not necessarily all given each year.

**Mécanique des solides et des matériaux / Solid Mechanics and Materials**

**MCG5101 (MAAJ 5001)** THEORY OF ELASTICITY (3cr.)

MCG5102 (MAAJ 5002) ADVANCED STRESS ANALYSIS (3cr.)
Solutions to special beam problems including beams on elastic foundations, curved beams, multispans, etc., as well as some axisymmetric problems. The significance of assumptions is discussed and solution techniques including series solutions and energy methods are utilized.

MCG5103 (MAAJ 5003) THEORY OF PERFECTLY PLASTIC SOLIDS (3cr.)

MCG5104 (MAAJ 5004) THEORY OF PLATES AND SHELLS (3cr.)
A general coverage of various approaches to plate problems and the application of these methods to practical cases. A study of the theory of shells including deformation of shells without bending, stresses under various loading conditions, general theory of shells, shells forming surfaces of revolution.

MCG5105 (MAAJ 5505) CONTINUUM MECHANICS (3cr.)

MCG5106 (MAAJ 5006) ADVANCED TOPICS IN ELASTICITY (3cr.)

MCG5107 (MAAJ 5507) ADVANCED DYNAMICS WITH APPLICATIONS (3cr.)

MCG5108 (MAAJ 5008) FINITE ELEMENT ANALYSIS (3cr.)

MCG5109 (MAAJ 5009) ADVANCED TOPICS IN FINITE ELEMENT ANALYSIS (3cr.)

MCG5110 (MAAJ 5100) MICROMECHANICS OF SOLIDS (3cr.)

MCG5114 (MAAJ 5104) ANALYSIS AND DESIGN OF PRESSURE VESSELS (3cr.)

MCG5117 (MAAJ 5107) INTRODUCTION TO COMPOSITE MATERIALS (3cr.)
Review of strengthening mechanism in metals and polymers. Fiber-reinforced composite materials: strengthening mechanism, prediction of strengths and moduli, specific properties, fracture mechanisms, toughness, fatigue, creep, effect of environment; fabrication methods and engineering applications. Laminates; mechanical properties and engineering applications.

MCG5118 (MAAJ 5108) INTRODUCTION TO PLASTICITY (3cr.)

MCG5119 (MAAJ 5109) FRACTURE MECHANICS (3cr.)

MCG5126 (MAAJ 5206) DEFORMATION OF MATERIALS (3cr.)
The deformation and fracture properties of metals, ceramics and polymers. Introduction to dislocation theory. Rheological models. Analysis and interpretation of constant strain rate, constant stress and stress relaxation tests in terms of the material structure.

MCG5129 (MAAJ 5209) HOT WORKING OF METALS (3cr.)
High temperature mechanical properties in metals. Types of recovery, recrystallization and precipitation in metals and their effects on hot strength and structure.
Hot rolling of metals. Selection of rolling schedules. Influence of as-rolled structures on room temperature tensile and fracture stresses, impact strength.

**MCG5137 (MAAJ 5307) SPECIAL STUDIES IN SOLID MECHANICS AND MATERIALS (3cr.)**

**MCG5138 (MAAJ 5308) ADVANCED TOPICS IN MECHANICAL ENGINEERING (3cr.)**

**MCG5180 (MAAJ 5800) FIBRE COMPOSITE MATERIALS (3cr.)**
Computer-automated manufacturing techniques. Advanced topics in composite design: lamination theory. Interlaminar stresses and free edge effects, lamina and laminate failure theories. Principles of non-destructive testing. Individual projects involving the design, manufacturing and testing of a fibre composite component or material. Limited enrolment. **Prerequisite: MCG 5117 (MAAJ 5107) or permission of the Institute.**

**MCG5181 (MAAJ 5801) ADVANCED VIBRATIONS (3cr.)**
Kinematics of vibrations, the single degree of freedom system, without and with damping, two degrees of freedom, several degrees of freedom, vibration of shafts, critical speeds, complex presentation, influence coefficients, matrix method, stability of solution, approximate methods.

**MCG5182 (MAAJ 5802) THEORY OF ELASTIC INSTABILITY (3cr.)**

**MCG7355 SPECIAL TOPICS IN ADVANCED MATERIALS (3cr.)**
Topics that may be covered include the following: nanocrystalline and amorphous materials; metals and ceramic-metal composites; functional materials; fibre-based engineering materials.

**Thermofluides / Thermofluids**

**MCG5111 (MAAJ 5101) GAS DYNAMICS (3cr.)**

**MCG5131 (MAAJ 5301) HEAT TRANSFER BY CONDUCTION (3cr.)**

**MCG5132 (MAAJ 5302) HEAT TRANSFER BY CONVECTION (3cr.)**

**MCG5133 (MAAJ 5303) HEAT TRANSFER BY RADIATION (3cr.)**

**MCG5134 (MAAJ 5304) HEAT TRANSFER WITH PHASE CHANGE (3cr.)**

**MCG5136 (MAAJ 5306) SPECIAL STUDIES IN FLUID MECHANICS AND HEAT TRANSFER (3cr.)**

**MCG5141 (MAAJ 5401) STATISTICAL THERMODYNAMICS (3cr.)**

**MCG5151 (MAAJ 5501) LAMINAR FLOW THEORY (3cr.)**
Derivation and exact solutions of the Navier-Stokes equations. Low Reynolds number flows, Stokes flow. Oseen flow, lubrication theory. Laminar boundary layers. Introduction to hydrodynamic stability.

**MCG5152 (MAAJ 5502) THEORY OF TURBULENCE (3cr.)**

**MCG5155 (MAAJ 5505) INVISCID FLOW THEORY (3cr.)**

**MCG5156 (MAAJ 5506) MEASUREMENT IN FLUID MECHANICS (3cr.)**

**MCG5157 (MAAJ 5507) NUMERICAL COMPUTATION OF FLUID DYNAMICS AND HEAT TRANSFER (3cr.)**

**MCG5158 (MAAJ 5508) INDUSTRIAL FLUID MECHANICS (3cr.)**
Application of simple flows to analysis of more complex systems. Pipe and duct systems, flow separation and control, aerosols, separation of particulates from flow, cavitation, unsteady flow.

**MCG5161 (MAAJ 5601) ENVIRONMENTAL ENGINEERING (3cr.)**

**MCG5191 (MAAJ 5901) COMBUSTION IN PREMIXED SYSTEMS (3cr.)**
Stoichiometry, thermo-chemistry, ignition, flame propagation, flame stabilization, diffusion flames, turbulent combustion, modelling.

**MCG5192 (MAAJ 5902) COMBUSTION IN DIFFUSION SYSTEMS (3cr.)**
Gaseous jet flames, combustion of liquid droplets, atomization, spray flames, coal combustion, fluidized bed combustion.

**MCG5551 (MAAJ 5408) THÉORIE D’ÉCOULEMENT VISQUEUX (3cr.)**

**MCG5552 (MAAJ 5409) THÉORIE DE TURBULENCE (3cr.)**

**MCG5557 (MAAJ 5500) MÉTHODES NUMÉRIQUES EN MÉCANIQUE DES FLUIDES (3cr.)**

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**Génie industriel - de la fabrication - et du design / Design - Manufacturing - Industrial Engineering**

**MCG5115 (MAAJ 5105) NON-LINEAR OPTIMIZATION (3cr.)**

**MCG5159 (MAAJ 5509) ADVANCED PRODUCTION PLANNING AND CONTROL (3cr.)**

**MCG5168 (MAAJ 5608) INDUSTRIAL ORGANIZATION (3cr.)**

**MCG5169 (MAAJ 5609) ADVANCED TOPICS IN RELIABILITY ENGINEERING (3cr.)**

**MCG5170 (MAAJ 5700) CAD/CAM (3cr.)**
The design process. Structure of computer aided drafting software. Analysis and optimization software. Software integration. Parametric design. Major group design project which integrates concepts from all major areas of mechanical engineering. Exclusion: May not be taken for credit with MCG4322.
Advisory Committee.

MCG9998 PRÉPARATION À L’EXAMEN GÉNÉRAL DE DOCTORAT / PREPARATION FOR PhD COMPREHENSIVE EXAMINATION
Inscription requise de tous les candidats au doctorat jusqu'à la réussite à l'examen de synthèse. / Registration required for all PhD candidates until the comprehensive examination is passed.

MCG9999 THÈSE DE DOCTORAT / PhD THESIS

Department of Mechanical and Aerospace Engineering Carleton University
Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings, please consult the Registration Instructions and Class Schedule booklet published in the summer. Carleton University course numbers (in parentheses) follow the University of Ottawa course number.

MCG5300 (MECH 5000) FUNDAMENTALS OF FLUID DYNAMICS (3cr.)
Differential equations of motion. Viscous and inviscid regions. Potential flow: superposition; thin airfoils; finite wings; compressibility corrections. Viscous flow: thin shear layer approximation; laminar layers; transition; turbulence modelling. Convective heat transfer: free versus forced convection; energy and energy integral equations; turbulent diffusion. Also offered at the undergraduate level, with different requirements, as AERO 4302, for which additional credit is precluded.

MCG5301 (MECH 5001) THEORY OF VISCOUS FLOWS (3cr.)
Navier-Stokes and boundary layer equations; mean flow equations for turbulent kinetic energy; integral formulations. Stability, transition, turbulence, Reynolds stresses; separation. Calculation methods, closure schemes. Compressibility, heat transfer, and three-dimensional effects.

MCG5303 (MECH 5003) INCOMPRESSIBLE NON-VISCOUS FLOW (3cr.)
The fundamental equations and theorems for non-viscous fluid flow; solution of two-dimensional and axisymmetric potential flows; low-speed airfoil and cascade theory; wing lifting-line theory; panel methods.

MCG5304 (MECH 5004) COMPRESSIBLE NON-VISCOUS FLOW (3cr.)
Steady isentropic, frictional, and diabatic flow; shock waves; irrotational compressible flow; small perturbation theory and similarity rules; second-order theory and unsteady, one-dimensional flow.

MCG5308 (MECH 5008) EXPERIMENTAL METHODS IN FLUID MECHANICS (3cr.)
Fundamentals of techniques of simulation of fluid dynamic phenomena. Theoretical basis, principles of design, performance and instrumentation of ground test facilities. Applications to aerodynamic testing.

MCG5309 (MECH 5009) ENVIRONMENTAL FLUID MECHANICS RELATING TO ENERGY UTILIZATION (3cr.)
Characteristics of energy sources and emissions into the environment. The atmosphere; stratification and stability, equations of motion, simple winds, mean flow, turbulence structure and dispersion near the ground. Flow and dispersion in groundwater, rivers, lakes and oceans. Physical and analytical modelling of environmental flows.

MCG5310 (MECH 5100) PERFORMANCE AND ECONOMICS OF AIRCRAFT (3cr.)
Aircraft performance analysis with emphasis on factors affecting take-off, landing and economic performance; high lift schemes; operating economics.

MCG5311 (MECH 5101) DYNAMICS AND AERODYNAMICS OF FLIGHT (3cr.)
Static stability theory. Euler's equations for rigid body motion; the linearized equations of motion; stability derivatives and their estimation. Longitudinal and lateral dynamic response of an aircraft to control and disturbance. Also offered at the undergraduate level, with different requirements, as AERO 4308, for which additional credit is precluded.

MCG5314 (MECH 5104) GROUND TRANSPORTATION SYSTEMS AND VEHICLES (3cr.)
Performance characteristics, handling and directional stability, ride comfort and safety of various types of ground vehicle systems including road vehicles, terrain-vehicle systems, guided transport systems, and advanced ground transport technology.

MCG5315 (MECH 5105) ORBITAL MECHANICS AND SPACE CONTROL (3cr.)
Orbital dynamics and perturbations due to the Earth's figure, the sun, and the moon with emphasis on mission planning and analysis. Rigid body dynamics applied to transfer orbit and on-orbit momentum management and control of spacecraft. Effects of flexible structures on a spacecraft control system.

MCG5121 (MECH 5106) SPACE MISSION ANALYSIS AND DESIGN (3cr.)
Review of solar system and space exploration. Space mission design and geometry. Analysis of orbit design, transfers, interplanetary trajectories. Effect of environment on spacecraft design. Space propulsion and launch vehicle design. Launch sequence, windows, cost. Reusable launch systems. Also offered at the undergraduate level, with different requirements, as AERO 4802.

MCG5317 (MECH 5107) EXPERIMENTAL STRESS ANALYSIS (3cr.)
MCG5321 (MECH 5106/MECH 5201) METHODS OF ENERGY CONVERSION (3cr.)
Technical, economic and environmental aspects of present and proposed large-scale systems of energy conversion.

MCG5122 (MECH 5202) SMART STRUCTURES (3cr.)

MCG5330 (MECH 5300) ENGINEERING ACOUSTICS (3cr.)
Review of acoustic waves in compressible fluids; acoustic pressure, intensity and impedance; physical interpretation and measurement; transmission through media; layers, in-homogeneous media, solids; acoustic systems; rooms, ducts, resonators, mufflers, properties of transducers; microphones, loudspeakers, computational acoustics.

MCG5331 (MECH 5301) AEROACOUSTICS (3cr.)
The convected wave equation; theory of subsonic and supersonic jet noise; propeller and helicopter noise; fan and compressor noise; boundary layer noise, interior noise; propagation in the atmosphere; sonic boom; impact on environment.

MCG5332 (MECH 5302) INSTRUMENTATION TECHNIQUES (3cr.)
An introduction for the non-specialists to the concepts of digital and analog electronics with emphasis on data acquisition, processing and analysis. Topics covered include operational amplifiers, signal processing, digital logic systems, computer interfacing, noise in electronic systems. Hands-on sessions illustrate theory and practice.

MCG5334 (MECH 5304) COMPUTATIONAL FLUID DYNAMICS OF COMPRESSIBLE FLOWS (3cr.)
Solution techniques for parabolic, elliptic and hyperbolic equations developed for problems of interest to fluid dynamics with appropriate stability considerations. A staged approach to solution of full Euler and Navier-Stokes equations is used. Grid generation techniques appropriate for compressible flows are introduced.

MCG5344 (MECH 5400) GAS TURBINE COMBUSTION (3cr.)
This course covers two major topics: combustion fundamentals and gas turbine combustor design. Combustion fundamentals include fuel evaporation, chemistry of combustion, chemical kinetics and emission formation and introduction to computational combustion modeling. Combustor design addresses the interrelationship between operational requirements and combustion fundamentals. Precludes additional credit for MECH 5800 (MCG 5480) when MECH 5800 was offered with this topic.

MCG5341 (MECH 5401) TURBOMACHINERY (3cr.)
Types of machines. Similarity; performance parameters; characteristics; cavitation. Velocity triangles. Euler equation: impulse and reaction. Radial pumps and compressors: analysis, design and operation. Axial pumps and compressors: cascade and blade-element methods; staging; off-design performance; stall and surge. Axial turbines. Current design practice. Also offered at the undergraduate level, with different requirements, as MECH 4305, for which additional credit is precluded.

MCG5342 (MECH 5402) GAS TURBINES (3cr.)

MCG5343 (MECH 5403) ADVANCED THERMODYNAMICS (3cr.)
The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics. The third topic includes an introduction to statistical thermodynamics.

MCG5347 (MECH 5407) CONDUCTIVE AND RADIATIVE HEAT TRANSFER (3cr.)
Analytical, numerical and analog solutions to steady-state and transient conduction heat transfer in multi-dimensional systems. Radiative heat exchange between black, grey, non-grey diffusive and specular surfaces, including effects of anthermous media.

MCG5348 (MECH 5408) CONVECTIVE HEAT AND MASS TRANSFER (3cr.)
Analogies between heat, mass and momentum transfer. Forced and free convection relations for laminar and turbulent flows analytically developed where possible and otherwise deduced from experimental results, for simple shapes and in heat exchangers. Mass transfer theory and applications.

MCG5350 (MECH 5500) ADVANCED VIBRATION ANALYSIS (3cr.)
General theory of discrete multi-degree-of-freedom vibrating systems. Emphasis on numerical techniques of solving complex vibrating systems, with selected applications from aeronautical, civil, and mechanical engineering.

MCG5125 (MECH 5501) ADVANCED DYNAMICS (3cr.)
Developing and applying the governing equations of motion for discrete and continuous mechanical systems. Includes Newton-Euler and Lagrangian formulations; classical and finite element approaches for continuous systems; and linear stability, frequency response, and propagation solution methods. Precludes additional credit for MECH 5500.
Students in the MA with thesis must complete 21 credits of courses and a thesis. The choice of elective credits is subject to the approval of the research paper director. The Department may stipulate additional requirements depending upon

Program Requirements

\[ \text{À l'intention des étudiants faisant de la recherche en vue de l'obtention du doctorat. Un séminaire, fondé sur les résultats originaux de leur recherche, doit être} \]

\[ \text{Avant la soutenance de sa thèse, il faut que chaque étudiant donne un séminaire portant sur ses recherches au Département} \]

\[ \text{Members of the Department are engaged in two main research fields: microbiology and host biology. Additional information is posted in the} \]

\[ \text{The convected wave equation; theory of subsonic and supersonic jet noise; propeller and helicopter noise; fan and compressor noise; boundary layer noise,} \]

\[ \text{Interrelationships between operational requirements and combustion fundamentals. Precludes additional credit for MECH 5800 (MCG 5480) when MECH} \]

\[ \text{Finite elements and their solution techniques. Multilayered plate, shell and continua. Eigenvalue and transient analysis, material and geometric non-linearities.} \]

\[ \text{Electro-mechanical, dissipative systems, and other engineering applications.} \]

\[ \text{Kinematic mapping; Burmester theory. Emphasis on practical applications.} \]

\[ \text{Algebraic-geometry applications: kinematic calibration of serial and in-parallel robots; kinematic synthesis of planar, spherical, spatial mechanisms. Various DH-parametrisations, Jacobian formulations. Topics in: projective geometry; Cayley-Klein geometries; Plücker line coordinates; Gröbner bases; Grassmannians; kinematic mapping; Burmester theory. Emphasis on practical applications.} \]

\[ \text{Problem-solving processes and how they can be applied in engineering design. Emphasis on learning methodologies rather than accumulating information. Techniques can be successfully applied in any engineering speciality. (Also offered as IDES 5301)} \]

\[ \text{Design of engineering structures to ensure against failure due to fatigue or brittle fracture. Nature of fatigue and brittle fracture; selection of suitable material, geometry, and inspection procedures for the load and environmental conditions.} \]


\[ \text{Development of microstructure in alloys in solidification processes and post-solidification processing. Nucleation and growth of solid phase. Formation of a dendrite structure, macro and micro segregations. Pore formation in castings. Thermodynamic and kinetics of phase transformations and structure evolution in solid alloys.} \]

\[ \text{An introduction to the finite element methodology, with emphasis on applications to heat transfer, fluid flow and stress analysis. The basic concepts of Galerkin's method, interpolation, numerical integration, and isoparametric elements are taught using simple examples.} \]

\[ \text{Time marching heat flow problems with linear and nonlinear analysis. Static plasticity. Time-dependent deformation problems; viscoplasticity, viscoelasticity, and dynamic analysis. Isoparametric elements and numerical integration are used throughout.} \]

\[ \text{Integral equations. The BEM for potential theory and for elastostatics in two-dimensions. Boundary elements and numerical integration schemes. Practical applications.} \]

\[ \text{The physical metallurgy of important engineering metals and alloys: analytical techniques, crystallography and structure of alloys, dislocation interactions and dissociation, metallurgical thermodynamics and transformations and strengthening mechanisms. Highlights the physical phenomena controlling the properties.} \]

\[ \text{Prerequisite: MECH 2700 or the equivalent.} \]
MCG5123 (MECH 5609) MICROSTRUCTURE AND PROPERTIES OF MATERIALS (3cr.)
Essential microstructural features of metals and alloys: crystal structure, dislocations, grain boundaries. The importance of these features in controlling mechanical properties is emphasized. Analytical techniques observing microstructure in metals and other materials: TEM, SEM, electron diffraction, spectrometry. Precludes additional credit for MECH 5804.

MCG5345 (MECH 5700) SURFACES AND COATINGS (3cr.)
Surface characteristics of solid materials and surface degradation/failure mechanisms including wear, fretting, oxidation, corrosion, and erosion are introduced. Coating methods including PVD, CVD, laser, thermal spray and electrochemical deposition are discussed in the context of failure prevention measures.

MCG5374 (MECH 5704) INTEGRATED MANUFACTURING CIMS (3cr.)
Topics essential to CIMS including computer graphics, geometric modelling, numerically controlled machining, and flexible manufacturing. The fundamental data structures and procedures for computerization of engineering design, analysis and production. Also offered at the undergraduate level, with different requirements, as MECH 4704, for which additional credit is precluded.

MCG5375 (MECH 5705) CAD/CAM (3cr.)

MCG5480 (MECH 5800) SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING (3cr.)

MCG5489 (MECH 5801) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
Topics will vary from year to year.

MCG5483 (MECH 5802) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG5488 (MECH 5803) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG5482 (MECH 5805) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG5486 (MECH 5806) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG5487 (MECH 5807) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MCG55909 MAse THESIS
MCG5598 (MECH 5908) INDEPENDENT ENGINEERING STUDY (3cr.)
Students pursuing a master's degree by course work carry out an independent study, analysis, and solution of an engineering problem or design project. The results are given in the form of a written report and presented at a departmental seminar. Carried out under the general direction of a faculty member.

MECH6909 PhD THESIS

Other Courses of Particular Interest
Biomedical Engineering
BMG5300

Chemical Engineering
CHG8188

Civil and Environmental Engineering
CIVE 5101, CIVE 5102, CIVE 5103, CIVE 5204, CIVE 5304, CIVE 5602

Mathematics and Statistics
MATH 4806, MATH 5806

Physics
PHYS 4407, PHYS 5101
Medieval and Renaissance Studies (MA) (Collaborative)

Since the 16th century, study of the middle ages implies studying a ‘middle’, or intermediary period, seen as standing between two great civilizations: Roman antiquity and the modern western world. This definition has had a major impact on scholarship, crystallizing a periodization that has now become traditional in most of the humanities.

The collaborative master’s in Medieval and Renaissance Studies (MDR) has two goals:

1. to offer at the graduate level a multi-disciplinary education in Medieval and Renaissance Studies;
2. to teach students the theoretical approaches and methods of research specific to the study of the period.

Participating Units

The following academic units participate in the collaborative master’s in Medieval and Renaissance Studies: English, Classical Studies, Français, History, Music, Spanish, Philosophy, and Religious Studies. Please see the websites of the Faculty of Graduate and Postdoctoral Studies (www.grad.ottawa.ca) for more information on the master’s program offered by each unit.

The title of the degree will indicate the discipline of the participating unit with the specification “specialization in Medieval and Renaissance Studies.”

Admission

Students who wish to enroll in the collaborative program in Medieval and Renaissance Studies must first be admitted to a master’s program in one of the participating units. Candidates must hold an honours degree or the equivalent. They must have an excellent knowledge of either English or French, and a passive understanding of the other language.

Students must apply to the collaborative program at the same time as they apply to the master’s program in the participating unit.

Language Requirements

The courses offered by the collaborative program in Medieval and Renaissance Studies are offered in English, in French, and in a bilingual format. An excellent knowledge of English or French and a passive understand of the other language are required. Each academic unit maintains its own language requirements. Except in the case of students in the departments of English and Français, all students have the right to submit assignments, the major research paper, or the thesis, and to answer examination questions in the official language of their choice.

Program Requirements

Degree Requirements

Students in the program must complete the requirements of their primary program and those of the collaborative program. One of the two 3-credit courses in Medieval and Renaissance Studies (MDV 5100 or MDV 5500) will be counted towards the requirements of the primary program. Consequently, students in the specialization will have only one extra course to take.

The requirements of the collaborative program are as follows:

1. Two compulsory courses:
   - MDV 5100 Medieval and Renaissance Studies Research Methods and Tools (3cr.)
   - OR
   - MDV 5500 Méthodes et outils de recherche des études médiévales et de la Renaissance (3cr.)
   - AND
   - MDV 5900 Séminaire de recherche interdisciplinaire / Interdisciplinary Research Seminar (3cr.)

Students must complete the two compulsory courses before they register to the major research paper or thesis.
2. A thesis or major research paper on a topic related to Medieval and Renaissance studies; the proposed topic must be approved by the program committee of the participating unit and the committee of the collaborative program. The supervision of the major research paper or thesis must be carried out by a professor approved by the collaborative program committee. At least one of the two thesis examiners (or one examiner of the major research paper) must be a member of the collaborative program.

3. In both cases, the title of the degree will indicate the discipline of the participating unit with the specification "specialization in Medieval and Renaissance Studies."

Courses

**MDV5100 MEDIEVAL AND RENAISSANCE STUDIES RESEARCH METHODS AND TOOLS** (3cr.)
Approaches to the study of manuscripts (paleography, codicology, iconography) and texts (explication, diplomatics, liturgy, stemmata) of the period.

**MDV5500 MÉTHODES ET OUTILS DE RECHERCHE DES ÉTUDES MÉDIÉVALES ET DE LA RENAISSANCE** (3cr.)
Approches à l’étude de manuscrits (paleographie, codicologie, iconographie) et textes (explication des textes, diplomatique, liturgie, stemmata) de l’époque.

**MDV9900 SÉMINAIRE DE RECHERCHE INTERDISCIPLINAIRE / INTERDISCIPLINARY RESEARCH SEMINAR** (3cr.)
Séminaire bilingué à thèmes variables destiné à explorer le sens et la valeur du travail interdisciplinaire en études médiévales et modernes. / Bilingual seminar using varying themes as a vehicle for exploring the meaning and value of interdisciplinary work in medieval and modern studies.

**Microbiology and Immunology (MSc)**

The Department of Biochemistry, Microbiology and Immunology is located in the Faculty of Medicine and offers graduate programs leading to the degrees of master of science (MSc) and doctor of philosophy (PhD) in microbiology and immunology.

The objective of the program is to refine critical and scholarly skills in fields and areas of specialization and to prepare students for a career in a research and/or in a governmental, clinical, or industrial setting. Graduates are expected to have acquired autonomy in conducting research, in preparing scholarly publications, through a training that includes course work, research seminars, and independent research leading to a thesis.

Members of the Department are engaged in two main research fields: microbiology and host biology. Additional information is posted in the departmental website.

The Department is a participating unit in the following collaborative programs: the bioinformatics program (at the master’s level) and the human and molecular genetics program (at the master’s and doctoral levels).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**

Admission to the graduate program in microbiology and immunology is governed by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applications are evaluated based on the following criteria:

1. Hold a bachelor’s degree with a specialization or a major (or equivalent) in biochemistry, biology, or microbiology with a minimum average of 75% (B+);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the
student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor member of the Department and of the FGPS who is willing and available to act as thesis supervisor.

Collaborative Program in Bioinformatics at the Master’s Level

The Department of Biochemistry, Microbiology and Immunology is a participating unit in the collaborative program in Bioinformatics at the master’s level. This program has been established for students wishing to include an interdisciplinary component in Bioinformatics as part of their degree in Microbiology and Immunology.

Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. To be accepted, the thesis director must be a member of the collaborative program. Students are normally informed about their acceptance into the collaborative program at the same time as being informed about their admission into the primary program. For further details, see the Bioinformatics program.

Program Requirements

Master’s Degree Requirements

The following requirements must be met:

1. Successful completion of the graduate course MIC5100;
2. Successful completion of an additional 3-credit graduate course;
3. Completion of the seminar course (MIC8240S), which involves the presentation of a seminar and the regular attendance at the seminars presented by the Department;
4. Presentation and defense of a thesis (MIC7999) based on original research carried out under the direct supervision of a faculty member of the Department.

Note: The Department may require students to take additional courses, depending on their backgrounds.

Residence

All students must complete a minimum of three sessions of full-time registration.

Duration of the program

The requirements of the program are usually fulfilled within two years of full-time studies.

Transfer from Master’s to PhD Program

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

MIC5100 HOST/PATHOGEN INTERACTIONS AND MOLECULAR IMMUNOLOGY (3cr.)
This course will examine current issues in microbiology/immunology. Topics to be chosen to allow discussion across the broad areas of virology, immunology and bacteriology. Within each of the modules, the focus will be on host-pathogen interactions at the molecular level, how microorganisms utilize, modify or disrupt host cell functions, including immune cell functions and immune responses, to establish infection and cause diseases, or on immunological diseases which may have an infectious component. Prerequisite: At least one undergraduate course in microbiology and/or immunology and one course in molecular biology, or permission of the course coordinator.

MIC5366 MSc SEMINAR (3cr.)
Attendance at two half-day symposia with guest speakers, attendance and participation in the annual BMI Student Symposium and BMI Poster Day, attendance at BMI seminars relevant to Microbiology and Immunology. Students must present at least one poster and one oral presentation during the course of their program. Graded S/NS
MIC7999 THÈSE DE MAÎTRISE / MSc THESIS
Avant la soutenance de sa thèse, il faut que chaque étudiant donne un séminaire portant sur ses recherches au Département / Prior to defending their thesis, each student will be required to present a formal seminar about their research to the department.

MIC8122 ADVANCED TOPICS IN IMMUNOLOGY (3cr.)
Focus on cellular immunology, including thymocyte maturation, induction and regulation of cellular responses, immune responses to pathogens, immunological memory, tolerance. Student assessments to be conducted by two methods: Weekly assessment of student presentations and participation in class discussions; assessment of take-home assignments such as completion of a research grant on a topic covered in the course. To be offered alternate years subject to sufficient demand. Prerequisite: MIC 5124 or equivalent.

MIC8124 / BCH8109 ADVANCED TOPICS IN CELL DEATH (3cr.)
Molecular mechanisms of cell death. Particular attention to be paid to role of aberrant cell death in human disease. Offered in the Fall of odd numbered years.

MIC8125 SPECIAL TOPICS IN MICROBIOLOGY AND IMMUNOLOGY (3cr.)
Discussion of current topics in Microbiology and Immunology. Topics to vary from year to year depending on the interest of faculty members offering the course and students. Student assessments to be conducted by two methods: Weekly assessment of student presentations and participation in class discussions; assessment of take-home assignments such as completion of a research grant on a topic covered in the course. Prerequisite: Permission of the course coordinator.

MIC8126 IMMUNOCHEMISTRY (3cr.)
Focus is on antigen structure of protein and carbohydrate antigens, receptor structure of B cells and T cells, structure of MHC molecules, accessory molecules and cytokine receptors and cell signalling pathways induced by the antigen and cytokine receptors. Student assessments to be conducted by two methods: Weekly assessment of student presentations and participation in class discussions; assessment of take-home assignments such as completion of a research grant on a topic covered in the course. To be offered alternate years subject to sufficient demand. Prerequisite: MIC 5124 or equivalent.

MIC8129 CURRENT TOPICS IN HAEMATOPOIETIC STEM CELLS AND IMMUNE DEVELOPMENT (3cr.)
This course will focus on the haematopoietic system that gives rise to the many cell types of the immune system. Topics to be covered include the developmental processes of embryonic stem cell differentiation into mesoderm and then into haematopoietic and non-haematopoietic progenitors; development of adult haematopoietic and immune systems; symmetric and asymmetric division of cells; intrinsic transcription factors and extracellular microenvironment factors regulating cell fate; immunological aspects of stem-cell based therapy; new technologies and their use in the field, and experimental design. Prerequisite: At least one undergraduate course in immunology or cell biology, or permission of the course coordinator.

MIC8236 ADVANCED TOPICS IN VIROLOGY (3cr.)
An in-depth presentation of current topics in virological research. Topics will vary from year to year. To be offered every alternate year subject to sufficient demand. Prerequisite: MIC 5326 or equivalent.

MIC8238 ADVANCED TOPICS IN BACTERIOLOGY - MECHANISMS OF PATHOGENESIS (3cr.)
Recent advances and current topics in selected areas of bacteriology with emphasis on mechanisms of pathogenesis. Students present and discuss journal articles. Offered every alternate year subject to sufficient demand. Prerequisite: MIC 5224 or its equivalent.

MIC8366 PhD SEMINAR (3cr.)
Attendance at two half-day symposia with guest speakers, attendance and participation in the annual BMI Student Symposium and BMI Poster Day, attendance at BMI seminars relevant to Microbiology and Immunology. Students will present a poster in their first and every alternate year, and an oral presentation the second and every alternate year until they have permission to write their thesis. Graded S/NS

MIC8401 ADVANCED TOPICS IN BACTERIAL GENETICS (3cr.)
Microbial genetic and genomic methods: origin, purpose and functioning. Analysis and use of genomes to study bacterial pathogenesis and host-microbe interactions.

MIC8500 SPECIAL TOPICS IN HEALTH-RELATED ENVIRONMENTAL MICROBIOLOGY (3cr.)
Recent advances and current topics in selected areas of health-related environmental microbiology. Topics reflect student interest. Offered in alternate years subject to sufficient demand. Prerequisite: MIC 5500 or equivalent.

MIC8700 BIOLOGY AND PATHOGENESIS OF HIV INFECTION (3cr.)
Biology and pathogenesis of Human Immunodeficiency Virus (HIV) infection. Genetics, replication, structure, regulation of gene expression, immunopathogenesis, antiviral therapy and vaccine development. Offered in alternate years subject to sufficient demand. Prerequisite: BCH 3170 or equivalent and permission of instructor.

MIC9997 SÉMINAIRE DE RECHERCHE/RESEARCH SEMINAR
À l'intention des étudiants faisant de la recherche en vue de l'obtention du doctorat. Un séminaire, fondé sur les résultats originaux de leur recherche, doit être présenté par les étudiants au cours de l'avant-dernière ou de la dernière session d'inscription précédant la soumission de la thèse de doctorat / For students doing research leading to the PhD. A seminar based on the student's original results, to be presented during the last two academic sessions prior to submission of the PhD thesis.
Mission Studies and Interreligious Dialogue (MA)

By virtue of the federation of Saint Paul University with the University of Ottawa, the Faculty of Pastoral of Human Sciences of Saint Paul University offers a graduate program leading to a degree conferred conjointly by the Senates of the University of Ottawa and Saint Paul University.

Other graduate programs within the sole jurisdiction of the Senate of Saint Paul University are also offered; their description and requirements can be found in the calendars of the Faculty of Theology, the Faculty of Canon Law and the Faculty of Human Sciences.

The Faculty of Human Sciences offers a graduate program leading to a degree which is conferred jointly by the senates of the University of Ottawa and Saint Paul University: Master of Arts in Mission Studies and Interreligious Dialogue MA(MissSHD).

Objectives

The MA program in Mission Studies and Interreligious Dialogue aims at inculcating in students an ability to critically reflect upon the theory and praxis of Christian mission in the contemporary multireligious and pluricultural context.

To those already initiated into this intercultural, interreligious and missionary reflection, this graduate program offers the opportunity of further research and specialization in the field, enabling students to integrate their already acquired personal experience with scientific knowledge.

Admission

Admission Requirements

To be admitted to the program, candidates must fulfil the following conditions:

- hold an honours BA in Mission Studies and Interreligious Dialogue with a minimum 70 per cent (B) average, or its equivalent;
- be proficient in one of the University's two official languages (English or French) and have at least a passive knowledge (ability to follow courses and to read) of the other.

Candidates who hold an honours bachelor's degree (or equivalent) with the required average in a discipline other than Mission Studies and Interreligious Dialogue may be admitted into a qualifying program to be determined by the Admissions Committee and in which they must achieve an average of at least 70% (B).

Residence and Time Limit

The Master's program requires two sessions of full-time residence. The candidate must complete all degree requirements within four years from the date of initial registration in the program.

Program Requirements

Degree Requirements

The degree can be completed either with thesis or with research paper.

A. Master's with thesis (30 credits)

1. Four courses as follows:
   a) Two compulsory courses
      
      MIS6100 MISSION STUDIES AND RELIGIOUS-CULTURAL PLURALISM (3cr.)
      MIS6101 INTERRELIGIOUS DIALOGUE, CHRISTIAN MISSION, AND HUMAN SCIENCES (3cr.)
   
   b) One course (3 cr.) from among the following:

      MIS6102 RELIGIONS AND CHRISTIAN FAITH I: A CASE STUDY (3cr.)
MUS6902 LEÇONS PARTICULIÈRES III / APPLIED MUSIC III

Medieval and Renaissance; German and French music; 20th Century (film music); critical theory; performance and reflective practice; music culturelle et religieuse dans une société pluraliste.

MIS6510 CONFLITS, DIALOGUE ET MISSION

MIS6501 MISSION CHRISTÉENNE, DIALOGUE INTERRELIGIEUX ET SCIENCES HUMAINES

MIS6113 SPECIAL TOPICS IN RELIGIOUS ANTHROPOLOGY AND DIALOGUE

To meet this requirement, students must either pass a

MIS6106 SPECIAL TOPICS IN RELIGIONS AND CHRISTIAN FAITH II: A CASE STUDY (3cr.)

MIS6101 INTERRELIGIOUS DIALOGUE, CHRISTIAN MISSION, AND HUMAN SCIENCES (3cr.)

The project can normally

MIS6104 SPECIAL TOPICS IN RELIGIOUS-CULTURAL PLURALISM (3cr.)

MIS6105 SPECIAL TOPICS IN THEOLOGY OF DIALOGUE AND MISSION (3cr.)

MIS6106 SPECIAL TOPICS IN HISTORY OF CHRISTIAN ENCOUNTER WITH OTHER RELIGIONS AND CULTURES (3cr.)

MIS6107 SPECIAL TOPICS IN PRAXIS OF MISSION (3cr.)

MIS6108 DIALOGUE, MISSION AND SOCIAL ETHICS (3cr.)

MIS6109 CULTURE, MISSION AND NEW RELIGIOUS MOVEMENTS (3cr.)

MIS6110 CONFLICT, DIALOGUE AND MISSION (3cr.)

MIS6111 SOCIAL COMMUNICATION AND INTERRELIGIOUS DIALOGUE (3cr.)

MIS6112 SPECIAL TOPICS IN SOCIO-CULTURAL ANTHROPOLOGY AND RELIGIOUS DIVERSITY (3cr.)

MIS6113 SPECIAL TOPICS IN RELIGIOUS ANTHROPOLOGY AND DIALOGUE (3cr.)

MIS6114 SPECIAL TOPICS IN SOCIOLOGY AND MISSION (3cr.)

MIS6115 DIRECTED READINGS AND RESEARCH I (3cr.)

MIS6116 DIRECTED READINGS AND RESEARCH II (3cr.)

c) One elective (3 cr.) from among the courses in the program or, with the approval of the director, from other graduate programs.

MIS6200 MASTER’S RESEARCH SEMINAR (6cr.)

MIS6998 MÉMOIRE / RESEARCH PAPER (6cr.)

Courses

MIS6100 MISSION STUDIES AND RELIGIOUS-CULTURAL PLURALISM (3cr.)

MIS6101 INTERRELIGIOUS DIALOGUE, CHRISTIAN MISSION, AND HUMAN SCIENCES (3cr.)
Practical approach. Critical study of the methods and models employed in interreligious dialogue and mission studies; their interdisciplinary dimension in relation to human sciences.

MIS6102 RELIGIONS AND CHRISTIAN FAITH I: A CASE STUDY (3cr.)
Critical and analytical study of a sacred text, author, movement or of a topic of relevance to the encounter between Christian faith and other religious traditions of the world (such as Hinduism, Buddhism, Islam, autochthonous religions, etc.). Theological implications.

MIS6103 RELIGIONS AND CHRISTIAN FAITH II: A CASE STUDY (3cr.)
Critical and analytical study of a sacred text, author, movement or of a topic of relevance to the encounter between Christian faith and other religious traditions of the world (such as Hinduism, Buddhism, Islam, autochthonous religions, etc.). Theological implications.
MIS6104 SPECIAL TOPICS IN BIBLE, DIALOGUE AND MISSION (3cr.)
Investigation of particular issues regarding the biblical foundation of mission and dialogue, in special reference to the cultural dimensions implied in professing and witnessing the Christian faith.

MIS6105 SPECIAL TOPICS IN THEOLOGY OF DIALOGUE AND MISSION (3cr.)
Critical examination of the issues related to the theological understanding and interpretation of mission and dialogue, in relation to the cultural and religious dimensions of the ‘proclamation of Christian Faith’.

MIS6106 SPECIAL TOPICS IN HISTORY OF CHRISTIAN ENCOUNTER WITH OTHER RELIGIONS AND CULTURES (3cr.)
Critical and contextual study of selected issues from the history of Christian mission; their cultural and religious dimensions; their implications for current encounters with peoples of other religions.

MIS6107 SPECIAL TOPICS IN PRAXIS OF MISSION (3cr.)
Critical reflection and study of specific issues related to actual missionary practice; their cultural and religious import in professing and witnessing the Christian faith.

MIS6108 DIALOGUE, MISSION AND SOCIAL ETHICS (3cr.)
Critical analysis of social-ethical problematic issues; theoretical and practical considerations; religious, cultural import and relevance in a pluralistic context; missiological implications.

MIS6109 CULTURE, MISSION AND NEW RELIGIOUS MOVEMENTS (3cr.)
Study of the contemporary, new religious movements with a special emphasis on their socio-cultural context and import. Analysis of their implications for mission studies and interreligious dialogue.

MIS6110 CONFLICT, DIALOGUE AND MISSION (3cr.)
Examination of the nature and source of ethno-religious conflicts. Theoretical foundations and practical requirements for dialogue in an ethno-religious conflict context. Missiological implications.

MIS6111 SOCIAL COMMUNICATION AND INTERRELIGIOUS DIALOGUE (3cr.)
Study of theoretical and practical issues related to social communication, especially in the context of cultural and religious pluralism. Media, culture and religion.

MIS6112 SPECIAL TOPICS IN SOCIO-CULTURAL ANTHROPOLOGY AND RELIGIOUS DIVERSITY (3cr.)
Critical examination of issues in socio-cultural anthropology relevant to mission studies and interreligious dialogue; their cultural and religious import in a pluralistic context.

MIS6113 SPECIAL TOPICS IN RELIGIOUS ANTHROPOLOGY AND DIALOGUE (3cr.)
Study of selected topics in religious anthropology, relevant to Christian mission and dialogue; their cultural and religious import in contemporary society.

MIS6114 SPECIAL TOPICS IN SOCIOLOGY AND MISSION (3cr.)
Study of intercultural and interreligious values. Critical examination of sociological issues relevant to Christian mission and dialogue; their cultural and religious import in a pluralist society.

MIS6115 DIRECTED READINGS AND RESEARCH I (3cr.)

MIS6116 DIRECTED READINGS AND RESEARCH II (3cr.)

MIS6200 MASTER'S RESEARCH SEMINAR (6cr.)
The seminar is essentially a research activity whose goal is to guide a group of students in the selection, organization and composition of a research paper that meets the criteria for scientific research in mission studies and interreligious dialogue.

MIS6500 SCIENCES DE LA MISSION ET PLURALISME CULTUREL / RELIGIEUX (3cr.)

MIS6501 MISSION CHRÉTIENNE, DIALOGUE INTERRELIGIEUX ET SCIENCES HUMAINES (3cr.)
Approche pratique. Étude des méthodes et des modèles utilisés dans le dialogue interreligieux et en sciences de la mission; leur dimension interdisciplinaire en relation avec les sciences humaines.

MIS6502 RELIGIONS ET FOI CHRÉTIENNE I: ÉTUDES DE CAS (3cr.)
Étude d’un texte sacré, d’un auteur, d’un mouvement ou d’un thème d’importance dans la perspective d’une rencontre entre la foi chrétienne et une tradition religieuse du monde (hindouisme, bouddhisme, islam, religions autochtones, etc.). Implications théologiques de cette étude.

MIS6503 RELIGIONS ET FOI CHRÉTIENNE II: ÉTUDES DE CAS (3cr.)
Étude d’un texte sacré, d’un auteur, d’un mouvement ou d’un thème d’importance dans la perspective d’une rencontre entre la foi chrétienne et une tradition...
religieuse du monde (hindouisme, bouddhisme, islam, religions autochtones, etc.). Implications théologiques de cette étude.

MIS6504 THÈMES CHOISIS EN BIBLE, DIALOGUE ET MISSION (3cr.)
Examen critique de problèmes particuliers concernant les fondements bibliques de la mission et du dialogue, spécialement en relation avec les dimensions culturelles de l’annonce et du témoignage de la foi chrétienne.

MIS6505 THÈMES CHOISIS EN THÉOLOGIE DU DIALOGUE ET DE LA MISSION (3cr.)
Examen critique des problèmes touchant la compréhension et l’interprétation de la mission et du dialogue, en relation avec les dimensions culturelles et religieuses de l’annonce de la foi chrétienne.

MIS6506 THÈMES CHOISIS EN HISTOIRE DE LA RENCONTRE CHRÉTIENNE AVEC D'AUTRES RELIGIONS ET CULTURES (3cr.)
Examen critique et contextuel de problèmes choisis dans l’histoire de la mission chrétienne; leurs dimensions culturelles et religieuses; leurs implications pour les rencontres actuelles avec des peuples d’autres religions.

MIS6507 THÈMES CHOISIS EN PRATIQUE DE LA MISSION (3cr.)
Réflexion critique et étude de problèmes spécifiques touchant la pratique missionnaire actuelle; leur signification culturelle et religieuse pour l’annonce et le témoignage de la foi chrétienne.

MIS6508 DIALOGUE, MISSION ET ÉTHIQUE SOCIALE (3cr.)
Analyse critique de problèmes d’ethique sociale; réflexions théoriques et pratiques; signification et pertinence religieuses et culturelles dans un contexte pluraliste; implications missiologiques.

MIS6509 CULTURE, MISSION ET NOUVEAUX MOUVEMENTS RELIGIEUX (3cr.)
Étude des nouveaux mouvements religieux contemporains, avec un intérêt, particulier pour leur contexte socioculturel et leur impact. Analyse de leurs implications pour les sciences de la mission et le dialogue interreligieux.

MIS6510 CONFLITS, DIALOGUE ET MISSION (3cr.)
Examen de la nature et des sources des conflits ethno-religieux. Fondements théoriques et exigences pratiques du dialogue dans un contexte de conflit ethno-religieux. Implications missiologiques.

MIS6511 COMMUNICATIONS SOCIALES ET DIALOGUE INTERRELIGIEUX (3cr.)
Étude de problèmes théoriques et pratiques reliés aux communications sociales, spécialement dans un contexte de pluralisme culturel et religieux. Médias, culture et religion.

MIS6512 THÈMES CHOISIS EN ANTHROPOLOGIE SOCIO-CULTURELLE ET DIVERSITÉ RELIGIEUSE (3cr.)
Examen critique de problèmes en anthropologie socioculturelle en relation avec les sciences de la mission et le dialogue interreligieux; leur signification culturelle et religieuse dans un contexte pluraliste.

MIS6513 THÈMES CHOISIS EN ANTHROPOLOGIE RELIGIEUSE ET DIALOGUE (3cr.)
Étude de thèmes choisis en anthropologie religieuse touchant la mission chrétienne et le dialogue; leur signification culturelle et religieuse dans la société contemporaine.

MIS6514 THÈMES CHOISIS EN SOCIOLOGIE ET MISSION (3cr.)
Étude des valeurs interculturelles et religieuses. Examen critique de problèmes sociologiques en relation avec la mission chrétienne et le dialogue; leur signification culturelle et religieuse dans une société pluraliste.

MIS6515 LECTURE ET RECHERCHES DIRIGÉES I (3cr.)

MIS6516 LECTURE ET RECHERCHES DIRIGÉES II (3cr.)

MIS6600 SÉMINAIRE DE RECHERCHE DE MAÎTRISE (6cr.)
Le séminaire est essentiellement une activité de recherche qui a pour but de guider le groupe de participants dans la détermination, l’organisation et la rédaction d’un travail qui répond aux normes scientifiques de la recherche en sciences de la mission et dialogue interreligieux.

MIS6998 MÉMOIRE / RESEARCH PAPER (6cr.)

MIS7999 THÈSE DE MAÎTRISE / MASTER'S THESIS (12cr.)

Music (MMus / MA)

The Department of Music offers the Master of Music (MMus) and the MA in Music. There are two streams, one leading to performance, the other to musical research in the fields of musicology or theory.
Members of the Department are engaged in research in the following fields:

**Musicology**

Medieval and Renaissance; German and French music; 20th Century (film music); critical theory; performance and reflective practice; music and society.

**Theory**

Analysis and theory of modal, tonal, post-tonal, and popular music; history of theory; critical theory; feminist theory; composition; counterpoint; pedagogy.

**Performance**

Piano; voice; orchestral instruments; guitar.

**Admission**

Candidates are required to have one of the following: a BMus; a four-year honours BA in music; a four-year BA with a major in music; or an equivalent degree, certificate, or diploma. A 75 percent (B+) average is required for the undergraduate degree or diploma. If the degree is from a conservatory, it is deemed equivalent if so indicated on the transcript, or if the total course work is equivalent, to a four-year BA, and includes the equivalent of 6 credits in music history and 6 credits in music theory. In addition, applicants must perform an audition or submit an example of writing from undergraduate work in music history or music theory. The choice of evaluation depends on whether the student wishes to pursue the performance stream or the musicology/theory stream. Applicants may be asked to take placement tests in music history, music theory or aural skills. If remedial work is necessary, deficiencies must be remedied by the end of the first year. Candidates are admitted either to the MMus or the MA. A student who has successfully completed the requirements of the MMus degree may, instead of accepting the MMus, become a candidate for the MA with the approval of the Graduate Studies Committee.

**Language Requirements**

The MMus and MA with research paper have a second language requirement. To meet this requirement, students must either pass a proficiency test (ESL 1000 or FLS 1000) administered by the Official Languages and Bilingualism Institute (OLBI), or an equivalent test selected by the department. A pass on this test leads to an "S" on the transcript. In addition, the MA with thesis requires proficiency in a third language. The Department of Music administers the third language test (usually German).

**Graduate Certificates**

The Department also offers two graduate certificates, one in piano pedagogy research and another in orchestral studies. For further details on these certificates, please consult the FGPS Certificate Website.

**Program Requirements**

Students in the MMus must complete 30 credits of courses, as well as two recitals and a recital defence.

Students in the MA with research paper must complete 27 credits consisting of 6 compulsory credits plus 15 elective credits of courses and a 6-credit research paper.

Students in the MA with thesis must complete 21 credits of courses and a thesis.

**Details are specified below:**

**Performance (MMus) (30 cr.)**

**Compulsory courses (21 cr.)**

- MUS5900 INITIATION À LA RECHERCHE MUSICALE / INTRODUCTION TO MUSICAL RESEARCH (3cr.)
- MUS5901 TECHNIQUES DE L’ANALYSE MUSICALE / TECHNIQUES OF MUSICAL ANALYSIS (3cr.)
- MUS6900 LEÇONS PARTICULIÈRES I / APPLIED MUSIC I (3cr.)
- MUS6901 LEÇONS PARTICULIÈRES II / APPLIED MUSIC II (3cr.)
- MUS6902 LEÇONS PARTICULIÈRES III / APPLIED MUSIC III (3cr.)
- MUS6903 LEÇONS PARTICULIÈRES IV / APPLIED MUSIC IV (3cr.)
- MUS6911 MUSIQUE DE CHAMBRE I / CHAMBER MUSIC I (3cr.)
- or
- MUS6912 INTERPRÉTATION DU LIED ET DE LA MÉLODIE / ART SONG INTERPRETATION (3cr.)
Elective MUS credits (9 cr.)

MA with Research Paper (27 cr.)

Compulsory courses (6 cr.)
MUS5900 INITIATION À LA RECHERCHE MUSICALE / INTRODUCTION TO MUSICAL RESEARCH (3cr.)
MUS5901 TECHNIQUES DE L’ANALYSE MUSICALE / TECHNIQUES OF MUSICAL ANALYSIS (3cr.)

Elective MUS credits (15 cr.)
The choice of elective credits is subject to the approval of the research paper director. The Department may stipulate additional requirements depending upon the student's choice of research topic.

Research Paper
MUS6099 MÉMOIRE / RESEARCH PAPER (6cr.)

MA with thesis (21 cr.)

Compulsory courses (9 cr.)
MUS5900 INITIATION À LA RECHERCHE MUSICALE / INTRODUCTION TO MUSICAL RESEARCH (3cr.)
MUS5901 TECHNIQUES DE L’ANALYSE MUSICALE / TECHNIQUES OF MUSICAL ANALYSIS (3cr.)
MUS7901 PRÉPARATION D’UNE THÈSE / PROJECT PREPARATION: THESIS (3cr.)

Elective MUS credits (12 cr.)
The choice of elective credits is subject to the approval of the thesis supervisor.

Thesis
MUS7999 THÈSE / THESIS

Duration of the program
Full-time students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

1. Recital I (MUS 7996) and Recital II (MUS 7997) will be planned in consultation with the professor concerned.
2. The topic of the research paper must be approved before the end of the fall term in the second year. The final paper must receive the grade of “S” (satisfactory) from both the professor who supervised its preparation and from a second reader.

Courses

Les cours énumérés ci-après ne sont pas nécessairement offerts tous les ans. Pour de plus amples renseignements, veuillez consulter le Département.

All of the courses below are not necessarily offered each year. For more information, students should consult the Department.

Cours du tronc commun / Core Courses

MUS5900 INITIATION À LA RECHERCHE MUSICALE / INTRODUCTION TO MUSICAL RESEARCH (3cr.)

MUS5901 TECHNIQUES DE L’ANALYSE MUSICALE / TECHNIQUES OF MUSICAL ANALYSIS (3cr.)

MUS6900 LEÇONS PARTICULIÈRES I / APPLIED MUSIC I (3cr.)

MUS6901 LEÇONS PARTICULIÈRES II / APPLIED MUSIC II (3cr.)
Préalable : MUS6900. / Prerequisite: MUS6900.

MUS6902 LEÇONS PARTICULIÈRES III / APPLIED MUSIC III (3cr.)
Préalable : MUS6901. / Prerequisite: MUS6901.
Le mandat du programme de physiothérapie étant de former des professionnels bilingues capables de desservir les populations francophones, le

Le programme de Maîtrise ès Sciences de la Santé en physiothérapie s'étend sur six sessions consécutives, soient deux années d'études à temps

Cours au choix / Electives

Interprétation / Performance

MUS6902 STAGE EXTERNE / EXTERNAL PRACTICUM (3cr.)
Stage dirigé permettant aux étudiantes et aux étudiants de mettre en pratique leurs connaissances et leur expertise, normalement dans un cadre extérieur à l'université. Rédaction d'un rapport évalué par leurs professeurs superviseurs. Noté : S/NS. Préalables : Permission du professeur superviseur de l'étudiant et du directeur des études supérieures; disponibilité d'un stage jugé convenable par le Département de musique. / A supervised practicum designed to allow students to put their knowledge and developing expertise to work in a setting normally outside the university. Students will be required to submit a written report that will be evaluated by the student's supervisors. Graded: S/NS. Prerequisites: Permission of the student's supervisor and director of Graduate studies; availability of a placement deemed suitable by the Department of Music.

MUS6904 MUSIQUE ET AFFAIRES / THE BUSINESS OF MUSIC (3cr.)
Étude d'institutions et d'entreprises contemporaines professionnelles attachées à la gestion d'une carrière de musicien professionnel. / The study of present-day institutions and industries connected to the performance of music and aspects of professional preparation, organization, and presentation.

MUS6913 MUSIQUE DE CHAMBRE II / CHAMBER MUSIC II (3cr.)

MUS6965 PRODUCTION D'OPÉRAS I / OPERA PRODUCTION I (3cr.)
Étude, mise-en-scène et présentation publique d'opéra. Ouvert à tous les étudiants du M.Mus. en chant. Préalable : permission du directeur du programme d'études supérieures. / The study, staging and performance of an opera or operas. Open to all MMus students in vocal performance. Prerequisite: Approval of the Director of Graduate Studies.

MUS6966 PRODUCTION D'OPÉRAS II / OPERA PRODUCTION II (3cr.)
Continuation de MUS 6965. Étude, mise-en-scène et présentation publique d'opéra. Ouvert à tous les étudiants du M.Mus. en chant. Préalable : permission du directeur du programme d'études supérieures et MUS 6965. / Continuation of MUS 6965. The study, staging and performance of an opera or operas. Open to all MMus students in vocal performance. Prerequisite: Approval of the Director of Graduate Studies and MUS 6965.

MUS6970 RÉPERTOIRE DE MUSIQUE DE CHAMBRE / CHAMBER MUSIC REPERTOIRE (3cr.)
Étude d'une partie du répertoire de musique de chambre du point de vue de l'interprète : bibliographie, techniques d'ensemble, techniques d'interprétation. Travaux pratiques (interprétation). / Study of selected chamber music repertoire from the performer's perspective: literature, ensemble techniques, performance practices. Practical work.
MUS6993 THÈMES EN INTERPRÉTATION / TOPICS IN PERFORMANCE (3cr.)
Thèmes liés à l'interprétation et aux différentes habiletés requises : technique, mémorisation, contrôle de l'anxiété liée à la performance. / Topics relating to performance and the various skills required: technique, memorization, controlling performance anxiety.

MUS6996 ÉTUDE INDIVIDUELLE EN INTERPRÉTATION / INDEPENDENT STUDIES IN PERFORMANCE (3cr.)
Recherche supervisée en atelier où l'on explore un sujet de recherche en interprétation sous la direction d'un professeur. / Guided research in a workshop setting where the student pursues an individual research topic in interpretation under the supervision of a professor.

Théorie / Theory

MUS5911 SÉMINAIRE DE RECHERCHE / RESEARCH SEMINAR (3cr.)
Forum de discussion sur la méthodologie, les problèmes et le cadre théorique de la recherche, dans le contexte des recherches poursuivies par les étudiants et les étudiantes inscrits. Préalable : Connaissance passive de l'anglais. / Discussion of research methodology, problems and theoretical frameworks in relation to participating students' research. Prerequisite: Passive knowledge of French.

MUS5921 MÉTHODES D'ANALYSE DE LA MUSIQUE TONALE I / ANALYSIS AND ANALYTICAL METHOD: TONAL MUSIC I (3cr.)

MUS5923 MÉTHODES D'ANALYSE DE LA MUSIQUE POST-TONALE / ANALYSIS AND ANALYTICAL METHOD: POST-TONAL MUSIC (3cr.)

MUS6926 THÈMES EN COMPOSITION MUSICALE / TOPICS IN MUSICAL COMPOSITION (3cr.)

MUS6930 SÉMINAIRE DE THÉORIE ET D'ANALYSE / SEMINAR IN THEORY AND ANALYSIS (3cr.)

MUS6997 LECTURES DIRIGÉES DANS LE DOMAINE DE THÉORIE / DIRECTED READINGS IN THEORY (3cr.)

Musicologie / Musicology

MUS5911 SÉMINAIRE DE RECHERCHE / RESEARCH SEMINAR (3cr.)
Forum de discussion sur la méthodologie, les problèmes et le cadre théorique de la recherche, dans le contexte des recherches poursuivies par les étudiants et les étudiantes inscrits. Préalable : Connaissance passive de l'anglais. / Discussion of research methodology, problems and theoretical frameworks in relation to participating students' research. Prerequisite: Passive knowledge of French.

MUS6370 TOPICS IN MUSICOLOGY (3cr.)

MUS6380 TOPICS IN ETHNOMUSICOCOLOGY (3cr.)

MUS6770 THÈMES EN MUSICOCOLOGY (3cr.)

MUS6780 THÈMES EN ETHNOMUSICOCOLOGY (3cr.)

MUS6950 SÉMINAIRE EN MUSICOCOLOGY / SEMINAR IN MUSICOCOLOGY (3cr.)
Thèmes choisis en musicologie parmi lesquels se trouvent la réception, l'opéra, l'herméneutique, la politique, la musique de film et les autographes de compositeurs. / Selected topics in musicology to include reception studies, opera studies, hermeneutics, politics, film music studies, and sketch studies.

MUS6998 LECTURES DIRIGÉES EN MUSICOCOLOGY / DIRECTED READINGS IN MUSICOCOLOGY (3cr.)

Recherche en pédagogie du piano / Piano pedagogy research

MUS5902 STAGE EXTERNE / EXTERNAL PRACTICUM (3cr.)
Stage dirigé permettant aux étudiantes et aux étudiants de mettre en pratique leurs connaissances et leur expertise, normalement dans un cadre extérieur à l'université. Rédaction d'un rapport évalué par leurs professeurs superviseurs. Noté : SNS. Préalables : Permission du professeur superviseur de l'étudiant et du directeur des études supérieures; disponibilité d'un stage jugé convenable par le Département de musique. / A supervised practicum designed to allow students to put their knowledge and developing expertise to work in a setting normally outside the university. Students will be required to submit a written report that will be evaluated by the student's supervisors. Graded: SNS. Prerequisites: Permission of the student's supervisor and director of Graduate studies; availability of a placement deemed suitable by the Department of Music.

MUS5911 SÉMINAIRE DE RECHERCHE / RESEARCH SEMINAR (3cr.)
Forum de discussion sur la méthodologie, les problèmes et le cadre théorique de la recherche, dans le contexte des recherches poursuivies par les étudiants et
les étudiantes inscrites. Préalable : Connaissance passive de l'anglais. / Discussion of research methodology, problems and theoretical frameworks in relation to participating students' research. Prerequisite: Passive knowledge of French.

**MUS6931 THÈMES EN PÉDAGOGIE DE LA MUSIQUE / TOPICS IN MUSICAL PEDAGOGY** (3cr.)
Les thèmes étudiés comprennent les facteurs cognitifs liés aux habiletés en lecture musicale; le contrôle de la dimension expressive dans l'interprétation; l'importance de la pratique dans la maîtrise des mouvements techniques; les habiletés développées par une approche fondée sur l'apprentissage à l'oreille comparativement à une approche basée sur l'apprentissage de la lecture; les mémoires auditive, visuelle et tactile impliquées dans la mémorisation de la musique. / Themes being studied will include the cognitive factors related to the skills involved in reading music; the control of expressive aspects of playing; the role of practising in mastering the technical movements; the skills related to an ear training approach versus a note-reading approach; the aural, visual and tactile memory skills involved in memorising music.

**MUS6932 THÈMES EN PÉDAGOGIE DU PIANO / TOPICS IN PIANO PEDAGOGY** (3cr.)
Les thèmes étudiés comprennent les réflexes conditionnés d'un sujet aux stimuli musicaux complexes impliqués dans l'apprentissage du jeu pianistique; une analyse approfondie des recherches sur l'efficacité et la pertinence des méthodes de piano déjà reconnues; l'étude des habiletés motrices impliquées dans le développement de la technique; les questions de santé impliquées dans les blessures liées au jeu du piano. / Themes being studied will include a subject's conditioned responses to complex musical stimuli in the context of learning to play the piano; in-depth understanding of the research evaluating the effectiveness and relevance of already established piano methods; study of the motor skills involved in developing piano technique; health issues involved in the injuries related to piano playing.

**MUS6933 THÈMES EN PÉDAGOGIE DE LA CHORALE / TOPICS IN CHORAL PEDAGOGY** (3cr.)

**MUS6994 ÉTUDES INDIVIDUELLE EN PÉDAGOGIE DE LA MUSIQUE / INDEPENDENT STUDIES IN MUSICAL PEDAGOGY** (3cr.)
Ce cours comprend une recherche supervisée en laboratoire ou en atelier où l'on explore un sujet au choix en pédagogie musicale. / This course involves guided research in a laboratory or workshop setting where the student pursues an individual research topic in musical pedagogy under the supervision of a professor.

**MUS6995 LECTURES DIRIGÉES DANS LE DOMAINE DE LA MUSIQUE / DIRECTED READINGS IN MUSICAL PEDAGOGY** (3cr.)
Ce cours comprend la lecture critique supervisée d'un ensemble de documents en pédagogie musicale choisis par l'étudiant ou l'étudiante. L'étudiant ou l'étudiante doit remettre un travail écrit. / This course involves the critical directed reading of a body of appropriate literature in musical pedagogy determined by the student under the supervision of a professor. Students are required to submit a written report.

**EDU5253 THEORIES OF LEARNING APPLIED TO TEACHING** (3cr.)
Critical survey of theories of learning in historical and contemporary perspectives and their pedagogical implications for classroom practices.

**EDU5381 CREATIVITY AND THE LEARNING PROCESS** (3cr.)
Analysis of the nature of creativity; concepts of creative thinking and creative behaviours in educational settings; exploration of applications of creativity designed for foster personal expressiveness; investigation of methods appropriate for assessing creative processes and products.

**EDU5653 THÉORIES ET MODÈLES DE L'APPRENTISSAGE** (3cr.)
Analyse des principales théories de l'apprentissage. Étude des applications de ces théories aux pratiques éducatives.

**EDU8253 COGNITIVE PROCESSES IN DIVERSE EDUCATIONAL CONTEXTS** (3cr.)
Analysis of essential cognitive processes from different theoretical perspectives; application of learning theories to various contexts.

**EDU8653 PROCESSUS COGNITIFS DANS DIVERS CONTEXTES ÉDUCATIFS** (3cr.)
Analyse de processus cognitifs essentiels à partir de diverses perspectives théoriques; mise en application de théories d'apprentissage dans divers contextes.

**Neuroscience (MSc)**

The Department of Cellular and Molecular Medicine is located in the Faculty of Medicine and offers graduate programs leading to a Master of Science degree (MSc) or to a doctoral (PhD) degree in neuroscience.

The Department of Cellular and Molecular Medicine is located at the Health Sciences Center of the University of Ottawa. Through its cross-appointed and adjunct members, the Department has research affiliations with the following institutes: the Loeb Research and University of Ottawa Heart Institutes at the Ottawa Hospital (Civic Campus), the Royal Ottawa Hospital, the Canadian Red Cross, Health Canada, National Research Council and the Department of National Defense.

The objective of these programs is to help the student develop skills in methodology and critical analysis, and theoretical and practical knowledge. To acquire these abilities, students read the scientific literature; they carry out experiments in the laboratory and analyze the generated data and their results; and they present them in the form of research seminars or posters.
Graduates of the program will acquire autonomy in conducting research and in preparing scholarly publications and grant applications. A comprehensive set of courses, state-of-the-art research facilities and outstanding research opportunities ensures a career in neuroscience. The Department is a participating unit in the collaborative program in human and molecular genetics at the master’s and the doctoral levels.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate program in neuroscience is governed by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applications are evaluated based on the following criteria:

1. Be the holder of a bachelor’s degree with a specialization or a major (or equivalent) in science with a minimum average of B (70%) calculated in accordance with the FGPS guidelines;
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Program Requirements

Master’s Degree Requirements

The following requirements must be met:

1. 6 credits of graduate courses including either NSC 5102 or NSC 5104 or equivalent, approved by the Department;
2. Enrollment in the seminar course (NSC 8324S), which involves the presentation of a seminar and regular attendance at the departmental seminars;
3. Presentation and defense of a thesis (NSC7999) based on original research carried out under the direct supervision of a research faculty member in the Department.

The Department may require students to take additional courses, depending on their backgrounds.

Residence

All students must complete a minimum of three sessions of full-time registration.

Duration of the program

The requirements of the program are usually fulfilled within two years of full-time studies.

Transfer from Master’s to PhD Program

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

Courses
NSC5102 CELLULAR AND MOLECULAR NEUROSCIENCE (3cr.)
The molecular and cellular properties of neurons. Emphasis to be placed on the molecular basis of electrical activity of neurons and chemical synaptic transmission.

NSC5104 SYSTEMS NEUROSCIENCE (3cr.)
Structure and function of representative components of the nervous system to be presented in an integrated and comprehensive manner, emphasizing a reductionist approach to the study of neural networks and their behavioural output. Prerequisites: PHS 3240 or equivalent or permission of the program director.

NSC5106 MOLECULAR PSYCHIATRY (3cr.)
Study of genetic and neurochemical bases of mental illnesses using transgenic and gene knockout mouse models, animal behavioural paradigms, in vivo imaging. Gene therapy approaches in psychiatry; influence of environmental stressors. Prerequisites: PHS 3240 or BIO 3170/BIO 3570 or PSY 3501/PSY 3701 or equivalent or permission of the program director.

NSC7100 NEUROTRANSMISSION AND NEUROMODULATION (3cr.)
Molecular and cell biology of neurotransmission including the identity, actions and mechanisms of neurotransmitters and neuromodulators. Use of computer simulations to explore the complex interactions between synaptic input and the electrical architecture of neurons.

NSC7999 THÈSE DE MAÎTRISE / MSc THESIS

NSC8103 DEVELOPMENTAL NEUROSCIENCE (3cr.)
Fundamental concepts of development of the nervous system with an emphasis on those aspects unique to this tissue type. Topics to include control of proliferation and differentiation, axonal outgrowth and pathfinding, synaptogenesis and formation of neuronal maps, neuronal plasticity, growth factor action and neural regeneration.

NSC8104 COMPUTATIONAL NEUROSCIENCE (3cr.)
Basic concepts of sensory-motor processing from the cellular level of excitable membranes and synaptic signalling mechanisms to the emergent properties of complex neural networks.

NSC8105 MOLECULAR BIOLOGY AND THE NEURON (3cr.)
Emphasis on how signal transduction regulates neuronal function. Topics to include the role of the cytoskeleton in neuronal function, membrane sorting in endocytosis and endocytic pathways, metabotropic and ionotropic receptor signaling, signaling by the GTP-binding proteins, plasma membrane and vesicular transporters, role of protein-protein interactions in the regulation of neuronal signaling, and genomic and proteomic approaches to study neuronal signaling.

NSC8106 MECHANISMS OF NEUROLOGICAL DISEASE (3cr.)
Current knowledge of select neuropathologies with emphasis on the underlying genetics and biochemistry of these conditions. Examination of some fundamental cellular processes important for understanding neurological diseases.

NSC8324 SEMINAR FOR MSc STUDENTS
All graduate students enrolled in the MSc program or who have been admitted to a PhD program without an MSc must participate in these seminars for one year. Two seminars must be presented by each student during the year.

NSC8325 SEMINAR FOR PhD STUDENTS
All graduate students enrolled in the PhD program must participate in these seminars for one year during their doctoral or post MSc training. Two seminars must be presented by each student during the year: one on an assigned subject, the other on his or her research project.

NSC8340 NEUROMUSCULAR FUNCTION AND DYSFUNCTION (3cr.)
Topics to be covered include factors controlling muscle- and synapse-specific gene expression, regulation of myogenesis and muscle cell growth, formation of the neuromuscular junction, motor neuron - muscle interactions, the role of the cytoskeleton in organization of post-synaptic domains, functional role of ion channels in muscle, molecular genetics of neuromuscular disease. Prerequisite: CMM 5340 or equivalent

NSC9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAM (PhD)

NSC9999 THÈSE DE DOCTORAT / PhD THESIS

**Nursing (MSc)**

The goal of the master's program is to educate registered nurses for an advanced practice role and/or doctoral studies. Graduates of the program are prepared to assume leadership roles in improving the quality of nursing care in various health care settings. The program provides rigorous academic preparation based on theory and research to address health-related phenomena experienced by individuals, families, groups, aggregates and communities.
The master's program is offered in English and French with a thesis option or a clinical option (course based) and on a full-time or part-time basis. It may be combined with the Diploma in Primary Health Care Nurse Practitioner. In accordance with the University of Ottawa policy, students can write exams, course assignments and the thesis in either language.

The courses can be offered by distance modalities. Francophones from minority communities on the Canadian west and east coasts and in the Territories benefit from additional privileges thanks to the Consortium national de formation en santé (CNFS). CNFS is a nationally-represented organization that comprises ten university- and college-level academic institutions offering French-language education in various health-related fields.

**Admission**

Candidates for the Master of Science in Nursing will be considered for admission under the general regulations of the Faculty of Graduate and Postdoctoral Studies. Applicants must meet the following requirements: have completed a baccalaureate in nursing (equivalent to the degree offered by the University of Ottawa) with at least 70% (B) average and have successfully completed an introductory statistics course (or equivalent) within the last six (6) years. This course must be completed prior to commencing the program or, if not, during the first session in the program. A current certificate of competence from the College of Nurses of Ontario or equivalent from another province is required. The equivalent of two years of recent nursing practice as a registered nurse, preferably in the chosen area of concentration, is strongly recommended.

**Graduate Diplomas or Specialization**

The Master of Science in Nursing program also offers the opportunity to complete additional qualifications notably a Diploma in Primary Health Care Nurse Practitioner; or a Graduate Diploma in Health Services and Policy Research; or a Specialization in Women studies.

**Diploma in Primary Health Care Nurse Practitioner**

Candidates for the Diploma in Primary Health Care Nurse Practitioner will be considered for admission under the general regulations of the Faculty of Graduate and Postdoctoral Studies. Applicants must have completed a baccalaureate in nursing (equivalent to the degree offered by the University of Ottawa) with at least a B (70%) average and have successfully completed an introductory statistics course (or equivalent) within the last six (6) years. This course must be completed prior to commencing the program or, if not, during the first session in the program. A current certificate of competence from the College of Nurses of Ontario or equivalent from another province is required. The equivalent of two years' nursing practice (3,640 hours) as a registered nurse is also required.

**Graduate Diploma in Health services and policy research**

The MSc in nursing program (thesis option) and the Doctoral program offer a Graduate Diploma in Health Services and Policy Research that permits students in the Master's or Doctoral program to be sufficiently competent to carry out independent policy-relevant health services research. Although they may have acquired some of these competencies within the master of science and doctoral program in nursing, the Diploma permits them to tailor their education to ensure that they have the relevant and sufficient competencies needed to engage in high quality research in this field. Diploma recipients have the knowledge and skills to contribute to improved accessibility, quality, effectiveness, and efficiency of health services for Ontarians and all Canadians. They work as effective partners with policy-makers to ensure that newly created information is shared with relevant decision-makers and is used to help create a healthier, more productive population.

To obtain relevant information, consult the following website: http://www.grad.ottawa.ca/programs/certificates/health_services_policy_research.html.

**Specialization in Women's studies**

The MSc in nursing program (thesis option) participates in the collaborative program in women's studies at the master's level. This program was established for students wishing to enrich their training in nursing by including an interdisciplinary component in women's studies. The specific requirements of the collaborative program include two core “FEM” courses and a thesis on a topic related to Women's Studies. Students in the collaborative program must complete three credits additional to those required in the regular program.

Students should normally apply for acceptance in the women's studies collaborative program at the same time as they apply for admission to the master's program in nursing. For further details, please consult the women's studies section in the Faculty of Graduate and Postdoctoral Studies Calendar.

**Program Requirements**

**A. Thesis Option**

Four compulsory courses (15 credits)

NSG5130 Development of knowledge and theory in nursing as a discipline (3cr.)
NSG5140 Research methods in nursing (3cr.)
NSG5210 Advanced nursing practice in primary health care (6cr.)
or
NSG5220 Advanced nursing practice in tertiary health care (6cr.)
NSG5192 Statistical analysis in nursing (3cr.)

Two elective courses (6 credits)
NSG7999 Thèse de maîtrise / Master's thesis

B. Clinical Option

Five compulsory courses (21 credits)

NSG5130 Development of knowledge and theory in nursing as a discipline (3cr.)
NSG5140 Research methods in nursing (3cr.)
NSG5210 Advanced nursing practice in primary health care (6cr.)
or
NSG5220 Advanced nursing practice in tertiary health care (6cr.)
NSG5192 Statistical analysis in nursing (3cr.)
NSG6401 CLINICAL PROJECT IN ADVANCED NURSING PRACTICE (6cr.)

Three elective courses (9 credits)
Subject to approval from the program director, appropriate electives may be chosen from other University of Ottawa graduate programs.
The requirement to complete 9 credits of elective courses does not apply to students registered in the Master of Science in Nursing / Primary Health Care Nurse Practitioner (Diploma).

Passing Grade
The passing grade in all courses in the program is B (70%). Students who fail two courses or six credits must withdraw.

Courses

Les cours décrits ici ne sont pas nécessairement offerts chaque année. / The following courses are not necessarily offered every year.

NSG5130 DEVELOPMENT OF KNOWLEDGE AND THEORY IN NURSING AS A DISCIPLINE (3cr.)
Prevailing nursing conceptualizations and their links to practice, research and education. Historical development and structure of contemporary nursing knowledge. Critique of middle-range theories appropriate to the study of nursing phenomena.

NSG5140 RESEARCH METHODS IN NURSING (3cr.)
Critical appraisal of research in nursing. Methodological issues related to research problem conceptualization; design selection; sampling; instrument development; data management and analysis. Creation of a nursing research proposal. Prerequisite: NSG 5130.

NSG5192 STATISTICAL ANALYSIS IN NURSING (3cr.)
Introduction to the planning, analysis and interpretation of quantitative research in nursing including: analysis of inferential statistics; analysis of variance and covariance; and linear regression.

NSG5210 ADVANCED NURSING PRACTICE IN PRIMARY HEALTH CARE (6cr.)
Nurses’ role in advanced nursing practice. Theoretical foundations, concepts and strategies in primary health care. Clinical practicum as consultant, educator, researcher, leader and clinician in primary health care. Prerequisite or corequisite: NSG 5130.

NSG5220 ADVANCED NURSING PRACTICE IN TERTIARY HEALTH CARE (6cr.)
Nurses’ role in advanced nursing practice. Theoretical foundations, concepts and strategies associated with caring for patients and their families in complex care situations. Clinical practicum as consultant, educator, researcher, leader and clinician in tertiary health care settings. Prerequisite or corequisite: NSG 5130.

NSG5350 PATHOPHYSIOLOGY FOR THE NURSE PRACTITIONER (3cr.)
Examine theoretical and practice related concepts in pathophysiology as a basis for advanced nursing practice. Explore alterations in physiological function with an emphasis on age-related, acute, episodic, and chronic conditions found in primary health care practice. Seminar: 3 hours/week. Course for PHCNP students only.

NSG5360 ROLES AND RESPONSIBILITIES OF THE NURSE PRACTITIONER (3cr.)
Compare and contrast advanced practice nursing and related frameworks to develop, integrate, sustain, and evaluate the role of the nurse practitioner within primary health care. Critically analyze and develop strategies to implement advanced practice nursing competencies with a focus on the community. Seminar: 3 hours/week. Course for PHCNP students only.

**NSG5370 ADVANCED HEALTH ASSESSMENT AND DIAGNOSIS I** (3cr.)
Analyze and critique concepts and frameworks essential to advanced health assessment and diagnosis using clinical reasoning skills. Apply clinical, theoretical and research knowledge in comprehensive and focused health assessment for the individual client’s diagnostic plan of care. Course for PHCNP students only. 
Prerequisite or co-requisite: NSG5350.

**NSG5375 ADVANCED HEALTH ASSESSMENT AND DIAGNOSIS II** (3cr.)
Integrate knowledge and apply conceptual frameworks integral to advanced health assessment and diagnosis in advanced nursing practice. Demonstrate initiative, responsibility, and accountability in complex decision making for individuals, groups, and/or families within the nurse practitioner scope of practice based on current research findings. Seminar: 3 hours per week. Clinical: 6 hours per week. Course for PHCNP students only. Prerequisite: NSG5370.

**NSG5380 THERAPEUTICS IN PRIMARY HEALTH CARE I** (3cr.)
Critically appraise and interpret concepts and frameworks integral to pharmacotherapy, advanced counseling, and complementary therapies for common conditions across the lifespan. Develop, initiate, manage, and evaluate therapeutic plans of care that incorporate client values and acceptability, goals of therapy, analysis of different approaches, pharmacotherapeutic principles. Course for PHCNP students only. Prerequisite or co-requisite: NSG5370.

**NSG5401 INTEGRATIVE PRACTICUM** (12cr.)
Synthesize the competencies essential to advanced nursing practice to provide primary health care for clients across the lifespan. Demonstrate autonomy, decision-making, and critical analysis of organizational and system issues that influence scope of practice, professional accountability, and outcomes. Course for PHCNP students only. Prerequisites: NSG 5350, NSG 5360, NSG 5370, NSG 5375, NSG 5380 and NSG 5385.

**NSG5530 ÉTUDE DE LA DISCIPLINE INFIRMIÈRE** (3cr.)
Historique du développement de la discipline infirmière et de l'organisation de son corps de connaissance. Conceptions dominantes et leurs liens avec la recherche, la pratique et la formation dans la discipline. Critique de théories de niveau intermédiaire utiles à l'explication de phénomènes propres à la discipline.

**NSG5540 MÉTHODOLOGIE DE LA RECHERCHE EN SCIENCES INFIRMIÈRES** (3cr.)
Analyse critique de la recherche dans la discipline infirmière. Éléments méthodologiques reliés à la problématique, la sélection du devis, l'échantillonnage, l'élaboration d'instruments de mesure, la gestion et l'analyse des données. Développement d'un protocole de recherche en sciences infirmières. Préalable : NSG 5530.

**NSG5592 ANALYSE STATISTIQUE EN SCIENCES INFIRMIÈRES** (3cr.)
Introduction à la planification, l'analyse et l'interprétation des résultats de recherche de type quantitatif en sciences infirmières incluant ce qui suit : analyse de statistiques inferentielles, analyse de variance et de covariance, régression linéaire.

**NSG5610 SOINS INFIRMIERS DE NIVEAU AVANCÉ EN SOINS DE SANTÉ PRIMAIRES** (6cr.)

**NSG5620 SOINS INFIRMIERS DE NIVEAU AVANCÉ EN MILIEU DE SOINS TERTIAIRES** (6cr.)

**NSG5750 PHYSIOPATHOLOGIE POUR INFIRMIÈRES ET INFIRMIERS PRATICIENS** (3cr.)
Examen des concepts théoriques et pratiques reliés à la physiopathologie comme fondement de la pratique de niveau avancé des soins infirmiers. Exploration des changements aux fonctions physiologiques en mettant l’accent sur les modifications liées à l’âge, aux troubles aigus, épisodiques et chroniques rencontrés dans la pratique en soins de santé primaires. Cours pour étudiantes CSSPHL seulement. Séminaire : 3 heures / semaine.

**NSG5760 RÔLES ET RESPONSABILITÉS DES INFIRMIÈRES ET INFIRMIERS PRATICIENS** (3cr.)
Comparaison et mise en contraste des cadres de référence en pratique de soins infirmiers de niveau avancé et d’autres cadres connexes afin de développer, d’intégrer, de soutenir, et d’évaluer le rôle de l’infirmière et de l’infirmier praticiens en soins de santé primaires. Analyse critique et élaboration de stratégies pour la mise en œuvre de compétences en pratique de soins infirmiers de niveau avancé axés sur la communauté. Cours réservé aux étudiantes en soins de santé primaires. Séminaire : 3 heures / semaine.

**NSG5770 FORMATION AVANCÉE EN ÉVALUATION DE LA SANTÉ ET DIAGNOSTIC** (3cr.)
Analyse et critique des concepts et des cadres de référence essentiels à la formation avancée en évaluation de la santé et en diagnostic en utilisant des habiletés de raisonnement clinique. Application des connaissances cliniques, théoriques et de recherche à l’évaluation complète de la santé axée sur le diagnostic et le plan

NSG5775 FORMATION AVANCÉE EN ÉVALUATION DE LA SANTÉ ET DIAGNOSTIC II (3cr.)

NSG5780 MÉTHODES THÉRAPEUTIQUES EN SOINS DE SANTÉ PRIMAIRE I (3cr.)

NSG5785 MÉTHODES THÉRAPEUTIQUES EN SOINS DE SANTÉ PRIMAIRE II (3cr.)

NSG6115 DESIGN OF MULTIPLE INTERVENTIONS IN COMMUNITY HEALTH (3cr.)
Theoretical basis for the design and evaluation of multistrategy and multi-level community health programs. Key design issues including synergies among interventions, intervention adaptation for contextual environment and implementation barriers. Integrated theories, planning tools and evaluation strategies to be discussed, using multiple intervention case studies. Prerequisites: NSG 5130; NSG 5210 (or NSG 5220); NSG 5140; or equivalents.

NSG6124 CLINICIAN ROLE IN ADVANCED NURSING PRACTICE (3cr.)
Theoretical and practice issues related to the advanced practice role in direct care. Examination of concepts related to clinician role function, models of care delivery for complex health problems. The clinical practicum provides an opportunity to strengthen the clinician role in direct care, consultation, and leadership in an area of specialization.

NSG6133 DECISION MAKING IN CLINICAL PRACTICE (3cr.)
Examination of decision models as they relate to decision making at the patient, practitioner, and policy maker levels. Study of the patient decision making process. Exploration of decision support strategies and evaluation of practitioner’s decision support skills.

NSG6134 EDUCATOR’S ROLE IN ADVANCED NURSING PRACTICE (3cr.)

NSG6135 PALLIATIVE/END OF LIFE CARE: AN INTERPROFESSIONAL APPROACH (3cr.)
Philosophy and practice of palliative/end of life care across the lifespan and in diverse health settings. Critical examination of theory, research, practice and policy issues related to care of individuals and families facing life threatening illness. Exploration of concepts of death, dying, bereavement within health care systems, culture, and society and through an interprofessional approach. Prerequisite: Permission of Program Director.

NSG6150 HISTORICAL CONTEXT IN NURSING PRACTICE (3cr.)
Historical context for selected nursing practice topics and leadership styles. Nursing and health care from the 19th to the late 20th century from a feminist and social history stand point. Perspectives and patterns of explanation for past nursing practices. Appraisal of primary and secondary sources, methods and theoretical approaches.

NSG6160 POLICY, POLITICAL ACTION AND CHANGE IN HEALTH CARE (3cr.)
Policy analysis, political action, organization and change theories. Acquisition of advanced nursing practice skills in policy and organizational analysis, application of change theory, lobbying, negotiating and strategizing.

NSG6401 INTERVENTION DESIGN IN ADVANCED NURSING PRACTICE (6cr.)
Utilization of theory and evidence based practices relevant to a clinical field and to program evaluation. Clinical practicum structured around the design, implementation, and evaluation of interventions. Prerequisites: NSG 5210 or NSG 5220, or NSG 5360 (for primary health care nursing practice students}
NSG6524 RÔLE DE CLINICIENNE DE L'INFIRMIÈRE EN PRATIQUE DE NIVEAU AVANCÉ (3cr.)
Eléments théoriques et enjeux liés à l'actualisation du rôle de clinicienne. Examen des concepts et des modèles de prestation des soins utilisés auprès des clients nécessitant des soins complexes. Le stage permet de consolider le rôle de clinicienne, consultante et leader dans un domaine de spécialisation.

NSG6533 PRISE DE DÉCISIONS EN SITUATION CLINIQUE (3cr.)
Examen des modèles de décision au niveau de la prise de décisions du patient, de l'intervenant et des prises de positions politiques. Étude du processus décisionnel du patient. Exploration des décisions entourant les stratégies de soutien et évaluation des compétences du praticien.

NSG6534 RÔLE D'ÉDUCATRICE DE L'INFIRMIÈRE EN PRATIQUE DE NIVEAU AVANCÉ (3cr.)
Enjeux de la formation clinique en sciences infirmières et autres disciplines. Théories d'enseignement/apprentissage, modèles et stratégies pédagogiques. Éléments essentiels à l'identification des besoins d'apprentissage, au développement d'un plan d'enseignement pour infirmières, clients, familles, et autres professionnels de la santé. Principes et méthodes d'évaluation formative et sommative.

NSG6535 SOINS PALLIATIFS ET DE FIN DE VIE : UNE APPROCHE INTERPROFESSIONNELLE (3cr.)
Philosophie et pratique des soins palliatifs et de fin de vie, au long de l'existence et dans divers milieux de santé. Examen critique de la théorie, la recherche, la pratique et les problématiques d'ordre politique associées aux soins des personnes et des familles aux prises avec une maladie mortelle. Exploration des concepts de mort, d'agonie et de déuil dans les systèmes de soins de santé, la culture et la société et selon une approche interprofessionnelle. Préalable : permission de la directrice du programme.

NSG6550 CONTEXTE HISTORIQUE EN SCIENCES INFIRMIÈRES (3cr.)
Contexte historique pour certains thèmes et styles de leadership. Approche féministe et sociale dans l'étude des sciences infirmières de la fin du XIXe siècle jusqu'au milieu du XXe. Perspectives et analyse des événements d'antan dans la profession. Analyse des sources primaires et secondaires, des méthodes et des approches théoriques.

NSG6560 POLITIQUE, ACTION POLITIQUE ET CHANGEMENT EN SOINS DE SANTÉ (3cr.)
Analyse des politiques, action politique et théories de l'organisation et du changement. Développement d'habiletés nécessaires à l'infirmière en pratique de niveau avancé en regard de l'analyse politique et organisationnelle, l'application de la théorie du changement, le lobbying, la négociation et la formulation de stratégies.

NSG6801 DEVIS D'INTERVENTIONS EN PRATIQUE DES SOINS INFIRMIERS DE NIVEAU AVANCÉ (STAGE) (6cr.)
Utilisation de la théorie et des évidences systématiques pertinentes au domaine de spécialisation choisi et à l'évaluation de programme. Stage structuré autour de la planification, de l'exécution et de l'évaluation d'une intervention clinique. Préalables : NSG 5610 ou NSG 5620, ou NSG 5760 (pour étudiantes en soins de santé primaires seulement) et NSG 5540.

NSG6998 THÈMES EN SCIENCES INFIRMIÈRES / SPECIAL TOPICS IN NURSING (3cr.)
La recherche et l'expertise dans certains secteurs de spécialisation des soins infirmiers. Peut comporter un practicum. Thèmes à approuver au préalable par la Direction du programme. / Research and advanced practice in a specialized area of nursing. May include a clinical practicum. Program approval required for topic selection.

NSG6999 ÉTUDES DIRIGÉES / DIRECTED STUDY (3cr.)
Approfondissement des connaissances dans un domaine d'intérêt particulier, avec l'approbation du programme. / Study of an area of particular interest in greater depth. Program approval is required.

NSG7100 THEORETICAL AND PHILOSOPHICAL PERSPECTIVES IN NURSING (3cr.)
Critical analysis of nursing knowledge development and the influence on nursing research and practice. Comparison and contrast of theories and philosophies in nursing with an emphasis on substantive areas of nursing that are of interest to the student. (Course is reserved for PhD students)

NSG7102 RESEARCH METHODS / DESIGN PROBLEMS IN NURSING (3cr.)
In-depth coverage and critical analysis of challenges associated with research methods to answer nursing research questions. Thorough appraisal of design pitfalls and sampling issues arising from the complexity and unpredictability of human subjects, measurement issues and special analytic techniques. (Course is reserved for PhD students.)

NSG7103 DECISION MAKING IN NURSING (3cr.)
Analysis and synthesis of decision and change models at client, practitioner and policy maker levels. In-depth exploration of selected conceptual, methodological, and design challenges to improve decision-making capacities of populations or to promote uptake of evidence-based nursing practices. (Course is reserved for PhD students.)

NSG7104 EVALUATING COMPLEX NURSING INTERVENTIONS (3cr.)
Discussion of design issues associated with complex interventions. Exploration of strategies for developing, implementing, and evaluating programs targeted to changing multiple levels of health care. Analysis of models, evidence, and policies appropriate to intervention design and examination of barriers to effective change. (Course is reserved for PhD students.)
Pathology and Experimental Medicine (MSc) Collaborative

The Faculty of Medicine offers graduate programs leading to the master’s (MSc) degrees in several disciplines.

The objective of the Pathology and Experimental Medicine collaborative program is to provide graduate students with the knowledge and skills to examine the basic mechanisms of disease pathology, and to develop new strategies for prevention and treatment. The degree awarded specifies the primary program and indicates “specialization: Pathology and Experimental Medicine.”

The program operates within the framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS), which are posted on the FGPS website.

Participating Programs

The primary participating programs are:

- The MSc in Cellular and Molecular Medicine of the Department of Cellular and Molecular Medicine.
- The MSc in Biochemistry of the Department of Biochemistry, Microbiology and Immunology.
- The MSc in Microbiology and Immunology of the Department of Biochemistry, Microbiology and Immunology.
- The MSc in Neuroscience of the Department of Cellular and Molecular Medicine.

Admission

Admission to the collaborative program in Pathology and Experimental Medicine is governed by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Candidates must indicate in their application for admission form that they wish to be accepted in the collaborative program.

To be accepted into the collaborative program students must:

- Be admitted to one of the programs participating in the collaborative program;
- Provide at least one letter of recommendation from a professor who is willing and available to act as thesis supervisor;
- Be sponsored into the collaborative program by a faculty member, normally the thesis supervisor, who must be a member of the Pathology and Experimental Medicine program.

Program Requirements

Requirements

The requirements and regulations of both the primary program and of the collaborative program must be met.

The requirements specific to the collaborative program are as follows:

1. One course (3 credits) in the primary program;
2. One Pathology and Experimental Medicine specialization course (3 credits);
3. Successful completion of the Pathology and Experimental Medicine seminar course;
4. Presentation and defence of a thesis on a topic in pathology and experimental medicine based on original research carried out under the supervision of a professor who is a member of the Pathology and Experimental Medicine collaborative program. At least one of the thesis examiners must be a member of the Pathology and Experimental Medicine collaborative program.

**Thesis Advisory Committee (TAC)**

The composition of the Thesis Advisory Committee (TAC) and the frequency of committee meetings follow the regulations of the respective primary program. At least one member of the TAC, in addition to the thesis supervisor, must be part of the Pathology and Experimental Medicine collaborative program.

**Transfer from MSc to PhD**

The regulations for transfer from MSc to PhD without being required to write a master’s thesis are those in effect in the student’s primary program.

**Courses**

PME5366

PME8112

PME8366

**Courses related to the collaborative program offered by each participating unit.**

**BCH8107 ADVANCED TOPICS IN STRUCTURE AND FUNCTION OF PLASMA LIPOPROTEINS (3cr.)**
Recent advances in our knowledge of the plasma lipoproteins with a special emphasis on their role in the etiology of atherosclerosis. The subject will be introduced by an overview of the general structural properties of lipoproteins which will be followed by detailed discussion of the structure, metabolism and genetics of the apolipoproteins, the proteins and enzymes that modify lipoproteins and cell surface lipoprotein receptors. Other topics will include cholesterol homeostasis, plasma cholesterol transport and disorders of lipoprotein metabolism.

**CMM5001 THE PATHOLOGICAL BASIS OF DISEASE (3cr.)**
Introductory Course for Non-Medical Graduate Students in the Life Sciences. This course will consist of a brief introduction to pathology describing the manifestation of disease at the macroscopic and microscopic level. This will be followed by (i) A description of various types of microscopy and methodology. (ii) Concepts in flow cytometry, tissue/cell fractionation. (iii) Histo-/cytochemistry and immunohisto-/cytochemistry. (iv) Normal cells and tissues. (v) Organs. (vi) The general pathology of cells and tissues including hypertrophy, aplasia, atrophy, hyperplasia, metaplasia, dysplasia, neoplasia, storage diseases, extracellular space pathologies, necrosis and apoptosis. Blood vessel and cardiac pathologies will be covered as well as concepts in neuropathology, organ/system specific pathologies and genetic diseases.

**CMM5105 INTRODUCTION TO CANCER BIOLOGY (3cr.)**
An introduction to the biology of cancer. Major topics in cancer biology include the following: tumor suppression/oncogenes; apoptosis in cancer; cell immortalization and senescence; genomic instability; multistep tumorigenesis/inflammation in cancer; biology of angiogenesis; rational therapies.

**CMM5315 CELLULAR AND MOLECULAR BASIS OF CARDIOVASCULAR FUNCTION/DYSFUNCTION (3cr.)**
Mechanism of failing heart and cardiovascular system, its associated functions and associated conditions. Therapies for restoring function. Topics include: regulation of heart development, cell signaling, cellular and molecular mechanisms of atherosclerosis and heart disease, hormonal regulation, hypertension, bioenergetics, cardiovascular genomics and genetics, cell therapy, and regenerative medicine.

**CMM8105 ADVANCED TOPICS IN CANCER BIOLOGY (3cr.)**
Advanced study of recent developments in the field of cancer biology with emphasis on cellular and molecular aspects. Specific topics to be covered include: angiogenesis, apoptosis, cancer genetics, cell signaling, genetic instability, oncogenes and tumour suppressors.

**NSC8101 ADVANCED TOPICS IN NEUROPATHOLOGY (3cr.)**
General histopathological responses of central and peripheral nervous tissue to pathological stimuli including hypoxic-ischemic, traumatic, inflammatory/infectious, demyelinating and toxic. Emerging topics in neurology and neuropathology including the following: the pathology and pathogenesis of protein-based neurodegenerative disorders, the emerging family of RNA-mediated neurological disorders, mendelian and non-mendelian genetic diseases of the nervous system (including the role of microRNA in neurological disease), advances in diseases of skeletal muscle, advances in the molecular pathogenesis of Central Nervous System tumours, and advances in metabolic/mitochondrial/storage diseases.

**Philosophy (MA)**
The Department of Philosophy offers MA (with or without thesis) and PhD programs in Philosophy. The programs are offered in English and French.

The Department participates in the following collaborative programs: women’s studies (at the master’s level) and Canadian studies (at the PhD level), which make it possible for students to obtain a specialization in either domain.

The program is governed by the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

**Admission**

**Admission Requirements**

To be admitted to the MA program a candidate must have an honours BA in Philosophy (or the equivalent) with a minimum "B" average. The Department reserves the right to impose a preliminary examination.

Candidates lacking the necessary background may be admitted to a qualifying program.

An application dossier must include official transcripts and two letters of recommendation. For the master’s with thesis, the dossier must also include a description of the intended field of research, and a sample of written work in philosophy (15-25 pp.).

**Language Requirements**

Proficiency in both French and English is strongly encouraged so that students may take advantage of the full range of activities - lectures, personal contacts, and courses - available in the Department (graduate courses are normally not duplicated in the two languages).

**Collaborative Program in Women’s Studies at the Master's Level**

The Department of Philosophy is a participating unit in the collaborative program in women’s studies at the master's level. This program has been established for students wishing to enrich their training in philosophy by including an interdisciplinary component in Women's studies. The specific requirements of the collaborative program include two core courses and a thesis on a topic related to Women’s studies. Only one of the core "FEM" courses will be counted for credit towards the requirements of the master’s in philosophy.

Students should normally apply for admission to the Women’s studies collaborative program at the same time as they apply for admission to the master’s program in philosophy. For further details, please consult the Women's Studies brochure of the Faculty of Graduate and Postdoctoral Studies.

**Program Requirements**

**Degree Requirements**

The MA may be obtained by fulfilling the requirements of either of the following options:

1. The MA program with thesis, consisting of 4 (one-session) courses, an approved thesis project, and a thesis, including defence.
2. The MA program without thesis, consisting of 8 (one-session) courses. In exceptional cases, students may take one course in another department.

An accelerated route leading from the MA program into the PhD program is available (see PhD Program).

MA candidates must also complete a proficiency requirement in the second official language. This requirement can be completed in one of three ways:

- Passing (50%) the FLS 1000 exam; OR
- Completing 6 credits of FLS courses at your level (as determined by the Official Languages and Bilingualism Institute); OR
- Successfully completing a Philosophy graduate seminar given in French. (N.B. As per University regulations, students may write examinations and papers in the official language of their choice.)

**Duration of the program**

Students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

**Residence**

The residence requirement for students admitted on a full-time basis is three sessions. It is possible to prepare for the MA degree entirely on a part-time basis. A part-time student can take no more than two courses per session.
Courses

Liste des cours supérieurs offerts par le Département. Pour de plus amples renseignements, consulter les listes paraissant trois mois avant le début de la session d'automne. Les cours prévus pour l'année scolaire en question y sont détaillés.

List of graduate courses offered by the Department. For more information consult the detailed syllabi available three months before the fall session, where students will find the list of courses offered in that particular academic year.

PHI5319 AESTHETICS I (3cr.)
PHI5377 AESTHETICS II (3cr.)
PHI5378 AESTHETICS III (3cr.)

PHI5331 ANCIENT PHILOSOPHY I (3cr.)
PHI5349 ANCIENT PHILOSOPHY II (3cr.)
PHI5350 ANCIENT PHILOSOPHY III (3cr.)
PHI5332 MEDIEVAL PHILOSOPHY I (3cr.)
PHI5351 MEDIEVAL PHILOSOPHY II (3cr.)
PHI5352 MEDIEVAL PHILOSOPHY III (3cr.)
PHI5333 MODERN PHILOSOPHY I (3cr.)
PHI5353 MODERN PHILOSOPHY II (3cr.)
PHI5354 MODERN PHILOSOPHY III (3cr.)

PHI5334 ANGLO AMERICAN PHILOSOPHY I (3cr.)
PHI5355 ANGLO AMERICAN PHILOSOPHY II (3cr.)
PHI5356 ANGLO AMERICAN PHILOSOPHY III (3cr.)

PHI5335 FRENCH PHILOSOPHY I (3cr.)
PHI5357 FRENCH PHILOSOPHY II (3cr.)
PHI5358 FRENCH PHILOSOPHY III (3cr.)

PHI5336 GERMAN PHILOSOPHY I (3cr.)
PHI5359 GERMAN PHILOSOPHY II (3cr.)

PHI5360 GERMAN PHILOSOPHY III (3cr.)

PHI5341 LOGIC AND PHILOSOPHY OF SCIENCE I (3cr.)
PHI5361 LOGIC AND PHILOSOPHY OF SCIENCE II (3cr.)
PHI5362 LOGIC AND PHILOSOPHY OF SCIENCE III (3cr.)

PHI5342 EPISTEMOLOGY I (3cr.)
PHI5363 EPISTEMOLOGY II (3cr.)
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PHI5757 PHILOSOPHIE FRANÇAISE II (3cr.)
PHI5758 PHILOSOPHIE FRANÇAISE III (3cr.)
PHI5736 PHILOSOPHIE ALLEMANDE I (3cr.)
PHI5759 PHILOSOPHIE ALLEMANDE II (3cr.)
PHI5760 PHILOSOPHIE ALLEMANDE III (3cr.)
PHI5741 LOGIQUE ET PHILOSOPHIE DU LANGAGE I (3cr.)
PHI5761 LOGIQUE ET PHILOSOPHIE DU LANGAGE II (3cr.)
PHI5762 LOGIQUE ET PHILOSOPHIE DU LANGAGE III (3cr.)
PHI5742 ÉPISTéMOLOGIE ET PHILOSOPHIE DES SCIENCES I (3cr.)
PHI5763 ÉPISTéMOLOGIE ET PHILOSOPHIE DES SCIENCES II (3cr.)
PHI5764 ÉPISTéMOLOGIE ET PHILOSOPHIE DES SCIENCES III (3cr.)
PHI5743 MÉTAPHYSIQUE I (3cr.)
PHI5765 MÉTAPHYSIQUE II (3cr.)
PHI5766 MÉTAPHYSIQUE III (3cr.)
PHI5744 ANTHROPOLOGIE PHILOSOPHique I (3cr.)
PHI5767 ANTHROPOLOGIE PHILOSOPHique II (3cr.)
PHI5768 ANTHROPOLOGIE PHILOSOPHique III (3cr.)
PHI5745 PHILOSOPHIE MORALE I (3cr.)
PHI5769 PHILOSOPHIE MORALE II (3cr.)
PHI5770 PHILOSOPHIE MORALE III (3cr.)
PHI5746 PHILOSOPHIE SOCIALE ET POLITIQUE I (3cr.)
PHI5771 PHILOSOPHIE SOCIALE ET POLITIQUE II (3cr.)
PHI5772 PHILOSOPHIE SOCIALE ET POLITIQUE III (3cr.)
PHI5747 PHILOSOPHIE DE LA RELIGION I (3cr.)
PHI5773 PHILOSOPHIE DE LA RELIGION II (3cr.)
PHI5774 PHILOSOPHIE DE LA RELIGION III (3cr.)
PHI5748 PHILOSOPHIE DE L'HISTOIRE I (3cr.)
PHI5775 PHILOSOPHIE DE L'HISTOIRE II (3cr.)
PHI5776 PHILOSOPHIE DE L'HISTOIRE III (3cr.)
PHI6101 SELECTED PROBLEMS I (3cr.)
PHI6102 SELECTED PROBLEMS II (3cr.)
PHI6103 SELECTED PROBLEMS III (3cr.)

PHI6501 THÈMES ET PROBLÈMES DE PHILOSOPHIE I (3cr.)
PHI6502 THÈMES ET PROBLÈMES DE PHILOSOPHIE II (3cr.)
PHI6503 THÈMES ET PROBLÈMES DE PHILOSOPHIE III (3cr.)

PHI6904 ÉTUDE DIRIGÉE/DIRECTED STUDY (3cr.)
Travail à préparer sous la direction d’un membre du corps professoral du département. Préalable : permission du comité des études supérieures. / Paper to be prepared under the direction of a professor in the department. Prerequisite: Permission of the Graduate Studies Committee.

PHI6999 RECHERCHE DIRIGÉE (M.A.) / DIRECTED RESEARCH (MA)

PHI7999 RECHERCHE ET THÈSE DE MAÎTRISE / MA THESIS RESEARCH

PHI8995 MÉMOIRE DE RECHERCHE (Ph.D.) / MAJOR RESEARCH PAPER (PhD)

PHI8998 EXAMEN DE CANDIDATURE (Ph.D.) / CANDIDACY-EXAMINATION (PhD)

PHI8999 RECHERCHE DIRIGÉE (Ph.D.) / DIRECTED RESEARCH (PhD)

PHI9999 RECHERCHE ET THÈSE DE DOCTORAT / PhD THESIS RESEARCH

Physics (MSc)

Ottawa-Carleton Institute for Physics

General Information

Established in 1983, the Ottawa-Carleton Institute for Physics (OCIP) combines the research strengths of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Physics.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in research in different fields of Physics: condensed matter; high energy and biological physics; medical physics; photonics. Additional information is posted in the departmental website.

Particularly for the medical physics program, research supervision may be provided by members of other institutions in the area such as hospitals, cancer clinics and government laboratories.

Most of the requirements of these programs must be fulfilled in English. A very good knowledge of this language is therefore required.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “Regulations and Procedures for Joint Graduate Programs (www.ocjp.ca)” and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the website of the FGPS.

Admission

Admission to the graduate program in Physics is governed by the General Regulations of the Ottawa-Carleton Institute for Physics (OCIP) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:
1. Be the holder of a bachelor’s degree with a specialization, or a major in Physics (or equivalent) with a minimum average of 70% (B);  
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;  
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;  
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;  
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Program Requirements

A- Master’s requirements

The following requirements must be met:

1. Successful completion of three graduate courses at the 5000 level or above in physics or in other related disciplines approved by the Department of Physics;  
2. Participation in the Institute’s seminar series;  
3. Presentation and defense of a thesis (PHY 7999) based on original research carried out under the direct supervision of a faculty member of the Department.

In special circumstances, the requirements may also be met by taking 10 graduate courses at the 5000 level or more, and no thesis. In this case, a comprehensive examination and participation in the Institute’s seminar series are also required.

B- Requirements for the Physics in modern technology option

1. Successful completion of six graduate courses at the 5000 level or above in physics or in other related disciplines approved by the Department of Physics;  
2. Successful completion of the Physics in Modern Technology work term (PHY 5495);  
3. Participation in the Institute’s seminar series.

Note: Students in the physics in modern technology option are required to complete a work term rather than a research thesis. Although every effort is made to find a work term position for every student in the physics in modern technology option, no guarantee of employment can be made. To minimize the likelihood of a work term position not being found, acceptance in the option will be limited to reflect the availability of work term placements. In the event that a work term placement cannot be found, students may fulfill the master's degree requirements with courses only as described in option A. Students in this option are normally expected to complete all their requirements in three consecutive terms.

Residence

All students must complete a minimum of three sessions of full-time registration.

Minimum Standards

The passing grade in all courses is B. Students who fail 6 credits, or the comprehensive exam or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Duration of the program

The requirements of the program are usually fulfilled within two years. The maximum time permitted is four years from the date of initial registration.

Transfer from Master’s to PhD Program

Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d'Ottawa correspond à 0.5 crédit à la Carleton University.
Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

**Physique de la matière condensée / Condensed Matter Physics**

**PHY5100 (PHYJ 5401) SOLID STATE PHYSICS I (3cr.)**

**PHY5110 (PHYJ 5402) SOLID STATE PHYSICS II (3cr.)**

**PHY5151 (PHYJ 5403) TYPE I & II SUPERCONDUCTORS (3cr.)**

**PHY5167 (PHY5291) ADVANCED TOPICS IN MEDICAL PHYSICS (3cr.)**
Topics may include medical imaging physics, cancer therapy physics, medical biophysics, or radiation protection and health physics. Topics vary from year to year. Prerequisites: PHY 5161 (PHYS 5203) plus, as appropriate to the topic offered, at least one of PHY 5112 (PHYS 5204), PHY 5164 (PHYS 5206), PHY 5165 (PHYS 5207); or permission of the Department.

**PHY5230 (PHYJ 5508) INTRODUCTION TO THE PHYSICS OF MACROMOLECULES (3cr.)**
The chemistry of macromolecules and polymers; random walks and the static properties of polymers; experimental methods; the Rouse model and single chain dynamics; polymer melts and viscoelasticity; the Flory-Huggins theory; the reptation theory; computer simulation algorithms; biopolymers and copolymers.

**PHY5347 (PHYJ 5509) PHYSICS, CHEMISTRY AND CHARACTERIZATION OF MINERAL SYSTEMS (3cr.)**
The materials science of mineral systems such as the network and layered silicates. In-depth study of the relations between mineralogically relevant variables such as atomic structure, crystal chemistry, site populations, valence state populations, crystallization conditions, etc. Interpretation and basic understanding of key characterization tools such as microprobe analysis, Mössbauer spectroscopy, x-ray diffraction and optical spectroscopy.

**PHY5362 (PHYJ 5006) COMPUTATIONAL METHODS IN MATERIAL SCIENCES (3cr.)**
Introduction to modern computational techniques used in material science research. Classical molecular dynamics, classical and quantum Monte Carlo methods, plane-wave based electronic band structure calculations, Carr-Parrinello quantum molecular dynamics. Applications to condensed matter systems: basic simulation techniques, force-field based methods in the study of thermodynamic and physical properties of solids, first-principles quantum mechanical methods.

**PHY5380 (PHYJ 5407) SEMICONDUCTOR PHYSICS I (3cr.)**
Brillouin zones and band theory. E-k diagram, effective mass tensors, etc. Electrical properties of semiconductors.

**PHY5381 (PHYJ 5408) SEMICONDUCTOR PHYSICS II: OPTICAL PROPERTIES (3cr.)**

**PHY5384 (PHYJ 5308) PHYSICS OF FIBER OPTIC SYSTEMS (3cr.)**

**PHY5387 (PHYJ 5504) PHYSICS OF MATERIALS (3cr.)**
Microscopic characteristics related to the physical properties of materials. Materials families: metals and alloys, ceramics, polymers and plastics, composites, layered materials, ionic solids, molecular solids, etc. Specific materials groups. Equilibrium phase diagrams and their relation to microstructure and kinetics. Experimental methods of characterization. Interactions and reactions. Prerequisite: PHY 4382 or equivalent. Cannot be combined for credit with PHY 4387.

**PHY5781 (PHYJ 5408) PHYSIQUE DES SEMICONDUCTEURS II : PROPRIÉTÉS OPTIQUES (3cr.)**
PHY5922 (PHYJ 5507) ADVANCED MAGNETISM (3cr.)
Study of some of the experimental and theoretical aspects of magnetic phenomena found in ferro-, ferri-, antiferro-magnetic and spin glass materials. Topics of current interest in magnetism. Prerequisite: PHY 4385 or equivalent.

PHY5951 (PHYJ 5409) PHYSIQUE DE BASSE TEMPÉRATURES / LOW TEMPERATURE PHYSICS II (3cr.)

PHY6371 (PHYJ 5404) TOPICS IN MÖSSBAUER SPECTROSCOPY (3cr.)
Experimental techniques used to measure Mössbauer spectra. Physics of the Mössbauer effect: recoilless emission/absorption, anisotropic Debye-Waller factors, second order Doppler shifts, etc. Mössbauer lineshape theory with static and dynamic hyperfine interactions. Distributions of static hyperfine parameters. Physics of the hyperfine field, transferred and supertransferred fields, calculations of electric field gradients, etc. Applications of Mössbauer spectroscopy to various areas of solid state physics and materials science.

PHY682 (PHYJ 6406) PHYSICS OF SEMICONDUCTOR SUPERLATTICES (3cr.)
Fundamental physics of two-dimensional quantized semiconductor structures. Electronic and optical properties of superlattices and quantum wells. Optical and electronic applications. This course is intended for students registered for the Ph.D. in semiconductor physics research. Prerequisite: Advanced undergraduate or graduate course in solid state physics.

PHY6782 (PHYJ 6407) PHYSIQUE DES SUPER-RÉSEAUX À SEMICONDUCTEURS (3cr.)

Physique des particules, nucléaire et atomique / Particle, Nuclear and Atomic Physics

PHY5966 (PHYJ 5601) EXPERIMENTAL TECHNIQUES OF NUCLEAR AND ELEMENTARY PARTICLE PHYSICS (3cr.)
A course intended for students interested in high energy experimental physics. Large accelerators for charged particles. Particle detectors: nuclear emulsion, bubble chamber, spark chamber, Vertex detectors and calorimeters etc. Study of properties of elementary particles through analysis of experimental results.

PHY5967 (PHYJ 5602) ELEMENTARY PARTICLE PHYSICS / PHYSIQUE DES PARTICULES (3cr.)

PHY8164 (PHYJ 5604) INTERMEDIATE NUCLEAR PHYSICS (3cr.)

PHY8260 ADVANCED NUCLEAR PHYSICS (6cr.)

PHY8165 (PHYJ 6601) PARTICLE PHYSICS PHENOMENOLOGY (3cr.)

PHY8166 (PHYJ 6602) ADVANCED TOPICS IN PARTICLE PHYSICS PHENOMENOLOGY (3cr.)

Photonique / Photonics

PHY5318 (PHYJ 5318) MODERN OPTICS (3cr.)
Electromagnetic wave propagation; reflection, refraction; Gaussian beams; guided waves. Laser theory: stimulated emission, cavity optics, gain and bandwidth, atomic and molecular lasers. Mode locking, Q switching. Diffraction theory, coherence, Fourier optics, holography, laser applications. Optical communication systems, nonlinear effects: devices, fibre sensors, integrated optics. Also offered at the undergraduate level, with different requirements, as PHYS 4208 for which additional credit is precluded. Prerequisite: permission of the Department.

PHY5330 (PHYJ 5330) FIBER OPTICS COMMUNICATIONS (3cr.)

PHY5331 (PHYJ 5331) FIBER OPTICS SENSORS (3cr.)
Fundamental properties of optical fibres. Light sources and detectors for optical fibre applications. Fibre optics sensors based on the Mach-Zehnder, Michelson and Fabry-Perot interferometers, Bragg gratings, signal detection schemes. Distributed sensing and multiplexing. Applications for optical fibre sensors. Temperature and strain measurements.

PHY5332 (PHYJ 5332) NONLINEAR OPTICS (3cr.)
Nonlinear optical susceptibility; wave equation description of nonlinear optics processes: second harmonic generation, intensity dependent refractive index, sum- and frequency-generation, parametric amplification; quantum mechanical theory of nonlinear optics; Brillouin and Raman scattering; the electro-optic effect; nonlinear fibre optics and solitons.
PHYS333 (PHYJ 5333) MODE LOCKED LASERS (3cr.)

Physique médicale / Medical Physics
PHY5161 (PHY 5203) MEDICAL RADIATION PHYSICS (3cr.)
PHY5112 (PHY 5204) PHYSICS OF MEDICAL IMAGING (3cr.)
Physical foundation of, and recent developments in, transmission x-ray imaging, computerized tomography, nuclear medicine, magnetic resonance imaging, and ultrasound, for the imaging physics specialist. Imaging system performance: contrast, resolution, modulation transfer function, signal-to-noise ratio, detective quantum efficiency. Essentials of image display and processing.

PHY5164 (PHY 5206) MEDICAL RADIOThERAPY PHYSICS (3cr.)
PHY5165 (PHY 5207) RADIOBIOLOGY (3cr.)
PHY5163 (PHY 5208) RADIATION PROTECTION (2cr.)
PHY5166 (PHY 5209) MEDICAL PHYSICS PRACTICUM (3cr.)

Physique de la technologie moderne / Physics in Modern Technology
PHY5495 (PHY 5905) PHYSICS IN MODERN TECHNOLOGY WORK TERM
Practical experience for students in the physics in modern technology stream. Satisfactory / not satisfactory grade, to be based on the grades obtained for the written and oral reports as well as on the evaluations of the employer. Prerequisites: Acceptance in the physics in modern technology stream of the MSc program and permission of the Department.

Général / General
PHY5130 (PHYJ 5001) EXPERIMENTAL CHARACTERIZATION TECHNIQUES IN MATERIALS SCIENCE, PHYSICS, CHEMISTRY, AND MINERALOGY (3cr.)
Survey of experimental techniques used in materials science, condensed matter physics, solid state chemistry, and mineralogy to characterize materials and solid substances. Diffraction (X-ray diffraction, neutron diffraction...). Spectroscopy (infra-red spectroscopy, Raman spectroscopy, nuclear magnetic resonance, Mössbauer spectroscopy, electron spin resonance...). Microscopy and imaging (scanning electron microscopy, transmission electron microscopy, optical microscopy, magnetic resonance imaging...). Other analytic techniques (thermal analysis, wet chemistry, bulk thermodynamic properties, linear response and dc susceptibility...).

PHY5170 (PHY 5701) ADVANCED QUANTUM MECHANICS I (3cr.)
Review of operators, motion in a general field and angular momentum. Identical particles and exchange, two electron atoms, Hartree-Fock and statistical models of many particle systems. Angular momentum, Clebsch-Gordan coefficients and scattering theory. Prerequisite: PHY 4375.

PHY5340 (PHY 5004) COMPUTATIONAL PHYSICS I (3cr.)

PHY5341 (PHY 5005) COMPUTATIONAL PHYSICS II (3cr.)
Interpolation, regression and modeling. Random number generation. Monte-Carlo methods. Simulations in thermo-sta tistics. Fractals, percolation, cellular automata. Stochastic numerical methods. This course cannot be combined for credit with PHY4341 (PHY 4741).

PHY5342 (PHY 5003) COMPUTER SIMULATIONS IN PHYSICS (3cr.)
A course aimed at exploring physics with a computer in situations where analytic methods fail. Numerical solutions of Newton's equations, non-linear dynamics. Molecular dynamics simulations. Monte-Carlo simulations in statistical physics: the Ising model, percolation, crystal growth models. Symbolic computation in classical and quantum physics. Prerequisites: PHY 3355 (PHY 3755), PHY 3370 (PHY 3770) and knowledge of one of the following: FORTRAN, Pascal or C.

PHY5355 (PHY 5505) STATISTICAL MECHANICS (3cr.)

PHY5361 (PHY 5102) NONLINEAR DYNAMICS IN THE NATURAL SCIENCES (3cr.)
A multidisciplinary introduction to nonlinear dynamics with emphasis on the techniques of analysis of the dynamic behaviour of physical systems. Basic mathematical concepts underlying nonlinear dynamics, including differential and difference equations, Fourier series and data analysis, stability analysis, Poincaré maps, local bifurcations, routes to chaos and statistical properties of strange attractors. Applications of these concepts to specific problems in the natural
Sciences such as condensed matter physics, molecular physics, fluid mechanics, dissipative structures, evolutionary systems etc.

**PHY5740 (PHYJ 5502) PHYSIQUE NUMÉRIQUE I (3cr.)**

**PHY5741 (PHYJ 5503) PHYSIQUE NUMÉRIQUE II (3cr.)**

**PHY5742 (PHYJ 5506) SIMULATIONS NUMÉRIQUES EN PHYSIQUE (3cr.)**

**PHY6170 (PHYJ 5703) ADVANCED QUANTUM MECHANICS II (3cr.)**

**PHY7999 (PHYS 5909) THÈSE DE MAÎTRISE / MSc THESIS**

**PHY8191 (PHYS 5901) SELECTED TOPICS IN PHYSICS (MSc) (3cr.)**

**PHY8391 (PHYS 6001) SELECTED TOPICS IN PHYSICS (PhD) (3cr.)**

**PHY9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAMINATION (PhD)**

**PHY9999 (PHYS 6999) THÈSE DE DOCTORAT / PhD THESIS**

**PHY5344 (PHYS 5002) COMPUTATIONAL PHYSICS (3cr.)**

**PHY8111 (PHYS 5101) CLASSICAL MECHANICS AND THEORY OF FIELDS (3cr.)**

**PHY8122 (PHYS 5202) MOLECULAR SPECTROSCOPY (3cr.)**

**PHY8132 (PHYS 5302) CLASSICAL ELECTRODYNAMICS (3cr.)**

**PHY8172 (PHYS 5702) RELATIVISTIC QUANTUM MECHANICS (3cr.)**

**PHY5140 (PHYS 5801) METHODS IN THEORETICAL PHYSICS I (3cr.)**

**PHY5141 (PHYS 5802) METHODS IN THEORETICAL PHYSICS II (3cr.)**

**PHY8290 (PHYS 5900) SELECTED TOPICS IN PHYSICS (MSc) (6cr.)**

**PHY8173 (PHYS 6701) QUANTUM ELECTRODYNAMICS (3cr.)**

**PHY8490 (PHYS 6900) SELECTED TOPICS IN PHYSICS (PhD) (6cr.)**

**Cours spécialisés / Specialized Courses**

**PHY5100 (PHYJ 5401) SOLID STATE PHYSICS I (3cr.)**

**PHY5110 (PHYJ 5402) SOLID STATE PHYSICS II (3cr.)**

**PHY5151 (PHYJ 5403) TYPE I & II SUPERCONDUCTORS (3cr.)**
PHY5320 (PHYJ 5508) INTRODUCTION TO THE PHYSICS OF MACROMOLECULES (3cr.)
The chemistry of macromolecules and polymers; random walks and the static properties of polymers; experimental methods; the Rouse model and single chain dynamics; polymer melts and viscoelasticity; the Flory-Huggins theory; the reptation theory; computer simulation algorithms; biopolymers and copolymers.

PHY5322 BIOLOGICAL PHYSICS (3cr.)

PHY5347 (PHYJ 5509) PHYSICS, CHEMISTRY AND CHARACTERIZATION OF MINERAL SYSTEMS (3cr.)
The materials science of mineral systems such as the network and layered silicates. In-depth study of the relations between mineralogically relevant variables such as atomic structure, crystal chemistry, site populations, valence state populations, crystallization conditions, etc. Interpretation and basic understanding of key characterization tools such as microprobe analysis, Mössbauer spectroscopy, x-ray diffraction and optical spectroscopy.

PHY5362 (PHYJ 5006) COMPUTATIONAL METHODS IN MATERIAL SCIENCES (3cr.)
Introduction to modern computational techniques used in material science research. Classical molecular dynamics, classical and quantum Monte Carlo methods, plane-wave based electronic band structure calculations, Carr-Parrinello quantum molecular dynamics. Applications to condensed matter systems: basic simulation techniques, force-field based methods in the study of thermodynamic and physical properties of solids, first-principles quantum mechanical methods.

PHY5380 (PHYJ 5407) SEMICONDUCTOR PHYSICS I (3cr.)
Brillouin zones and band theory. E-k diagram, effective mass tensors, etc. Electrical properties of semiconductors.

PHY5381 (PHYJ 5408) SEMICONDUCTOR PHYSICS II: OPTICAL PROPERTIES (3cr.)

PHY5384 (PHYJ 5308) PHYSICS OF FIBER OPTIC SYSTEMS (3cr.)

PHY5387 (PHYJ 5504) PHYSICS OF MATERIALS (3cr.)
Microscopic characteristics related to the physical properties of materials. Materials families: metals and alloys, ceramics, polymers and plastics, composites, layered materials, ionic solids, molecular solids, etc. Specific materials groups. Equilibrium phase diagrams and their relation to microstructure and kinetics. Experimental methods of characterization. Interactions and reactions. Prerequisite: PHY 4382 or equivalent. Cannot be combined for credit with PHY 4387.

PHY5495 (PHYS 5905) PHYSICS IN MODERN TECHNOLOGY WORK TERM
Practical experience for students in the physics in modern technology stream. Satisfactory / not satisfactory grade, to be based on the grades obtained for the written and oral reports as well as on the evaluations of the employer. Prerequisites: Acceptance in the physics in modern technology stream of the MSc program and permission of the Department.

PHY5722 PHYSIQUE BIOLOGIQUE (3cr.)

PHY5781 (PHYJ 5408) PHYSIQUE DES SEMICONDUCTEURS II : PROPRIÉTÉS OPTIQUES (3cr.)

PHY5895 STAGE EN PHYSIQUE DE LA TECHNOLOGIE MODERNE
Expérience pratique pour les étudiants dans l'option physique de la technologie moderne. Note, Satisfaisant ou Non satisfaisant, basée sur l'évaluation de l'employeur et les rapports écrits et oraux décrivant le projet du stage. Préalables : être accepté dans l'option physique de la technologie moderne du programme de maîtrise et permission du département.

PHY5922 (PHYJ 5507) ADVANCED MAGNETISM (3cr.)
Study of some of the experimental and theoretical aspects of magnetic phenomena found in ferro-, ferri-, antiferro-magnetic and spin glass materials. Topics of current interest in magnetism. Prerequisite: PHY 4385 or equivalent.
Les conditions d'admission sont décrites ci-dessous :

Renseignements généraux

PHY4330 ADVANCED DYNAMICS
This course is intended for students registered for the Ph.D. in semiconductor physics research. Prerequisite: Advanced undergraduate or graduate course in solid state physics.

PHY6382 (PHY 6406) PHYSICS OF SEMICONDUCTOR SUPERLATTICES
Fundamental physics of two-dimensional quantized semiconductor structures. Electronic and optical properties of superlattices and quantum wells. Optical and electronic applications. This course is intended for students registered for the Ph.D. in semiconductor physics research. Prerequisite: Advanced undergraduate or graduate course in solid state physics.

De plus, les cours suivants peuvent être suivis pour crédits au niveau supérieur à la discrétion du directeur du département de physique. Toutefois, un seul de ces cours pourra être crédité pour la maîtrise ou le doctorat :

In addition, the following courses may be taken for credit at the graduate level at the discretion of the chairperson of the Physics Department. However, only one such course may be counted toward the credits required for the master's or doctoral degree:

PHY4327 APPLICATIONS OF INTEGRATED CIR CUTS IN PHYSICS
A course designed to introduce students having no formal background in electronics to the use of integrated circuits in designing laboratory apparatus. Both digital and analogue circuits will be covered. Topics are chosen from counters, gates, wave-shaping, microcomputers, D/A and A/D conversion, op amps, filters, lock-in amplifiers, and phase locked loops. This course is offered in alternate years.

PHY4330 ADVANCED DYNAMICS
Advanced mechanics: Lagrangian and Hamiltonian formulations; canonical transformations: Hamilton-Jacobi theory. Relativity: Lorentz transformation; tensor analysis; relativistic classical mechanics.

PHY4335 PHYSICS OF CONTINUOUS MEDIA

PHY4346 GENERAL RELATIVITY
An introduction to the mathematical techniques and experimental tests of the general theory of relativity. This course is offered in alternate years.

PHY4361 APPLIED NUCLEAR PHYSICS

PHY4362 SUBATOMIC PHYSICS I

PHY4368 SUBATOMIC PHYSICS II
Properties of leptons, quarks and hadrons. The fundamental interactions, conservation laws, invariance principles and quantum numbers. Resonances in hadron-hadron interactions. Three body phase space. Dalitz plots. Quark model of hadrons, mass formulae. Weak interactions, parity violation, decay of neutral kaons, CP violation, Cabibbo theory.

PHY4370 QUANTUM MECHANICS

PHY4385 SOLID STATE PHYSICS

**PHY4387 PHYSICS OF MATERIALS** (3cr.)

**PHY4395 ASTROPHYSICS** (3cr.)

**PHY4730 COURS AVANCÉ DE DYNAMIQUE** (3cr.)
Mécanique avancée : formulations de Lagrange et de Hamilton; transformations canoniques; théorie de Hamilton-Jacobi. Relativité : transformations de Lorentz; analyse tensorielle; mécanique classique relativiste.

**PHY4762 PHYSIQUE SUBATOMIQUE I** (3cr.)

**PHY4770 MÉCANIQUE QUANTIQUE** (3cr.)

**PHY4785 PHYSIQUE DE L’ÉTAT SOLIDE** (3cr.)

**Physiothérapie (M.Sc.S.)**

**Introduction**

La physiothérapie est une profession de la santé de première ligne, autonome et axée sur le client, qui a pour but d’améliorer et de maintenir l’autonomie fonctionnelle, de prévenir et de gérer la douleur, les déficiences physiques, les incapacités et les limites à la participation, de favoriser la bonne forme physique, la santé et le mieux-être (Association Canadienne de Physiothérapie, 2000). La mission du programme de physiothérapie est de former des professionnels de la physiothérapie bilingues, capables de desservir les besoins de la population francophone de l’Ontario et des autres communautés francophones du Canada dans le contexte bilingue et multiculturel du pays, et de promouvoir un haut niveau d’excellence dans les activités de recherche et d’enseignement en réadaptation.

Le programme préconise une formation centrée sur le client et sur l’intégration des résultats probants issus de la recherche dans la prise de décision clinique. Les bases conceptuelles du programme reposent à la fois sur les sciences du mouvement (kinésiologie et patho-kinésiologie) et les sciences cliniques et intègrent les bases du modèle de la classification internationale du fonctionnement, du handicap et de la santé en tant que norme pour décrire et mesurer la santé.

**Renseignements généraux**

Le programme de Maîtrise ès Sciences de la Santé en physiothérapie s’étend sur six sessions consécutives, soient deux années d’études à temps plein; il compte 60 crédits de cours et 1080 heures de stage. Les stages obligatoires peuvent s’effectuer au sein des hôpitaux, des conseils scolaires et des centres de réadaptation de la région de la capitale nationale. Ces stages peuvent également avoir lieu à l’extérieur de la région.


Le mandat du programme de physiothérapie étant de former des professionnels bilingues capables de desservir les populations francophones, le programme de cours est offert uniquement en français. Cependant, les travaux et examens peuvent être rédigés soit en français, soit en anglais. Également, bien que le programme de cours soit en français, certains stages cliniques peuvent être effectués dans des milieux bilingues ou anglophones. Les étudiants doivent donc avoir aussi une connaissance fonctionnelle de l’anglais.

Les règlements qui régissent ce programme sont établis par la Faculté des études supérieures et postdoctorales (FESP). Ces règlements sont publiés sur le site web de la FESP sous la rubrique « Règlements généraux » à l’adresse suivante : www.etudesup.uottawa.ca. En plus des règlements généraux de la FESP, le programme est régi par des règlements qui lui sont spécifiques.

**Admission**
Les conditions d’admission sont décrites ci-dessous :

Il faut détenir un baccalauréat spécialisé (ou l’équivalent) avec une moyenne minimale de B (70%), calculée selon les directives de la FÉSP, et satisfaire aux exigences suivantes :

1. Une excellente connaissance du français écrit et parlé et une connaissance fonctionnelle de l’anglais écrit et parlé. Les compétences linguistiques seront vérifiées lors de l’entrevue de sélection qui aura lieu dans les deux langues.


3. Trois (3) crédits en psychologie, soit un cours d’introduction à la psychologie, soit un cours de psychologie du développement (par exemple, PSY 1501 Introduction à la psychologie expérimentale ou l’équivalent et PSY 2505 Psychologie du développement ou l’équivalent).

4. Trois (3) crédits en statistiques (par exemple, HSS 2781 Mesure et analyse des données ou l’équivalent).

5. Une expérience de bénévolat ou de travail en relation d’aide au cours des trois dernières années serait un atout.

Note : Les cours préalables doivent avoir été complétés dans les six années précédant la demande d’admission.

Les cotes de cours indiquées ci-dessus entre parenthèses représentent des équivalents à l’Université d’Ottawa et sont données à titre d’exemple pour aider le candidat dans son choix de cours. Les équivalences pour les préalables à l’admission peuvent être vérifiées auprès du secrétariat scolaire de la Faculté des sciences de la santé.

Documents exigés

1. Un sommaire officiel de la demande d’admission en ligne.

2. Un relevé de notes officiel provenant de chaque établissement postsecondaire fréquenté par le candidat.

3. Le formulaire « Liste de contrôle pour l’admission » dûment rempli.

4. Un curriculum vitae à jour stipulant le nom d’au moins deux répondants et leurs coordonnées (adresse complète, téléphone, courriel).

Consortium national de formation en santé pour francophones (CNFS)

Le gouvernement du Canada, par l’entremise de Santé Canada, appuie financièrement depuis le printemps 1999 le Consortium national de formation en santé (CNFS). Le CNFS est un consortium d’universités et d’établissements de santé répartis dans l’ensemble du Canada qui vise à faciliter l’accès à des études en sciences de la santé à des étudiants provenant de milieux francophones en contexte minoritaire. Le CNFS a permis l’ajout de places supplémentaires au programme en physiothérapie pour des francophones de l’extérieur du Québec et de l’Ontario. Il est prévu que les étudiants qui sont accueillis dans le cadre du CNFS fassent la majorité de leurs stages cliniques dans leur province d’origine.

Cours de conversation anglaise

Pour préparer les étudiants à passer leurs stages en milieu bilingue, l’École des sciences de la réadaptation offre un cours de conversation anglaise (REA3940) qui peut être recommandé ou exigé selon la compétence linguistique du candidat.

Program Requirements

Le programme propose deux cheminement, l’un avec cours et l’autre avec mémoire.

1. Cheminement avec cours :

L’étudiant devra compléter 54 crédits de cours obligatoires, 3 crédits de travaux dirigés en physiothérapie (PHT 6753 : Séminaire de recherche) et deux (2) cours optionnels de 1.5 crédits.

2. Cheminement avec cours et mémoire :

L’étudiant devra compléter 54 crédits de cours obligatoires et un mémoire de recherche de 6 crédits. Le mémoire est une production originale de 50 pages et consiste en l’approfondissement d’une question reliée à la physiothérapie à l’aide d’une méthodologie stricte. Le sujet du mémoire peut être théorique ou appliqué au champ d’étude (étude de cas). Le mémoire devra être présenté oralement aux professeurs et aux étudiants du programme. Pour suivre le cheminement avec mémoire, il faut obtenir l’approbation de la direction du programme.

Pour les deux cheminement, en plus des 60 crédits, l’étudiant devra compléter six stages cliniques totalisant 1080 heures réparties sur 29 semaines, tel que prescrit par le Conseil Canadien pour l’Agrement des Programmes Universitaires en Physiothérapie. Il devra également compléter deux activités d’intégration post-stage non créditées. Pour participer aux stages, il faut présenter certains documents conformément aux exigences des agences, des milieux cliniques et du Ministère de la Santé de l’Ontario, visant à protéger les clients ainsi que les étudiants.
**Normes minimales et échecs**

Une moyenne globale non cumulative calculée pour chacune des sessions devra être maintenue à un minimum de B. La note de passage dans chaque cours individuel est de C+. L'étudiant qui a subi deux échecs (l'équivalent de six crédits) doit se retirer du programme. Du point de vue de ce règlement, les stages I, II, III, IV, V et VI sont considérés équivalents à trois crédits chacun. Les stages sont notés S (satisfaisant) ou NS (non satisfaisant). Tout stage pour lequel la note NS a été obtenue doit être répété. Dans l'éventualité d'un deuxième échec au même stage ou à deux stages différents, l'étudiant doit se retirer du programme.

**Courses**

**PHT5511 PRINCIPES DE PRATIQUE CLINIQUE I (1.5cr.)**
Rôles et fonctions du physiothérapeute, histoire de la profession, code d’éthique, principes de la relation d’aide, techniques d’entrevue, communication dans l’équipe multidisciplinaire. Ce cours comporte des laboratoires.

**PHT5512 PRINCIPES DE PRATIQUE CLINIQUE II (1.5cr.)**

**PHT5513 PRINCIPES DE PRATIQUE CLINIQUE III (1.5cr.)**

**PHT5522 INTRODUCTION À LA BIOMÉCANIQUE (1.5cr.)**
Concepts mathématiques utiles à l’analyse du mouvement et réponse biomécanique des divers tissus. Rôle des structures articulaires et musculaires dans la production du mouvement et le contrôle de la posture : types de mouvements, déterminants de la stabilité articulaire, facteurs qui influencent la performance musculaire, etc.

**PHT5525 MARCHE HUMAINE ET ANALYSE BIOMÉCANIQUE CLINIQUE (1.5cr.)**

**PHT5526 PHYSIOLOGIE DE L’EXERCICE EN RÉADAPTATION (1.5cr.)**

**PHT5551 PRATIQUE FACTUELLE I (1.5cr.)**
Intégration des résultats probants et du raisonnement scientifique au raisonnement clinique par la lecture et la critique d’articles de recherche en lien avec les autres cours du programme de physiothérapie (thème 2). Préalable : PHT 5751.

**PHT5552 PRATIQUE FACTUELLE II (1.5cr.)**
Intégration des résultats probants et du raisonnement scientifique au raisonnement clinique par la lecture et la critique d’articles de recherche en lien avec les autres cours du programme de physiothérapie (thème 3). Préalable : PHT 5551.

**PHT5721 MOTRICITÉ HUMAINE I : FONDEMENTS NEUROBIOLOGIQUES ET ASPECTS PRATIQUES (3cr.)**

**PHT5722 ANATOMIE DU SYSTÈME LOMOOTEUR ET NEUROANATOMIE (3cr.)**
Module d’auto-apprentissage et lectures recommandées pour une mise à jour des connaissances de l’anatomie et de la physiologie du système.
locomoteur et du système nerveux, nécessaires à la physiothérapie.

**PHT5723 BIOMÉCANIQUE ET ÉVALUATION DU QUADRANT INFÉRIEUR ET DU QUADRANT SUPÉRIEUR** (3cr.)

**PHT5727 MOTRICITÉ HUMAINE II : DE L’ENFANCE À LA SÉNESCENCE** (3cr.)

**PHT5731 PRINCIPES DE RÉÉDUCATION I : MÉTHODES DE BASE ET EXERCICES THÉRAPEUTIQUES** (3cr.)

**PHT5732 PRINCIPES DE RÉÉDUCATION II : MÉTHODES ÉLECTROTHÉRAPEUTIQUES** (3cr.)

**PHT5751 MÉTHODOLOGIE DE LA RECHERCHE EN RÉADAPTATION** (3cr.)

**PHT5901 STAGE I**
Préalable : PHT 5512.

**PHT5902 STAGE II**
Préalables : PHT 5901, PHT 5731.

**PHT6514 PROMOTION DE LA SANTÉ ET ADMINISTRATION DES SERVICES DE SANTÉ EN PHYSIOTHÉRAPIE** (1.5cr.)

**PHT6536 PRINCIPES DE RÉÉDUCATION VI : ÉVALUATION, RÉÉDUCATION ET PRISE EN CHARGE DES AFFections RHUMATOLOGIQUES** (1.5cr.)

**PHT6541 L’APPROCHE INTERPROFESSIONNELLE** (1.5cr.)
Le travail d’équipe dans le domaine de la santé nécessite une compréhension implicite des rôles de chacun des intervenants d’une équipe de soins. Ce cours permettra le partage des connaissances et stimulera une approche interprofessionnelle qui est centrée sur la personne. Ce cours s’appuiera sur l’apprentissage collaboratif en petits groupes.

**PHT6542 APPROCHES SPÉCIALISÉES II : ÉVALUATION ET RÉÉDUCATION SENSORIMOTRICE NEUROLOGIQUE CHEZ L’ENFANT** (1.5cr.)

**PHT6543 APPROCHES SPÉCIALISÉES III : PHYSIOTHÉRAPIE DU SPORTIF ET MÉDECINE DU SPORT** (1.5cr.)
Rôle du physiothérapeute en médecine sportive dans le cadre d’un travail multidisciplinaire. Application des connaissances des systèmes musculosquelettique, neurologique, cardiorespiratoire et vasculaire à la réadaptation du sportif de tout âge. Particularité de l’évaluation, premiers soins,

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rééducation du sportif, prévention des blessures sportives. Aspects légaux et éthiques de la thérapie sportive. Ce cours comporte des laboratoires.

PHT6544 APPROCHES SPÉCIALISÉES IV : ASPECTS PSYCHOLOGIQUES ET NEUROPHYSIOLOGIQUES AVANCÉS POUR LA PRISE EN CHARGE DES ÉTATS DOULOUREUX CHRONIQUES (1.5cr.)


PHT6545 APPROCHES SPÉCIALISÉES V : RÉÉDUCATION VESTIBULAIRE (1.5cr.)

Évaluation et traitement en physiothérapie des patients ayant des troubles et lésions de l'oreille interne. Interventions visant à abolir le vertige paroxystique positionnel bénin, pour réduire les étourdissements et les vertiges, pour augmenter l'acuité visuelle dynamique, pour améliorer l'équilibre debout et pendant la marche chez les patients ayant un déficit vestibulaire unilatéral et bilatéral. Préalable : PHT 6734.

PHT6546 APPROCHES SPÉCIALISÉES VI : PRISE EN CHARGE ET RÉÉDUCATION DANS LES AMPUTATIONS, LES GRANDS BRÛLÉS, EN PÉRINATALITÉ ET EN SOINS PALLIATIFS (1.5cr.)


PHT6733 PRINCIPES DE RÉÉDUCATION III : ÉVALUATION ET RÉÉDUCATION CARDIAQUE ET RESPIRATOIRE (3cr.)


PHT6734 PRINCIPES DE RÉÉDUCATION IV : ÉVALUATION ET RÉÉDUCATION SENSORI-MOTRICES CHEZ L’ADULTE (3cr.)


PHT6735 PRINCIPES DE RÉÉDUCATION V : ÉVALUATION, RÉÉDUCATION ET PRISE EN CHARGE DES AFFECTIONS ORTHOPÉDIQUES (3cr.)


PHT6737 PRINCIPES DE RÉÉDUCATION VII : ÉVALUATION, RÉÉDUCATION ET PRISE EN CHARGE DES AFFECTIONS SYSTÉMIQUES MULTIPLES (3cr.)


PHT6741 APPROCHES SPÉCIALISÉES 1 : TECHNIQUES DE MOBILISATIONS VERTÉBRALES ET PÉRIPHÉRIQUES (3cr.)


PHT6753 SÉMINAIRE DE RECHERCHE (3cr.)

En groupe de trois, les étudiants sont appelés à conceptualiser une expérience de recherche sur un sujet d’intérêt pour le groupe, sous la direction d’un professeur. Le travail doit comprendre : recension des écrits, contribution originale à l’état des connaissances, analyse critique des résultats, rapport écrit et présentation des résultats aux pairs. Réservé aux étudiants dans le cheminement avec cours. Préalable : PHT 5751.

PHT6903 STAGE III


PHT6904 STAGE IV

Concomitant : PHT 6903.
PHT6905 STAGE V
Préalable : PHT 6904.

PHT6906 STAGE VI
Préalable : PHT 6905.

PHT6999 MÉMOIRE DE RECHERCHE (6cr.)
L’étudiant est amené individuellement à réaliser, sous la direction d’un professeur, les diverses étapes d’un projet de recherche de nature clinique, incluant la réception des écrits, la formulation des hypothèses, la collecte et l’analyse de données ainsi que la diffusion des résultats sous forme orale et écrite. La rédaction d’un mémoire, rapport de recherche écrit exhaustif, est obligatoire. Réservé aux étudiants dans le cheminement avec cours et mémoire. Noté S/NS. Exclusion : PHT 6753. Préalable : PHT 5751.

REA5940 CONVERSATION ANGLAISE POUR LES STAGES EN RÉADAPTATION/ENGLISH CONVERSATION FOR CLINICAL PLACEMENTS IN REHABILITATION
Cours visant la préparation des étudiants en réadaptation pour l’intervention ayant lieu en anglais : relation d’aide, entrevue initiale, consentement aux soins, évaluation, intervention, congé et rédaction de notes de dossier à l’aide de la méthode SOAP (Subjective, Objective, Assessment, Plan). La terminologie spécifique aux différents domaines de la réadaptation est abordée. Noté (S) satisfaisant ou (NS) non satisfaisant. Cours réservé aux étudiants inscrits à l’un des programmes de maîtrise professionnels de l’École des sciences de la réadaptation. / Course aimed at preparing students to converse effectively with English-speaking colleagues and clients. Topics will include English terms and dialogue related to forming a therapeutic relationship, the initial interview, obtaining informed consent, assessment, intervention, discharge and the charting of notes using the SOAP (Subjective, Objective, Assessment, Plan) method. Specific rehabilitation terminology will be presented. Graded (S) satisfactory or (NS) non satisfactory. Course reserved for students registered in one of the professional master’s programs within the School of Rehabilitation Sciences.

REA6547 SANTÉ ET RÉADAPTATION AU TRAVAIL (1.5cr.)

### Political Science (MA)

The School of Political Studies offers graduate programs leading to the degrees of Master of Arts (MA) and PhD in political science. The MA program is offered both full- and part-time whereas the PhD program is offered full-time only. The programs are offered in French and English. All students, regardless of the language selected for the majority of their courses, must take at least one course in French. In accordance with University of Ottawa policy, examinations, assignments and the research paper or thesis may be written in either English or French. Two options are available for the MA, the MA with thesis and the MA with research paper. The programs operate under the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) which can be accessed at www.grad.uOttawa.ca.

### Admission

The following are minimum requirements for admission to the master’s program. Meeting these minimal requirements alone does not guarantee acceptance. The School of Political Studies also takes into account the number of places available and the student’s aptitude for higher level research.

1. Students who have a BA with honours in political science or its equivalent with a minimum average of 70 % (B), calculated in accordance with FGPS guidelines, may be admitted directly to the MA program.
2. Students who do not have a BA with honours in political science, but who have a BA with a minor in political science or a BA in a related discipline, and a minimum average of 75 % (B +), may be accepted for a qualifying year, the content of which will be decided in consultation with the director of graduate studies in the political science.
3. An active knowledge of French or English is essential. All students admitted will have to take at least one of their courses in French, and all students must be capable of reading texts in English and French. Candidates must indicate in their application the language in which they plan to take the majority of their courses. Those students who plan to study mainly in English will have to demonstrate in their application an active knowledge of English. All students first language is other than English or French must provide proof in their application of their level of competence in both languages. The School of Political Studies reserves the right to require a language test for either language.

### Collaborative program in Women’s Studies at the master’s level

The School of Political Studies is one of the participating units in the collaborative program in women’s studies at the master’s level. This program was created to enable students to enrich their education in political science by adding the interdisciplinary dimension of women’s studies. The women’s studies program consists of two compulsory women’s studies (FEM) courses as well as a thesis or a research paper on a subject linked to women’s studies. One of the FEM courses will count towards the requirements of the master’s program with thesis, replacing one of the elective courses. Both FEM courses will count towards the requirements of the master’s program with research paper, replacing two of the electives.
Application for the collaborative program must normally be submitted at the same time as the application for the MA program in Political Science. For additional information, please refer to the description of the women’s studies collaborative program on the website of the Faculty of Graduate and Postdoctoral Studies.

Program Requirements

MA Program
Two options are available: the MA with thesis and the MA with research paper. The MA with major research paper, which emphasizes course work and the writing of a research paper, is offered in the areas of Canadian and Quebec politics and international and comparative politics. The MA with thesis is offered in all three fields of study and places greater emphasis on individual research.

Students admitted on a full-time basis must register full-time for a minimum of three sessions.

Students must maintain a minimum average of 70 % (B) during their master’s program. Those who receive a grade lower than 70 % (B) in two courses or more will be required to withdraw.

Fields
The master’s program offers the following fields of study:

- a) International relations;
- b) Canadian and Quebec politics;
- c) Political thought and the analysis of ideologies;
- d) Comparative politics;
- e) Women and politics;
- f) Environmental politics;
- g) Political economy;
- h) Citizenship, diversity and migration.

MA Degree Requirements

MA with thesis
The requirements of the MA with thesis are the following:

1. Completion of 12 credits of courses;
2. Presentation and defence of the thesis proposal;

Course requirements
Students are required to take the following courses:

1. A core course in the chosen field of study (3 credits);
   POL 6101
2. Two other courses (3 credits each) chosen from the optional courses and seminars offered.

All students must successfully complete at least one course given in French. Registration is limited to a maximum of three courses / seminars per session, not including the thesis proposal. Registration in the thesis proposal should take place preferably in the first session and at the latest in the third session. The individual program of study is decided in consultation with the director of graduate studies and a professor in the student’s field of study, both of whom must approve it. Courses with a code lower than 5XXX are not permitted.

Thesis proposal (POL 6999)
Students should begin the process of selecting a thesis topic and potential supervisor immediately upon commencing the program. The topic and supervisor are selected in consultation with an adviser and must be registered with the Faculty of Graduate and Postdoctoral Studies no later than the end of the second session in the program. Once the topic and supervisor have been chosen, the thesis proposal is prepared with the help of the supervisor.

The defence of the topic, which is the only requirement of POL 6999, must be completed before the end of the third session of registration (and preferably earlier). Once the topic has been defended, students are allowed to register for the thesis (POL 7989).

The thesis proposal could be organized in the following way:

1. Statement of the research question;
2. Hypotheses;
3. Research methods (techniques and data to be used);
4. Theoretical or practical relevance of the thesis;
5. Provisional bibliography.
The thesis proposal is assessed by a committee, composed of the thesis supervisor and another professor chosen by the School of Political Studies in consultation with the student and the thesis supervisor.

MA Thesis (POL 7989)
The thesis can be in any one of the four fields. It is prepared in regular consultation with the supervisor and evaluated by a committee of professors proposed by the director of the School of Political Studies.

The master’s thesis should be evaluated according to the following criteria.

1. Rigour of the methodology
2. Knowledge of the key scholarly literature relevant to the thesis
3. The quality of the research question
4. Analytical capacity
5. The coherence, clarity and quality of the argument, and of the writing

These criteria will be applied according to what can reasonably be expected of a master’s student who has been registered in the thesis option for four sessions.

Concretely, the thesis can focus on the study of one or more political phenomena narrowly defined, on the discussion of a concept, a hypothesis, or a critical analysis of an author’s work. The master’s thesis should be 80-120 pages (double spaced – 20,000 to 30,000 words), including any notes and bibliography. A thesis longer than 125 double-spaced pages (31,250 words) will not be accepted.

MA with research paper
The requirements of the MA with major research paper are the following:

1. Completion of 18 credits of courses;
2. Research paper.

Course requirements

1. Two core courses (3 credits each), one of them in the chosen field of study;
   - POL 6101
2. Three other courses (3 credits each) chosen from the optional courses and seminars offered.

The individual program of study is decided in consultation with the director of graduate studies and a professor in the student’s field of study, both of whom must approve it. All students must successfully complete at least one course given in French.

The maximum number of courses or seminars per session for which students are allowed to register is three. Courses with a code lower than 5XXX are not permitted.

Research Paper (POL 7979)
Upon completion of 12 credits, which must include two core courses as well as the methodology course, students are permitted to register for the major research paper. The first registration normally takes place in the third session. The goal of the major research paper is to evaluate a student’s capacity to complete a coherent literature review of a well-defined topic relating to a precise research question. Students are not required to do original research; rather, they are expected to analyze the relevant literature on a topic, relating to the question underlying their research. The topic and the literature to be consulted must be approved by two professors in the School of Political Studies.

The major research paper should demonstrate:

1. the ability to conduct research;
2. a knowledge of the relevant literature in the chosen topic;
3. the capacity to address a research question in a coherent, structured, and well-written manner.

These criteria will be applied according to what can be reasonably expected of a full-time master’s student who has been enrolled in the major research paper option for two sessions (including the summer).

The major research paper, which is written under a professor’s supervision, should be about 12,000 words or 50 pages. It is evaluated by the professor as well as by another professor recommended by the director of the master’s program. Each of the two professors will assign a letter grade, the average of which will constitute the student’s final mark.

Transfer from master’s to PhD
Students in the MA program at the University of Ottawa who have performed exceptionally well academically, who have demonstrated solid research skills and who are deemed sufficiently mature, may proceed to the doctoral program without completing their master’s degree. The conditions for transfer are as follows:

- Successful completion of at least four POL graduate courses (12 credits) with an “A” average as well as an “A+” in at least one of the courses;
- Approval of the Graduate Studies Committee of the School of Political Studies. The committee makes its decision on the basis of written reports on the student’s maturity and research skills, from the student’s thesis supervisor and from the professors in the courses taken in the master’s program.

The request for transfer must be made during the third session of full-time registration (or equivalent), and the transfer must take place before the end of the fourth session. The Graduate Studies committee will take into account the student’s grades, thesis plan (or draft plan) and the reports from professors who
taught the courses taken at the master’s.

Following the transfer, the student must successfully complete all the requirements of the PhD program. Students who transfer but do not complete the PhD program can however obtain the MA degree provided they meet all of its requirements.

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>POL5106</td>
<td>SELECTED TOPICS IN POLITICAL SCIENCE</td>
<td>3 cr.</td>
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<tr>
<td>POL5123</td>
<td>CANADIAN POLITICS</td>
<td>3 cr.</td>
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<tr>
<td>POL5506</td>
<td>THÈMES CHOISIS EN SCIENCE POLITIQUE</td>
<td>3 cr.</td>
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<tr>
<td>POL5523</td>
<td>POLITIQUE CANADIENNE</td>
<td>3 cr.</td>
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<tr>
<td>POL6100</td>
<td>ANALYSIS OF INTERNATIONAL AND COMPARATIVE POLITICS</td>
<td>3 cr.</td>
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<tr>
<td>POL6101</td>
<td>RESEARCH METHODS IN POLITICAL SCIENCE</td>
<td>3 cr.</td>
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<tr>
<td>POL6118</td>
<td>CORE SEMINAR IN COMPARATIVE POLITICS</td>
<td>3 cr.</td>
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<tr>
<td>POL6119</td>
<td>ANALYSIS OF THE CANADIAN POLITICAL SYSTEM</td>
<td>3 cr.</td>
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<tr>
<td>POL6120</td>
<td>THEMATIC ANALYSIS OF MODERN POLITICAL THOUGHT</td>
<td>3 cr.</td>
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<td>POL6500</td>
<td>ANALYSE POLITIQUE INTERNATIONALE ET COMPARÉE</td>
<td>3 cr.</td>
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<tr>
<td>POL6501</td>
<td>LA MÉTHODE EN SCIENCE POLITIQUE</td>
<td>3 cr.</td>
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<tr>
<td>POL6518</td>
<td>SÉMINAIRE NOYAU DE POLITIQUE COMPARÉE</td>
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<tr>
<td>POL6519</td>
<td>ANALYSE DU SYSTÈME POLITIQUE CANADIEN</td>
<td>3 cr.</td>
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<tr>
<td>POL6520</td>
<td>IDÉOLOGIE ET THÉORIE POLITIQUE</td>
<td>3 cr.</td>
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POL6999 PROJET DE THÈSE / THESIS PROPOSAL

POL7102 SELECTED TOPICS IN INTERNATIONAL AND COMPARATIVE POLITICS (3cr.)

POL7103 SELECTED TOPICS IN POLITICAL THOUGHT (3cr.)

POL7104 SELECTED TOPICS IN CANADIAN POLITICS (3cr.)

POL7105 POWER, LAW AND SYSTEMS OF GOVERNANCE (3cr.)
Studies the relationship between the exercise of power, the legal system and various systems of governance. The approach may be historical or thematic. The exact topic is announced at the beginning of the session.

POL7106 SUBJECTIVITY AND INTERSUBJECTIVITY (3cr.)
Study of the foundations and the nature of subjectivity and intersubjectivity. The approach may be historical or thematic. The exact topic is announced at the beginning of the session.

POL7107 ORIGINS AND FEATURES OF MODERN POLITICAL THOUGHT (3cr.)
Study of the authors, schools of thought and ideologies that constitute modernity. The exact topic is announced at the beginning of the session.

POL7108 IDEOLOGY AND SOCIAL TRANSFORMATION (3cr.)
Study of the relationship between political thought to social change and to the practices of social movements. The approach may be historical or thematic. The exact topic is announced at the beginning of the session.

POL7109 GOVERNANCE AND GLOBALIZATION (3cr.)
Analysis of institutions and practices of regulation at the international level in the context of globalization. Study of major trends in national and international governance, including forces of resistance. Case studies.

POL7110 INTERNATIONAL POLITICAL ECONOMY (3cr.)
Analysis of the political aspects of the international economy and how economic issues affect societies and international politics. Case studies. Examination of historical and contemporary theoretical approaches.

POL7111 SPACE AND TERRITORIALITY (3cr.)
Analysis of issues relating to the production, control and use of space in world order. Study of diverse contemporary theories concerning space and territoriality.

POL7112 SECURITY AND CONFLICT: CONTEMPORARY ISSUES (3cr.)
Analysis of the causes, mechanisms and consequences of inter-state conflicts (wars, crises) and/or intra-state conflicts (civil war, secession). Examination of relevant theoretical literature.

POL7113 CITIZENSHIP AND IDENTITY (3cr.)
Analysis of contemporary citizenship and identity issues in Canada. The approach may be historical or thematic, and the exact topic is announced at the beginning of the session.

POL7114 CONSTITUTION AND INSTITUTIONS (3cr.)
Analysis of constitutional and institutional issues in contemporary Canadian politics. The exact topic is announced at the beginning of the session.

POL7115 POLITICAL PARTIES AND MOVEMENTS (3cr.)
Analysis of current issues affecting political forces in Canada: parties, groups and movements. The exact topic is announced at the beginning of the session.

POL7116 PUBLIC POLICY (3cr.)
Analysis of current public-policy issues in Canada. The exact topic is announced at the beginning of the session.

POL7117 INTER-FIELD SEMINAR (3cr.)
In this seminar, taught by at least two professors, students examine a topic that draws on knowledge from at least two of the program’s fields of study (political thought, Canadian politics, international politics). The exact topic is announced at the beginning of the session.

POL7119 CREATION AND TRANSFORMATION OF STATES AND POLITICAL REGIMES (3cr.)
Study of theories of state-building and transformation (including strategies of adaptation within a context of globalisation; issues of state collapse), as well as the study of democratic and authoritarian regimes and their transformations (transition, consolidation, collapse), in a comparative perspective.

POL7120 COMPARATIVE POLITICAL ECONOMY (3cr.)
Study of theoretical approaches concerning the evolution of power relations between states and markets in different regions of the world; of the political economy of social movements; of political struggles regarding socio-economic inequalities. The emphasis will be on the political economy of both developing states and of highly industrialised countries.
POL.7121 COMPARATIVE POLITICS OF IDENTITIES (3cr.)
Study of theories concerning identity (primordialism, instrumentalism, constructivism) and of the role of ethnic, national, religious, linguistic and gender identities in political processes (violence, accommodation among different identity groups, management of diverse identities by the state).

POL.7122 SPECIAL TOPICS IN COMPARATIVE POLITICS (3cr.)
Topics to covered in rotation: Africa, Latin America, Asia, Middle East and former Soviet bloc (and possibly Western Europe/United States)

POL.7366 DOCTORAL METHODOLOGY SEMINAR (3cr.)
Advanced reflection on the methodological aspects and issues of thesis research (methods of inquiry, practical considerations, data analysis, interpretation of results, etc.). Students acquire the knowledge needed to design and formulate the thesis proposal. This seminar is reserved for PhD students in Political Science. It is offered once every two weeks over two consecutive sessions.

POL.7502 THÈMES CHOISIS EN POLITIQUE INTERNATIONALE ET COMPARÉE (3cr.)

POL.7503 THÈMES CHOISIS EN PENSÉE POLITIQUE (3cr.)

POL.7504 THÈMES CHOISIS EN POLITIQUE CANADIENNE (3cr.)

POL.7505 POUVOIR, DROIT ET RÉGIMES POLITIQUES (3cr.)
Étude des rapports entre l'exercice du pouvoir, le système du droit et les différents régimes politiques. L'approche adoptée peut être historique ou thématique. L'objet d'étude spécifique sera présenté en début de session.

POL.7506 SUBJECTIVITÉ ET INTERSUBJECTIVITÉ (3cr.)
Étude des fondements et de la nature de la subjectivité et de l’intersubjectivité. L’approche adoptée peut être historique ou thématique. L’objet d’étude spécifique sera présenté en début de session.

POL.7507 ORIGINE ET NATURE DE LA PENSÉE POLITIQUE MODERNE (3cr.)
Étude d’auteurs, de courants de pensée ou d’idéologies qui sont constituants de la modernité. L’objet d’étude spécifique sera présenté en début de session.

POL.7508 TRANSFORMATIONS SOCIALES ET IDÉOLOGIES (3cr.)
Étude de la pensée politique dans son rapport à l’évolution des sociétés, aux dynamiques sociales et à l’action des courants et mouvements organisés. L’approche adoptée peut être historique ou thématique. L’objet d’étude spécifique sera présenté en début de session.

POL.7509 GOUVERNANCE ET MONDIALISATION (3cr.)
Analyse des institutions et des pratiques de régulation politique à l’échelle internationale dans le contexte de la mondialisation. Étude des grands courants de changement de la gouvernance nationale et internationale, y compris les forces de résistance. Études de cas.

POL.7510 ÉCONOMIE POLITIQUE INTERNATIONALE (3cr.)

POL.7511 ESPACE ET TERRITORIALITÉ (3cr.)
Analyse des enjeux liés à la production, au contrôle et à l’utilisation de l’espace dans l’ordre mondial. Étude de diverses approches théoriques contemporaines qui abordent les enjeux de l’espace et de la territorialité.

POL.7512 SÉCURITÉ ET CONFLITS: ENJEUX CONTEMPORAINS (3cr.)
Analyse des causes, mécanismes et conséquences des conflits inter-étatiques (guerres, crises) et/ou intra-étatiques (guerres civiles, sécession). Exploration de corpus théoriques pertinents.

POL.7513 CITOYENNETÉ ET IDENTITÉS (3cr.)
Analyse d’enjeux contemporains en matière de citoyenneté ou d’identités au Canada. L’approche adoptée peut être historique ou thématique. L’objet d’étude spécifique sera présenté en début de session.

POL.7514 CONSTITUTION ET INSTITUTIONS (3cr.)
Analyse d’enjeux constitutionnels ou institutionnels dans la politique canadienne contemporaine. L’objet d’étude spécifique sera présenté en début de session.

POL.7515 FORCES POLITIQUES (3cr.)
Analyse d’enjeux contemporains touchant les forces politiques au Canada : partis, groupes et mouvements. L’objet d’étude spécifique sera présenté en début de session.

POL.7516 POLITIQUES PUBLIQUES (3cr.)
Analyse d’enjeux contemporains en matière de politiques publiques au Canada. L’objet d’étude spécifique sera présenté en début de session.
POL.7517 SÉMINAIRE INTER-PROFILS (3cr.)
Dans ce séminaire, animé par au moins deux professeurs, sera examiné un objet d’études qui fait appel à des compétences relevant d’au moins deux des profils de l’École (pensée politique, politique canadienne, relations internationales). L’objet d’étude spécifique sera présenté en début de session.

POL.7519 CONSTRUCTIONS ET TRANSFORMATIONS DES ÉTATS ET DES RÉGIMES POLITIQUES (3cr.)
Étude des théories portant sur la construction historique des États et leurs transformations (adaptation dans un contexte de mondialisation; effondrement des États), de même que les régimes démocratiques et autoritaires et leurs transformations (transition, consolidation, effondrement), le tout dans une perspective comparée.

POL.7520 ÉCONOMIE POLITIQUE COMPARÉ (3cr.)
Étude des approches théoriques portant sur l’évolution des rapports de force entre les États et les marchés dans les différentes régions du monde; sur l’économie politique des mouvements sociaux; sur les luttes politiques autour des inégalités socio-économiques. L’accent sera mis aussi bien sur l’économie politique des États en développement, que sur celle des pays fortement industrialisés.

POL.7521 POLITIQUE COMPARÉE DES IDENTITÉS (3cr.)
Études des théories relatives aux identités (primordialisme, instrumentalisme, constructivisme) et du rôle des identités ethniques, nationales, religieuses, linguistiques et de genre dans les processus politiques (violence, accommodement identitaire, gestion de la diversité identitaire par l’État).

POL.7522 THÈMES CHOISIS EN POLITIQUE COMPARÉE (3cr.)
Thèmes à couvrir en rotation : Afrique, Amérique latine, Asie, Moyen-Orient et ancien bloc soviétique [et possiblement Europe de l’Ouest/États-Unis]

POL.7766 SÉMINAIRE DOCTORAL DE MÉTHODOLOGIE (3cr.)
Réflexion approfondie sur les questions liées à la dimension méthodologique du travail de thèse. Modes d'investigation, organisation matérielle de la recherche, interprétation des données, appréciation des résultats, etc. Développement des connaissances nécessaires pour concevoir et formuler le projet de thèse. Ce séminaire est réservé aux étudiants du doctorat en science politique. Il est offert une fois par deux semaines sur deux sessions consécutives.

POL.7979 MÉMOIRE / RESEARCH PAPER (6cr.)

POL.7989 THÈSE DE MAÎTRISE / MA THESIS (12cr.)

POL.8100 DIRECTED READINGS (3cr.)

POL.8500 LECTURES DIRIGÉES (3cr.)

POL.9200 THEORIES AND PROBLEMS IN INTERNATIONAL POLITICAL ECONOMY (6cr.)
Evolution of theories and concepts in political economy as an approach to studying international affairs. Examination of various schools of thought. The comprehensive examination in the major field is held at the end of the course.

POL.9218 THEORIES AND PROBLEMS IN COMPARATIVE POLITICS (6cr.)
Study of the evolution of theories, concepts and methods in comparative politics as an approach to studying domestic politics and transnational influences, including states, regimes and institutions; the politics of identity; and political economy. The comprehensive examination in the major field is held at the end of the course.

POL.9219 THEORIES AND PROBLEMS IN CANADIAN POLITICAL ECONOMY (6cr.)
The fundamentals of political economy as an approach to studying political phenomena. Canada’s place in the global economy, intergovernmental relations, social movements and changes in the forms of federal intervention are among the topics covered. The comprehensive examination in the major field is held at the end of the course.

POL.9220 THEORIES AND PROBLEMS IN ANALYSIS OF POLITICAL IDEOLOGIES (6cr.)
Examination of key ideological movements (key questions, main concepts, major texts). Analysis of theories on the formation and transformation of ideologies. Contemporary ideological dynamics. The comprehensive examination in the major field is held at the end of the course.

POL.9310 COMPREHENSIVE EXAMINATION IN THE MAJOR FIELD

POL.9320 COMPREHENSIVE EXAMINATION IN THE MINOR FIELD

POL.9350 THESIS PROPOSAL

POL.9600 THÉORIES ET PROBLÈMES EN ÉCONOMIE POLITIQUE INTERNATIONALE (6cr.)
Évolution des théories et des concepts de l'économie politique en tant qu'approche servant à l'étude de la réalité internationale. Examen de différentes écoles de pensée. L'examen de synthèse dans le domaine majeur se tiendra à la fin du cours.

POL.9618 THÉORIES ET PROBLÈMES EN POLITIQUE COMPARÉE (6cr.)
Étude de l’évolution des théories, concepts et méthodes de la politique comparée en tant qu’approche servant à l’étude de phénomènes politiques internes aux
Public Administration (MA)

The School of Political Studies located in the Faculty of Social Science offers graduate programs leading to the Master of Arts (MA) and the Doctor of Philosophy (PhD) degrees in Public Administration.

The main objective of the master’s program is to provide students with leading edge theoretical and conceptual knowledge to enable them to understand and analyze public administration, as well as equipping them with the know-how and skills necessary for success in a constantly changing organizational environment. Emphasis is placed on the development of research skills.

The program aims to familiarize students with critical methods of knowledge production and to develop their capacity for conducting basic and applied research. Furthermore, they will develop the ability to extract from research the learning necessary for undertaking their responsibilities as public managers and policy analysts.

The program offers two fields or concentrations in public administration: public management and public policy. These fields are not mutually exclusive, but constitute the two main components of public administration studies.

The MA program is offered both full- and part-time, whereas the PhD program is offered full-time only. The programs are offered in French and English and the use of both languages is encouraged. Three options are offered: the master’s with thesis; the master’s with research paper; the master’s with research paper and internship.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate program in Public Administration is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS). To be considered for admission, applicants must:

1. Hold a bachelor’s degree with specialization or a major in public administration or in a related discipline with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify, in the case of the master’s with thesis, at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English or in French. A passive knowledge of the other language is required. *

*Students whose first language is other than French or English must provide proof in their application of their level of competence in these languages. The Public Administration Program reserves the right to conduct an interview and to require a test in either language. If a student’s research interests require comprehension of a language other than French or English, the Public Administration Program may require proof of such competency.
Collaborative Program

The public administration program participates in the collaborative program in women’s studies at the master’s level. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, see the description of the program posted on the FGPS website.

The women's studies program consists of two compulsory women's studies (FEM) courses as well as a thesis or a research paper on a subject linked to women's studies. One of the FEM courses will count towards the requirements of the master's program with thesis, replacing the elective course. Both FEM courses will count towards the requirements of the master’s program with research paper or with research paper and internship, replacing two electives.

Program Requirements

A- Master’s degree with thesis

1. 12 course credits including 9 compulsory credits (PAP6502*; PAP6103; and PAP6110 or PAP6111) and 3 elective credits chosen from the graduate courses in public administration or in other programs;
2. Presentation of a thesis proposal (PAP6998);
3. Presentation and defense of a thesis (PAP7999) based on an original research carried out under the direct supervision of a faculty member of the Department.

Note: Registration is limited to a maximum of three courses / seminars per session, not including the thesis proposal. Registration in the thesis proposal should take place as early as possible, ideally in the first session but by the third session at the latest.

*PAP 6502, offered only in French, is compulsory for all students. Language support is available to those who might need it.

PAP6998 PROJET DE THÈSE DE MAÎTRISE / MASTER’S THESIS PROPOSAL

Students should begin the process of selecting a thesis topic and potential supervisor immediately upon commencing the program. The topic and supervisor are selected in consultation with an adviser and must be registered with the Faculty of Graduate and Postdoctoral Studies no later than the end of the second session in the program. Once the topic and supervisor have been chosen, the thesis proposal is prepared with the help of the supervisor. The defence of the topic, which is the only requirement of POL 6998, must be completed before the end of the third session of registration (preferably earlier). Once the topic has been defended, students are allowed to register for the thesis (PAP 7999).

The thesis proposal is assessed by a committee, composed of the thesis supervisor and another professor chosen by the professor in charge of graduate studies in public administration in consultation with the student and the thesis supervisor.

PAP7999 THÈSE DE MAÎTRISE / MA THESIS (12cr.)

The thesis is prepared under the direction of the supervisor and evaluated following submission by a committee of professors proposed by the professor in charge of graduate studies in public administration. It is normally approximately twenty-five thousand words (between 80 and 120 pages).

The thesis must demonstrate the student’s capacity for scholarly analysis of a specific subject. It does not have to be an exhaustive study of the kind expected of a doctoral dissertation, but it must display a capacity for rigorous analysis of a specific subject. It is judged as much for its methodological quality as for its contribution to knowledge.

B- Master’s degree with research paper

1. 18 credits including 9 compulsory credits (PAP6502*; PAP6103; and PAP6110 or PAP6111) and 9 elective credits chosen from the graduate courses in public administration or in other programs;
2. Presentation of a research paper (PAP7998) based on an original research carried out under the direct supervision of a faculty member of the Department.

Note: Registration is limited to a maximum of three courses / seminars per session, not including the thesis proposal.

*PAP 6502, offered only in French, is compulsory for all students. Language support is available to those who might need it.

PAP7998 MÉMOIRE / RESEARCH PAPER (6cr.)

Registration for the research paper is permitted in the second session. The research paper is approximately 12,000 words (50 pages) in length. It is evaluated by the supervisor and by another professor appointed by the professor in charge of graduate studies. Research papers are graded alpha and the grade (the average of both evaluations) appears on the transcript.

C- Master’s degree with research paper and internship

1. 15 credits including 9 compulsory credits (PAP6502*; PAP6103; and PAP6110 or PAP6111) and 6 elective credits chosen from the graduate courses in public administration or in other programs;
2. Successful completion of an internship (PAP7997);
3. Presentation of a research paper (PAP7998) based on an original research carried out under the direct supervision of a faculty member of the Department.

Note: Registration is limited to a maximum of three courses per session, not including the thesis proposal.
*PAP 6502, offered only in French, is compulsory for all students. Language support is available to those who might need it.

PAP7997 STAGE / INTERNSHIP (3cr.)
The internship, normally in the public service, but also in non-governmental or private organizations, is related as closely as possible to the subject of the research paper and is intended to provide a deeper understanding of the student’s area of interest as well as practical experience in public administration. The student must submit a written report relating to the internship and must register full time simultaneously for the research paper and the internship.

Residence
All students must complete a minimum of three sessions of full-time registration at the beginning of the program. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the date of initial registration in the program.

Duration of the Program
Students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

Minimum Standards
The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), the thesis proposal, the research paper, the thesis or whose progress is deemed unsatisfactory are required to withdraw.

Transfer from Master’s to PhD Program
Students enrolled in the master’s program with thesis may be allowed to transfer to the PhD program without being required to write a master’s thesis. For additional information, please consult the “Admission” section of the PhD program.

Courses

PAP6101 GLOBALIZATION AND CONTINENTAL INTEGRATION (3cr.)
Examination of the impacts of socio-economic, technological and cultural globalization on our systems of governance both internationally and domestically. Analysis of the role of the nation-state in a context of simultaneous decentralization and internationalization, with a particular focus on global institutions and North American integration.

PAP6102 DEMOCRATIC GOVERNANCE (3cr.)
This seminar provides an examination of how democratic governments structure their decision-making processes for effectiveness, representation and accountability. A particular focus of this seminar is a critical evaluation of the New Public Management reforms, and an in-depth review of different models of government intervention and policy-making from a comparative perspective.

PAP6103 RESEARCH METHODS (3cr.)
Study of different methodological approaches used in public administration, conceptual tools and research methods (discourse analysis, content analysis, quantitative methods (statistics and probability), interview techniques, etc.) necessary for leading-edge research in public management and policy public. Epistemological and ontological questions related to the different approaches. Development of major research paper or thesis proposal.

PAP6110 THEORIES OF PUBLIC MANAGEMENT (3cr.)
(Core course for students in the field of public management.) Presentation of major components of public management (managerial roles and functions, planning, organizational cultures, leadership and motivation, human resources management, change management, etc.). Study of the main theoretical approaches in public management, with the aim of relating them critically to one another and undertaking a critical analysis of the methodological and theoretical contributions of the various approaches.

PAP6111 THEORIES OF PUBLIC POLICY (3cr.)
(Core course for students in the field of public policy.) Presentation of the different stages of the policy process, notably emergence, development, implementation and evaluation, as well as the influence of institutions, ideas and interests on public policy. The objective is to present the main theoretical approaches (neo-institutionalism, post-positivism, political economy, etc.) with the aim of relating them critically to one another and critically analyzing their methodological and theoretical contributions.

PAP6120 ETHICS IN THE PUBLIC SECTOR (3cr.)
Study of the theoretical and empirical issues related to ethics in the public sector, analysis of the literature on the philosophical and political foundations of ethical reflection and the literature on ethics and public administration. Themes addressed include citizenship and democracy, responsibility and accountability, the
public interest, contemporary issues in ethics in the public sector and social justice in public decision-making.

PAP6121 PUBLIC ADMINISTRATION: COORDINATION AND CONSISTENCY (3cr.)
Examination of the influence of structural and social processes on the theory and practice of public administration. The course will examine the mechanisms and issues of coordination in its multiple forms: multi-level coordination, coordination across the public, private and community sectors, horizontal and vertical coordination. The course will also address the challenges and issues of consistency in the process of public policy development and implementation and will examine a number of cases and international comparisons.

PAP6122 CULTURE AND POWER IN PUBLIC ORGANIZATIONS (3cr.)
Informal dimensions of public organizations, including organizational cultures and power relations that mesh with organizational issues. Sociopolitical analysis of organizations to improve understanding of factors of inertia, resistance and blockage that influence, to different degrees, possibilities for innovation and change in public administration.

PAP6130 SELECTED THEMES IN PUBLIC ADMINISTRATION (3cr.)

PAP6501 MONDIALISATION ET INTÉGRATION CONTINENTALE (3cr.)
Examen de l'impact sur la gouvernance à l'échelle internationale et nationale de la mondialisation des secteurs socio-économique, technologique et culturel. Analyse du rôle joué par l'état-nation dans un contexte de décentralisation et d'internationalisation simultanées, en mettant particulièrement l'accent sur les institutions mondiales et l'intégration nord-américaine.

PAP6502 GOUVERNANCE DÉMOCRATIQUE - RENDEMENT ET IMPUTABILITÉ (3cr.)
Examen des mesures prises par les gouvernements démocratiques pour s'assurer que les processus de prise de décision répondent aux critères d'efficacité, de représentativité, et d'imputabilité. Accent sur l'examen critique des réformes récentes des modes de gestion à la fonction publique et étude approfondie des différents modes d'intervention gouvernementale et d'élaboration de politiques d'un point de vue comparatif.

PAP6503 MÉTHODES DE RECHERCHE (3cr.)
Étude de différentes approches méthodologiques utilisées en administration publique, outils conceptuels et méthodes de recherche (analyse de discours, analyse de contenu, méthodes quantitatives (statistiques et probabilités), techniques d'entrevue, etc.) nécessaires pour faire de la recherche de pointe en gestion publique et en politiques publiques. Questions épistémologiques et ontologiques associées à ces diverses approches. Élaboration du projet de mémoire ou de thèse.

PAP6510 THÉORIES EN GESTION PUBLIQUE (3cr.)
(Cours noyau pour les étudiants dans le champ de la gestion publique.) Présentation des grandes composantes de la gestion publique (rôles et fonctions manageriels, planification, cultures organisationnelles, leadership et motivation, gestion des ressources humaines, gestion du changement, etc.). Étude des principales approches théoriques de la gestion publique, dans le but de les relier et d'entreprendre l’analyse critique des apports méthodologiques et théoriques des diverses approches.

PAP6511 THÉORIES EN POLITIQUES PUBLIQUES (3cr.)
(Cours noyau pour les étudiants dans le champ des politiques publiques.) Présentation des différentes phases de l’analyse des politiques publiques, notamment celles de l’émergence, de l’élaboration, de la mise en œuvre et de l’évaluation, ainsi que de l’influence des institutions, des idées et des intérêts sur les politiques publiques. L’objectif sera de présenter les principales approches théoriques de politiques publiques (néo-institutionnalisme, post-positivisme, économie politique, etc.), de les relier de façon critique et d'entreprendre une analyse des apports méthodologiques et théoriques des diverses approches.

PAP6520 ÉTICHE PUBLIQUE (3cr.)
Étude des enjeux théoriques et empiriques liés à l’éthique publique, analyse de la littérature sur les fondements philosophiques et politiques de la réflexion éthique et de la littérature sur l’éthique et l’administration publique. Les thèmes abordés incluent la citoyenneté et la démocratie, la responsabilité et la redéfinition de compétes, l'intérêt public, les enjeux éthiques publics contemporains et la justice sociale dans le contexte de la prise de décision publique.

PAP6521 ADMINISTRATION PUBLIQUE : COORDINATION ET COHÉRENCE (3cr.)

PAP6522 CULTURES ET POUVOIR DANS LES ORGANISATIONS PUBLIQUES (3cr.)
Dimension informelle de l'organisation publique, à savoir les cultures organisationnelles et les relations de pouvoir qui se conjuguent invariablement aux enjeux organisationnels. Lecture sociopolitique de l'organisation pour mieux saisir les facteurs d’inertie, de résistance et de blocage qui pèsent, à des degrés divers, sur les possibilités d’innovation et de changement dans l’administration publique.

PAP6530 THÈMES CHOISIS EN ADMINISTRATION PUBLIQUE (3cr.)

PAP6980 LECTURE DIRIGÉE / DIRECTED READING (3cr.)

PAP6998 PROJET DE THÈSE DE MAÎTRISE / MASTER’S THESIS PROPOSAL
PAP7997 STAGE / INTERNSHIP (3cr.)
Le stage s’effectue normalement au sein de la fonction publique, mais également dans des organismes non-gouvernementaux ou privés. Dans la mesure du possible, le stage est en rapport étroit avec le sujet du mémoire. Il a pour but d’approfondir les connaissances de l’étudiant dans son domaine d’intérêt et de lui fournir de l’expérience pratique en administration publique. L’étudiant doit soumettre un rapport écrit à la fin du stage et il doit s’inscrire à temps plein simultanément au mémoire et au stage. Le stage se fait habituellement à la troisième session. Le mémoire est noté S (satisfaisant) ou NS (non satisfaisant). / The internship, normally in the public service, but also in non-governmental or private organizations, is related as closely as possible to the subject of the research paper and is intended to provide a deeper understanding of the student’s area of interest as well as practical experience in public administration. The student must submit a written report relating to the internship and must register full time simultaneously for the research paper and the internship. The internship will usually take place during the third term, i.e. the summer term. Graded S (satisfactory) or NS (not satisfactory).

PAP7998 MÉMOIRE / RESEARCH PAPER (6cr.)
L’inscription au mémoire est permise dès la deuxième session d’études. Le mémoire a environ douze mille mots (environ 50 pages). Il est évalué par la personne qui l’a dirigé et par un autre professeur nommé par le directeur des études supérieures. Le mémoire est noté S (satisfaisant) ou NS (non satisfaisant). / Registration for the research paper is permitted in the second session. The research paper is approximately 12,000 words (50 pages) in length. It is evaluated by the supervisor and by another professor appointed by the professor in charge of graduate studies. The research paper is graded S (satisfactory) or NS (not satisfactory).

PAP7999 THÈSE DE MAÎTRISE / MA THESIS (12cr.)

PAP9200 RESEARCH SEMINAR IN PUBLIC ADMINISTRATION (6cr.)
Preparation for writing the thesis (including the thesis proposal) in public administration. Different stages of research in public management and public policy, notably the development of the research question, literature review, theoretical framework, methodological approach and the development of empirical data. The ontological dimensions (what constitutes the knowledge domain?) and epistemological (how do we know what we know?) will also be addressed. Introduction to different strategies of knowledge diffusion (conferences, articles, book chapters, letters to the media) and preparation for the thesis defence.

PAP9310 PUBLIC MANAGEMENT (3cr.)
In-depth study of the field of public management. Presentation of the formal dimensions (direction, organization, budgeting, strategy, planning, control, etc.) and informal dimensions (leadership, motivation, mobilization, organizational culture, coordination, power relations, etc.) in public management. Critical analysis of the principal theoretical approaches and tendencies of public management and their theoretical and methodological contributions.

PAP9311 PUBLIC POLICY (3cr.)
In-depth study of the field of public policy. Different stages in the policy process (emergence, development, implementation and evaluation). The objective is to present the main theoretical approaches and tendencies (neo-institutionalism, post-positivism, political economy, etc.), relating them critically to one another and critically analyzing their methodological and theoretical contributions.

PAP9320 SEMINAR IN MAJOR FIELD: PUBLIC MANAGEMENT (3cr.)
This course deepens the knowledge acquired in the course PAP9310 Public Management for doctoral candidates with public management as the Major Field.

PAP9330 SEMINAR IN MAJOR FIELD: PUBLIC POLICY (3cr.)
This course deepens the knowledge acquired in the course PAP9311 Public Policy for doctoral candidates with public policy as the Major Field.

PAP9600 SÉMINAIRE DE RECHERCHE EN ADMINISTRATION PUBLIQUE (6cr.)
Préparation à la rédaction de la thèse (incluant le projet de thèse) en administration publique. Les différentes étapes de la production de connaissances en gestion publique et en politiques publiques, notamment la formulation de la problématique de recherche, la revue de littérature, le cadre théorique, la démarche méthodologique et la production des données empiriques. Les dimensions ontologique (qu’est-ce qui compose le domaine du savoir ?) et épistémologique (comment savons-nous ce que nous savons ?) sont également abordées. Initiation aux différentes stratégies de diffusion des connaissances (conférences, rédaction d’articles, de chapitres et de lettres aux médias), avec un souci particulier pour la préparation à la soutenance de la thèse.

PAP9710 GESTION PUBLIQUE (3cr.)
Étude approfondie du domaine de la gestion publique. Présentation des composantes formelles (direction, organisation, budgétisation, stratégie, planification, contrôle, etc.) et informelles (leadership, motivation, mobilisation, culture organisationnelle, coordination, relations de pouvoir, etc.) en gestion publique. Analyse critique des principales approches et courants théoriques de la gestion publique et de leurs apports théoriques et méthodologiques.

PAP9711 POLITIQUES PUBLIQUES (3cr.)
Étude approfondie du domaine des politiques publiques. Différentes phases de l’analyse des politiques publiques (émergence, élaboration, mise en œuvre et évaluation). L’objectif sera de présenter les principales approches et courants théoriques dans le domaine des politiques publiques (néo-institutionnalisme, post-positivisme, économie politique, etc.), de les relier de façon critique et d’entreprendre une analyse de leurs apports théoriques et méthodologiques.

PAP9720 SÉMINAIRE DANS LE CHAMP MAJEUR : GESTION PUBLIQUE (3cr.)
Ce cours approfondira les connaissances acquises lors du cours PAP9710 Gestion publique pour les doctorants avec gestion publique comme champ majeur.

PAP9730 SÉMINAIRE DANS LE CHAMP MAJEUR : POLITIQUES PUBLIQUES (3cr.)
Ce cours approfondira les connaissances acquises lors du cours PAP9711 Politiques publiques pour les doctorants dont le champ majeur est politiques publiques.
Public and International Affairs (MA)

The Graduate School of Public and International Affairs offers a multidisciplinary master's program focusing on public and international affairs. The degree awarded is the Master of Arts (MA) in Public and International Affairs. The program has three fields of concentration: public policy; international affairs; and development studies. The field of concentration chosen can be added to the transcript if a student takes all of his elective courses within it. The program, which is only offered on a full-time basis, also offers a co-op option.

The program operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: www.etudesup.ucttawa.ca/generalregulations

Admission

To gain admission to the MA in Public and International Affairs, applicants must have completed an honours undergraduate degree (or its equivalent) in the social sciences, in arts, in management, or in law, with at least a 75 per cent (B+) average (calculated in accordance with the FGPS guidelines). Applicants with degrees in other disciplines may also be considered, depending on the relevance of their previous degree and experience to the MA in Public and International Affairs.

A basic knowledge of economics is required. There are two ways to meet this requirement. The first is for students to have successfully completed introductory courses in macroeconomics and microeconomics at the undergraduate level. At the University of Ottawa, this requirement can be met by taking the courses ECO1102 and ECO1104, or their equivalent. The Faculty of Social Sciences will offer these courses in the summer to facilitate the completion of this requirement. Equivalent courses from other universities are also accepted.

The second way to meet the economics requirement is to take a remedial course offered by the Graduate School of Public and International Affairs. Students with a GPA (grade point average) of 80% (A-) or more, but who lack these courses, could still be admitted to the program, on the condition that they take a remedial course in economics offered by the Graduate School of Public and International Affairs during their first session. The course, entitled “Economics for Public Management and Policy” (API5100), offers an intensive survey of the economics and mathematical skills necessary to be adequately prepared for the program’s core courses in economics. Completion of this course will also be recommended for students who may need to ensure that they have the necessary basic skills in mathematical analysis. This remedial course will be in addition to the 45 credits required by the program.

In order to apply, in addition to completing the on-line registration form and submitting official copies of their transcripts, applicants must submit two letters of recommendation, a curriculum vitae, and a letter of intent describing their interest in the program, identifying their preferred field of concentration (among the three offered by the program) and describing their level of knowledge in their second language. Applicants should note that meeting the minimum requirements does not guarantee their admission. In making decisions, the admission committee of the Graduate School of Public and International Affairs takes into account all application material as well as the number of places available. Candidates may be admitted instead to a qualifying program, the content of which will be decided in consultation with the graduate studies co-ordinator.

Language Requirements

Candidates who have not graduated from a French-speaking or an English-speaking university must pass the computerized Test of English as a Foreign Language (TOEFL), or equivalent, before admission. For additional information, please click on “Apply Now”.

All applicants must be able to understand speak and write proficiently either English or French and have a passive knowledge (ability to understand the spoken and written word) of the other language. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS.

Program Requirements
MA Degree Requirements

The MA in Public and International Affairs requires the successful completion of a total of 45 credits, as follows:

- eight core courses (24 credits),
- four elective specialized seminars (12 credits),
- a capstone seminar (3 credits), and
- a research paper (6 credits).

For the coop option, the degree requires the successful completion of a total of 51 credits, as follows:

- eight core courses (24 credits),
- three elective specialized seminars (9 credits),
- two work placements, with report (12 credits), and
- a research paper (6 credits).

With the permission of the program director, up to two courses (six credits) may be replaced by courses offered by other academic units.

For information regarding the research paper, consult the guide Preparing a Thesis or a Research Paper, accessible through the FGPS Web site (www.etudesup.uottawa.ca).

The First Year

The first year of study is essentially dedicated to the core courses that will allow students to gain a strong multidisciplinary foundation in public and international affairs. Students must complete four courses, involving different disciplines, in each of the fall and winter sessions. Through these eight courses, students acquire the foundations required to understand contemporary issues in the formulation of public policy and the conduct of international affairs, and allowing them to take seminars on more specialized topics in the second year of the program.

Core courses

- API5105 CONCEPTS AND ISSUES IN INTERNATIONAL AFFAIRS (3cr.)
- API5106 GLOBALIZATION AND GOVERNANCE (3cr.)
- API5115 THE POLITICS OF THE POLICY PROCESS (3cr.)
- API5116 DEMOCRATIC GOVERNMENT AND PUBLIC POLICY (3cr.)
- API5125 MACROECONOMIC POLICY (3cr.)
- API5126 MICROECONOMICS FOR PUBLIC POLICY (3cr.)
- API5135 ETHICS AND MORAL REASONING FOR PUBLIC AND INTERNATIONAL AFFAIRS (3cr.)
- API5136 RESEARCH METHODS FOR PUBLIC POLICY (3cr.)

The Second Year

The second year of the program is designed to allow students to acquire deeper knowledge in specific fields of concentration. It requires the student to complete three sets of requirements: a set of four elective seminars, a capstone seminar, and a research paper.

The specialized seminars are regrouped under three fields of concentration: public policy, international affairs, and development studies. Each year, the School will offer at least six seminars in each of the fields. Students who take all of their elective courses in a same field of concentration will be able to have this concentration indicated on their transcript. The graduate studies co-ordinator will assist students in selecting their specialized seminars.

The elective courses offered under the three fields of concentration are the following:

Concentration 1: Public Policy

- API6311 PUBLIC ECONOMICS (3cr.)
- API6312 PUBLIC FINANCE (3cr.)
- API6313 MULTI-LEVEL GOVERNANCE AND PUBLIC POLICY (3cr.)
- API6314 HEALTH POLICY (3cr.)
- API6315 SOCIAL POLICY (3cr.)
- API6316 ENVIRONMENTAL POLICY (3cr.)
- API6317 IMMIGRATION, DIVERSITY AND PUBLIC POLICY (3cr.)
- API6319 SPECIAL TOPICS IN PUBLIC POLICY (3cr.)

Concentration 2: International Affairs

- API6331 INTERNATIONAL FINANCE (3cr.)
- API6332 INTERNATIONAL TRADE (3cr.)
- API6333 INTERNATIONAL LAW AND ETHICS (3cr.)
- API6334 REGIONALISM AND INTEGRATION (3cr.)
- API6335 CANADIAN FOREIGN POLICY (3cr.)
- API6336 DEFENSE POLICY AND MILITARY AFFAIRS (3cr.)
- API6337 PEACE OPERATIONS AND POST-CONFLICT RECONSTRUCTION (3cr.)
- API6339 SPECIAL TOPICS IN INTERNATIONAL AFFAIRS (3cr.)
Anatomie required to complete qualifying courses in pertinent disciplines prior to admission. In exceptional cases, candidates who do not hold the equivalent of an honours bachelor's degree as defined above may be admitted to the naturelles et l'environnement sur le développement de certains de ces pays, l'importance des enjeux environnementaux dans les politiques internationales des « droits de la personne », les fondements philosophiques de ce concept, les mécanismes formels de protection de ces droits, l'expérience de certains pays.

Introduction à l'analyse économique des pays en voie de développement. Le cours aborde les différentes approches pour mesurer l'évolution économique, les entre les facteurs nationaux et internationaux.

API6355 FOREIGN AID POLICY

The quality of the research question, the relevance and signifi cance of the research problem, the potential contribution of the research question to knowledge in the area, the feasibility of conducting the research, the possible sources and analysis. The qualitative methods examined include the use of focus groups and interviews; quantitative methods include simple and multiple regression analysis, time series analysis, and multi-level modeling.

API6335 CANADIAN FOREIGN POLICY

API6332 INTERNATIONAL TRADE

Courses

Concentration 3: Development Studies

API6351 INTERNATIONAL ECONOMICS AND DEVELOPING COUNTRIES (3cr.)
API6352 POLITICAL ECONOMY OF DEVELOPMENT (3cr.)
API6353 HUMAN RIGHTS AND DEMOCRATIZATION (3cr.)
API6354 MIGRATION AND DEVELOPMENT (3cr.)
API6355 FOREIGN AID POLICY (3cr.)
API6356 ENVIRONMENT, NATURAL RESOURCE MANAGEMENT AND DEVELOPMENT (3cr.)
API6357 CONFLICT AND HUMAN SECURITY (3cr.)
API6359 SPECIAL TOPICS IN DEVELOPMENT STUDIES (3cr.)

API6399 CAPSTONE SEMINAR (3cr.)

These seminars allow students to apply, in an integrated manner, the knowledge, the theoretical and conceptual tools, and the research techniques acquired in the program to a specific policy problem, while being exposed to the more practical challenges of making policy and conducting international affairs.

Each seminar focuses on a specific case or problem of public policy, international affairs or international development and it requires that students work in teams to prepare a detailed policy brief, offering both rigorous analysis and alternatives for action to address the problem at hand. At the end of the seminar series, students must present their policy brief to their fellow students, faculty members, and senior fellows at the School. In their work, students are expected to draw on the knowledge acquired during the program.

Moreover, each seminar is led by a regular faculty member, in conjunction with a practitioner associated with the program, thus providing students with a better appreciation for the real-life constraints faced by policy-makers, diplomats and development workers. Guest lectures and site visits may also be used to provide students with a better understanding of the case examined in their seminar.

There are between 5 and 8 capstone seminars per year, covering the three fields of concentration.

API6999 MÉMOIRE / RESEARCH PAPER (6cr.)

Students, under the supervision of a professor, will write a major research paper on a topic in public and international affairs. The paper, which will be about 12,000 words in length, will be graded by two professors: the supervisor and another professor associated with the program and appointed by the graduate studies co-ordinator. Research papers are graded alpha and the grade (average of both evaluations) appears on the transcript.

Students will register in the research paper in the summer of their first year and they should normally complete it by the end of the sixth session.

The Co-op Option

The MA in Public and International Affairs, with the assistance of the University of Ottawa’s co-op office, offers a co-op stream to a limited number of students. The co-op option allows selected students the opportunity to acquire practical work experience by completing two one-session work placements in a public, non-profit or private organization operating in the area of public and international affairs.

There will be two options for the co-op stream. Under the first option, the first co-op placement will be in the summer of the first year and the second work placement will take place over the winter session of the second year. Under the second option, the students will complete two consecutive work placements over the summer of the first year and the fall of the second year. This option will serve to accommodate work placements that may require a longer timeframe to provide a more valuable work experience by having students engage in a longer project within the host organization. In both cases, students who enrol in the co-op stream of the program will obtain twelve credits (six credits per work placement, including the submission of a co-op report) for their work experience and co-op report; and they will be exempted from one elective course (three credits) and the capstone seminar (three credits).

Upon completion of their placement, students write a co-op placement report, describing their work experience and reflecting on how the knowledge and skills acquired in their program of study have been employed during their work placement. These reports are assessed as satisfactory/non-satisfactory basis by the professor designated as the co-op coordinator.

International Exchanges

The Graduate School of Public and International Affairs encourages students to participate in international exchanges in the second year of the program. These exchanges are arranged in collaboration with the International Office, which deals with administrative matters and remains in contact with the students before, during and after their stay abroad.

Duration of Program

Students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

Courses
API5100 ECONOMICS FOR PUBLIC MANAGEMENT AND POLICY (3cr.)
The foundations of macroeconomics and microeconomics. Topics covered in microeconomics include: the consumer and the firm; supply; demand and the role of prices; competition and the invisible hand; imperfect competition; coordination failure and incomplete information; public goods and externalities; transaction costs and property rights; income distribution and the tax system; free trade. Topics covered in macroeconomics include: unemployment, inflation and the monetary system; fiscal and monetary policy; growth, development, and living standards. Reserved for students needing to upgrade their knowledge of economics or mathematics prior to taking some courses in the program. Grading: S (satisfactory) / NS (non-satisfactory).

API5105 CONCEPTS AND ISSUES IN INTERNATIONAL AFFAIRS (3cr.)
Critical analysis of the key concepts and theories used to explain contemporary international affairs. Through an examination of the historical development of the dominant issues in international relations and security, and an exploration of their possible future directions, these concepts and theories will be related to concrete problems and recent developments in international affairs.

API5106 GLOBALIZATION AND GOVERNANCE (3cr.)
Influence of globalization on national and international governance as well as on the formulation of public policy across a range of policy fields. Topics include the multiple dimensions of globalization, the impact of globalization on international institutions, the internationalization of domestic public policy, the challenges and opportunities of globalization for policymakers, case studies in several policy fields (e.g. health, crime, trade and finance).

API5115 THE POLITICS OF THE POLICY PROCESS (3cr.)
Political factors and dynamics shaping public policy. Topics include the role of public opinion and agenda-setting, interests groups and the policy process, intergovernmental relations as well as the influence of experts and discursive politics on policy-making. Examining cases from several policy fields, the course will place Canada in a comparative perspective.

API5116 DEMOCRATIC GOVERNANCE AND PUBLIC MANAGEMENT (3cr.)
Examination of the political institutions in democratic societies and their implications for the formulation and implementation of public policy. Study of Canada in a comparative perspective. Topics include the organization of the executive and decision-making in government, the relationship among the political executive, the Public Service and the legislature, and policy implementation by the Public Service. Current trends in public management, such as new modes of service delivery, citizen engagement and consultation, and performance-based management.

API5125 MACROECONOMIC POLICY (3cr.)
Focus on the power and limitations of macroeconomic policy in promoting long term growth and in stabilizing short run fluctuations. Topics include the determination of output, employment, investment, inflation, interest rate, balance of payments, and the exchange rate. Analysis of the local and global economic consequences of fiscal and monetary policies implemented by governments. An examination of the actual conduct of fiscal and monetary policy by governments will place the Canadian experience in a comparative perspective.

API5126 MICROECONOMICS FOR PUBLIC POLICY (3cr.)
Systematic exposition of the principles and techniques of microeconomic theory that are most useful in analyzing public policies. Topics include the theory of the consumer, the theory of the firm, market mechanisms and general equilibrium analysis. The course will offer a general framework to improve the understanding of the resource allocation and welfare consequences associated with policies such as taxes, subsidies, regulation, and government transfers. Case studies of government intervention in the economy will be used to illustrate the concepts and theories examined.

API5135 ETHICS AND MORAL REASONING FOR PUBLIC AND INTERNATIONAL AFFAIRS (3cr.)
Examination of ethics and moral reasoning applied to the study of public policy and international affairs. Current debates in moral philosophy and how they help better understand contemporary controversies in public and international affairs. Examination of a number of current policy debates, such as issues of justice in social and environmental policy, the use of military intervention in international affairs, and the accommodation of religious and ethnic differences in liberal democracies.

API5136 RESEARCH METHODS FOR PUBLIC POLICY (3cr.)
Introduction to the various methods used in policy research and to use of multivariate quantitative methods to conduct a research project. Research design, data sources and analysis. The qualitative methods examined include the use of focus groups and interviews; quantitative methods include simple and multiple regression, logistic regression, and factor analysis.

API5500 ÉCONOMIE POUR LA GESTION ET LES POLITIQUES PUBLIQUES (3cr.)
Les fondements de la microéconomie et de la macroéconomie. Les thèmes couverts en microéconomie incluent : le consommateur et la firme ; l’offre, la demande et le rôle des prix ; la concurrence et la main invisible ; concurrence imparfaite ; problèmes de coordination et information incomplète ; biens publics et externalités ; coûts de transaction et droits de propriétés ; taxation et distribution des revenus ; commerce international. Les thèmes couverts en macroéconomie incluent : chômage ; inflation et système monétaire ; politiques fiscales et monétaires ; croissance, développement et niveaux de vie. Réservé aux étudiants qui doivent renforcer leurs connaissances en science économique ou en mathématiques avant de suivre certains cours du programme. Noté : S (satisfaisant) / NS (non-satisfaisant).

API5505 CONCEPTS ET ENJEUX EN AFFAIRES INTERNATIONALES (3cr.)
Analyse critique des théories et concepts clés utilisés pour expliquer les affaires internationales contemporaines. À travers l’étude du développement historique des principaux enjeux dans le domaine des relations internationales et de la sécurité, et une exploration des avenirs possibles, ces théories et concepts seront appliqués à l’analyse de problèmes contemporains et de développements récents en affaires internationales.
API5506 MONDIALISATION ET GOUVERNANCE (3cr.)
Influence de la mondialisation sur la gouvernance nationale et internationale ainsi que sur la formulation des politiques publiques dans divers domaines. Les thèmes abordés incluent les dimensions multiples de la mondialisation, l’impact de la mondialisation sur les institutions internationales, l’internationalisation des politiques nationales, les défis et les opportunités de la mondialisation pour les décideurs publics, études de cas dans divers secteurs de politique publique (e.g. santé, criminalité, commerce et finance).

API5515 POLITIQUE ET FORMULATION DES POLITIQUES PUBLIQUES (3cr.)

API5516 GOUVERNANCE DÉMOCRATIQUE ET GESTION PUBLIQUE (3cr.)

API5525 POLITIQUE MACROÉCONOMIQUE (3cr.)

API5526 MICROÉCONOMIE POUR POLITIQUES PUBLIQUES (3cr.)
Étude des principes et des techniques de la théorie microéconomique utiles dans l’analyse des politiques publiques. Les thèmes abordés incluent la théorie du consommateur, la théorie de la firme, les mécanismes du marché et équilibre général. Le cours offre un cadre général d’analyse pour mieux comprendre l’allocation des ressources et les conséquences en matière de bien-être reliées à diverses politiques, telles que la taxation, les subventions, la réglementation, et les transferts gouvernementaux. L’étude de cas spécifiques d’intervention gouvernementale dans l’économie servira à illustrer l’utilité des concepts et des théories étudiées.

API5533 ÉTHIQUE ET PHILOSOPHIE MORALE EN AFFAIRES PUBLIQUES ET INTERNATIONALES (3cr.)

API5536 MÉTHODES DE RECHERCHE EN POLITIQUES PUBLIQUES (3cr.)

API6001 STAGE / INTERNSHIP (6cr.)
Expérience en milieu de travail. Noté S (satisfaisant) / NS (non satisfaisant) par un professeur du programme selon les résultats du rapport écrit et l’évaluation du superviseur de stage. Préalable : permission du responsable des études supérieures. / Experience in a workplace setting. Graded S (satisfactory) / NS (not satisfactory) by a professor in the program based on the written report and the evaluation of the internship supervisor. Prerequisite: permission of the graduate studies co-ordinator.

API6002 STAGE / INTERNSHIP (6cr.)

API6311 PUBLIC ECONOMICS (3cr.)
Public economics studies how government intervention affects the economy. Topics covered include the efficiency of the competitive equilibrium, departures from efficiency, externalities and public goods, imperfect competition and asymmetric information; issues in political economy, including rent-seeking; and the inter-temporal issues of social security and economic growth. Case studies of policies will be drawn from Canada and other countries.

API6312 PUBLIC FINANCE (3cr.)
Public expenditures and taxation, mainly in Canada. Topics covered include social welfare programs; employment insurance; public pensions: old age security and the Canada pension plan; health care; education; personal income tax; consumption taxation; taxes on wealth and property; corporate tax; fiscal federalism in Canada including equalization payments among provincial governments.

API6313 MULTI-LEVEL GOVERNANCE AND PUBLIC POLICY (3cr.)
Impact of federalism, intergovernmental relations (IGR), and multi-level governance on the policy process in Canada; comparisons will be made to other federations (e.g., Australia and quasi-federations (e.g., the European Union). The course looks at both the growing role of municipal and Aboriginal governments in the policy process, the impact of multi-level governance for policy and program efficiency and effectiveness, and the implications for
accountability, transparency and citizen engagement in governance.

API6314 HEALTH POLICY (3cr.)
Examination of the development of health policy in Canada and selected other OECD countries. Issues covered include the funding of health-care, the role of public, non-profit, and private organizations in the delivery of health care, intergovernmental relations in this field, disease prevention and health promotion, and the impact of government policy generally on the health status of the population.

API6315 SOCIAL POLICY (3cr.)
Examination of the development and transformation of the welfare state in Canada and other OECD countries. Topics covered include poverty and income support, unemployment insurance, child care and family policy, as well as pensions. The course examines the political, economic, and demographic factors that have shaped social policy.

API6316 ENVIRONMENTAL POLICY (3cr.)
Examination of the development of environmental policies in Canada and selected other OECD countries. Topics covered include sustainable development, water and atmospheric pollution, the protection of species-at-risk, biotechnology, and climate change. The course examines the political and economic factors that shape environmental policy, including the interplay between domestic and international factors.

API6317 IMMIGRATION, DIVERSITY AND PUBLIC POLICY (3cr.)
Issues of immigration and diversity with an emphasis on public policy. Topics covered include the impact of immigration on Canada’s population and economy, its implications for public policies, diversity and conceptions of citizenship in Canada, the United States and the European Union, and attitudes towards immigration and diversity, including discrimination.

API6319 SPECIAL TOPICS IN PUBLIC POLICY (3cr.)

API6331 INTERNATIONAL FINANCE (3cr.)
Analysis of international financial markets and the environment in which they operate. Topics covered include foreign exchange markets (spot, forward, currency futures and options markets); purchasing power parity and the interest rate parity conditions; the exchange rate systems -- past to present (Bretton Woods and post-Bretton Woods periods); special topics such as currency and financial crises, the pricing of currency derivatives, the need for a new international financial architecture, the volatility/overshooting models of exchange rates, the European monetary system and the target zones and realignment models; the European economic and monetary union and the theory of optimal currency areas; the relative merits of fixed, flexible and hybrid exchange rate regimes.

API6332 INTERNATIONAL TRADE (3cr.)
Theoretical and empirical aspects of international trade. Topics covered include the gains from trade; the causes and consequences of trade; the alternatives to free trade (tariffs, quotas and non-tariff barriers, customs unions); factor movements, growth, and the theory of direct foreign investment; Canadian trade and foreign investment policies.

API6333 INTERNATIONAL LAW AND ETHICS (3cr.)
Issues in international affairs from a legal and ethical perspective. The course investigates the obligations and rights of actors in the international system, as well as the ethical and legal dimensions of specific important issues in international affairs, such as the legitimacy of the use of force, humanitarian crises and the "responsibility to protect", the international debt of developing countries, and the protection of the commons (e.g. oceans, atmosphere).

API6334 REGIONALISM AND INTEGRATION (3cr.)
Theories and practice of regional cooperation and integration. Topics include different forms of regionalism, including economic, political and security cooperation, in the European Union, North America, and other regions of the world. The course also addresses the implications of regionalism and integration for Canada’s foreign and domestic policy.

API6335 CANADIAN FOREIGN POLICY (3cr.)
Historical and contemporary analysis of Canada's foreign policy. Topics include the emergence and growth of Canada as an actor on the world stage, its evolving priorities and roles in international affairs, the relationship between foreign and domestic policies, the management of Canadian foreign policy, and current issues and challenges.

API6336 DEFENSE POLICY AND MILITARY AFFAIRS (3cr.)
Processes and outputs of defense policy in key Western states, including Canada. The course begins with an overview of the threats to security in the modern world and then examines models of defense policy making, before moving on to a more detailed analysis of the defense policies of selected states and how they are made.

API6337 PEACE OPERATIONS AND POST-CONFLICT RECONSTRUCTION (3cr.)
Concepts and practice of peacekeeping, peace-making and post-conflict reconstruction. Topics include the history and development of peace operations before and after the Cold War, preventive diplomacy, conflict resolution, humanitarian emergencies, the role of military and civilian actors in peace operations, and the rehabilitation of countries after civil war.

API6339 SPECIAL TOPICS IN INTERNATIONAL AFFAIRS (3cr.)

API6351 INTERNATIONAL ECONOMICS AND DEVELOPING COUNTRIES (3cr.)
Introduction to the economic analysis of developing countries. The course will address the different tools used to measure economic development as well as the obstacles to growth and development in the Third World. Issue areas considered include macro-economic adjustment, financing development, population growth, human capital, technological progress and facilitating institutions.

**API6352 POLITICAL ECONOMY OF DEVELOPMENT (3cr.)**  
Major political economy theories used in the study of development. Examination of the manner in which development policy trends since the Second World War have been shaped by different economic theories and problems. Contemporary issues in the political economy of development, such as poverty and inequality, the role of multinational corporations, population health, and women in development.

**API6353 HUMAN RIGHTS AND DEMOCRATIZATION (3cr.)**  
The politics of human rights in the context of countries in the process of democratization. Topics include the historical evolution of the meaning of “human rights”; the philosophical foundations of the concept of human rights; formal mechanisms for protecting human rights; experiences of implementation of human rights legislation and enforcement; rights-based approaches to international development; the activities and policies of non-governmental organizations promoting human rights; transitional justice and institutional reform in the context of democratizing countries.

**API6354 MIGRATION AND DEVELOPMENT (3cr.)**  
Examination of the complex links between migration and development, and the impact of global migration flows on relations between the “North” and “South”. The course will study theories of migration and the evolution of migration patterns; international and local legal norms and statutes addressing migration; humanitarian interventions in complex political emergencies; and the application of principles of development to situations of forced migration. Issues arising from the impact of migration on development financing and transnational social problems including criminal, drug, and terrorist networks.

**API6355 FOREIGN AID POLICY (3cr.)**  
Examination of the role of official development assistance in economic and social development. The course will address the moral, political and economic justification for foreign aid, as well as challenges in the design and implementation of effective foreign aid policies. The course will examine the range of organizations (multilateral, national, civil society) operating at both the advocacy and operational level. A particular emphasis will be placed on the practices of Canadian development agencies and non-governmental organizations.

**API6356 ENVIRONMENT, NATURAL RESOURCE MANAGEMENT AND DEVELOPMENT (3cr.)**  
Examination of the relation among natural resource management, environmental protection, and development. Topics include the factors shaping the management of natural resources in developing countries, the impact of environmental and natural resources policies on the development of countries, the importance of environmental issues in the development policies of international organizations, and the impact of environmental issues on the prospect for a sustainable form of development.

**API6357 CONFLICT AND HUMAN SECURITY (3cr.)**  
Examination of the relationship between conflicts and development, and exploration of the concept of human security as an approach to both development and peace-building. Students will become familiar with key theories of conflict, with particular attention to recent theories of “new wars” in the context of globalized economies and transnational networks. Exploration of the relationship between conflict and development outcomes using case studies.

**API6359 SPECIAL TOPICS IN DEVELOPMENT STUDIES (3cr.)**

**API6399 CAPSTONE SEMINAR (3cr.)**

**API6711 ÉCONOMIE PUBLIQUE (3cr.)**  
Étude de la façon dont les interventions gouvernementales affectent l’économie. Les thèmes couverts incluent l’efficacité de l’équilibre en situation de concurrence parfaite, inefficacité, externalités et bien publics, concurrence imparfaite et asymétrie en matière d’information, enjeux d’économie politique, y compris la recherche de rentes, et les questions inter-temporelles reliées à la sécurité sociale et la croissance économique. Études de cas du Canada et d’ailleurs.

**API6712 FINANCES PUBLIQUES (3cr.)**  
Dépenses publiques et taxation, surtout au Canada. Les thèmes abordés incluent les programmes de sécurité du revenu, l’assurance emploi, les pensions, la sécurité du revenu pour personnes âgées, le financement des soins de santé et de l’éducation, impôts sur le revenu des particuliers, taxes à la consommation, taxes sur la richesse et la propriété, impôts des entreprises, le fédéralisme fiscal au Canada, y compris la péréquation.

**API6713 GOUVERNANCE À NIVEAUX MULTIPLES ET POLITIQUES PUBLIQUES (3cr.)**  
Impact du fédéralisme, des relations intergouvernementales, et de la gouvernance à multiples niveaux sur les politiques publiques au Canada. Comparaison avec d’autres fédérations (e.g. Australie) et quasi-fédérations (e.g. Union Européenne). Le cours examine le rôle croissant des municipalités et des gouvernements autochtones dans la formulation des politiques publiques, l’impact de la gouvernance à niveaux multiples sur l’efficacité et l’efficience des programmes, et ses conséquences en matière d’imputabilité, de transparence et de participation des citoyens.

**API6714 POLITIQUES DE LA SANTÉ (3cr.)**  
Étude du développement des politiques en matière de santé au Canada et dans certains autres pays de l’OCDE. Le cours aborde la question du financement des soins de santé, le rôle des secteurs public, privé et non gouvernementaux dans l’offre de soins de santé, les relations intergouvernementales dans ce domaine, la promotion de la santé et la prévention des maladies, et de manière plus générale l’impact des politiques gouvernementales sur la santé des populations.
API6715 POLITIQUES SOCIALES (3cr.)
Étude du développement et de la transformation de l’État-providence au Canada et dans certains autres pays de l’OCDE. Le cours aborde la question de la pauvreté et de la sécurité du revenu, l’assurance emploi, les politiques familiales et la petite enfance ainsi que les pensions. Le cours examine aussi les facteurs politiques, économiques et démographiques qui influencent la formulation des politiques sociales.

API6716 POLITIQUES ENVIRONNEMENTALES (3cr.)
Étude du développement des politiques environnementales au Canada et dans certains autres pays de l’OCDE. Le cours aborde la question du développement durable, de la pollution atmosphérique, de la pollution de l’eau, de la protection des espèces à risque, de la réglementation des biotechnologies, et du changement climatique. Le cours examine aussi les facteurs économiques et politiques qui influencent les politiques environnementales, comprenant les relations entre les facteurs nationaux et internationaux.

API6717 IMMIGRATION, DIVERSITÉ ET POLITIQUES PUBLIQUES (3cr.)
Étude sur les enjeux de l’immigration, de la diversité et de leurs effets sur les politiques publiques. Le cours aborde la question de l’impact de l’immigration sur l’économie et la société canadiennes, ses répercussions sur les politiques publiques, la diversité et les conceptions de la citoyenneté au Canada, aux États-Unis et dans l’Union Européenne ainsi que les attitudes adoptées à l’égard de l’immigration et de la diversité ethnoculturelle, y compris la discrimination.

API6719 THÈMES CHOISIS EN POLITIQUES PUBLIQUES (3cr.)

API6731 FINANCE INTERNATIONALE (3cr.)
Étude des marchés financiers internationaux et de l’environnement dans lequel ils opèrent. Les thèmes étudiés concernent les marchés de change, la parité des pouvoirs d’achat et des taux d’intérêt, les systèmes de taux de change (la période de Bretton Woods et après), les crises financières internationales, les instruments financiers dérivés, l’union monétaire européenne et la théorie des zones monétaires optimales ainsi que les débats sur la nécessité d’une nouvelle architecture financière internationale.

API6732 COMMERCE INTERNATIONAL (3cr.)
Aspects théoriques et empiriques du commerce international. Les thèmes étudiés concernent les gains de l’échange, les causes et conséquences du commerce, les alternatives au libre-échange (tarifs, quotas et barrières non tarifaires, union douanière), la mobilité des facteurs de production, la croissance et la théorie des investissements étrangers directs, et la politique du Canada en matière de commerce international et d’investissements étrangers.

API6733 DROIT INTERNATIONAL ET ÉTHIQUE (3cr.)
Étude de certains enjeux des affaires internationales dans la perspective du droit et de l’éthique. Le cours examine les obligations et les droits des acteurs du système international ainsi que des dimensions éthiques et juridiques de certains enjeux et thèmes importants des affaires internationales, tels l’usage de la force militaire, les crises humanitaires et la « responsabilité de protéger », la dette des pays en voie de développement, et la protection des ressources communes de l’humanité (e.g. océans, atmosphère).

API6734 RÉGIONALISME ET INTÉGRATION RÉGIONALE (3cr.)
Theories et pratique de la coopération régionale et de l’intégration. Le cours aborde les différentes formes de régionalisme, y compris en matière de coopération économique, politique et sécuritaire, en Europe, dans les Amériques et ailleurs dans le monde. Le cours examine également les conséquences du régionalisme et de l’intégration en matière de politique étrangère et domestique du Canada.

API6735 POLITIQUE ÉTRANGÈRE CANADIENNE (3cr.)
Étude de la politique étrangère du Canada, aujourd’hui et dans l’histoire. Le cours aborde l’émergence et le développement du Canada comme acteur sur la scène internationale, l’évolution de ses priorités et de son rôle dans les affaires internationales, la relation entre la politique nationale du Canada et sa politique étrangère, l’administration de la politique étrangère ainsi que les défis contemporains dans ce domaine.

API6736 POLITIQUE DE DÉFENSE ET AFFAIRES MILITAIRES (3cr.)
Étude de la formulation et du contenu de la politique de défense de certains pays occidentaux, notamment du Canada. Le cours offre d’abord un survol des principales menaces à la sécurité dans le monde d’aujourd’hui et examine ensuite divers modèles de formulation de la politique de défense. Étude détaillées des politiques de défense de divers pays.

API6737 CONSOLIDATION DE LA PAIX ET RECONSTRUCTION APRÈS CONFLITS (3cr.)
Concepts et pratique du maintien de la consolidation de la paix ainsi que de la reconstruction après les conflits. Le cours aborde la question de l'histoire et du développement des opérations de paix avant et après la guerre froide, la diplomatie préventive, la résolution de conflits, les urgences humanitaires, le rôle des acteurs militaires et civils dans les opérations de paix de la reconstruction des pays à la suite d'une guerre civile.

API6739 THÈMES CHOISIS EN AFFAIRES INTERNATIONALES (3cr.)

API6751 ÉCONOMIE INTERNATIONALE ET PAYS EN VOIE DE DÉVELOPPEMENT (3cr.)
Introduction à l’analyse économique des pays en voie de développement. Le cours aborde les différentes approches pour mesurer l’évolution économique, les obstacles à la croissance et au développement dans ces pays, les ajustements macro-économiques, le financement du développement, la croissance de la population, le capital humain, le progrès technologique et l’importance du cadre institutionnel du développement économique.

API6752 ÉCONOMIE POLITIQUE DU DÉVELOPPEMENT (3cr.)
Public Ethics (MA)

The Faculty of Philosophy at Saint Paul University, in collaboration with the Faculties of Theology and of Human Sciences, offers the Master of Arts in Public Ethics (MA Pub.Ethics). This degree is conferred jointly by the Senates of Saint Paul University and the University of Ottawa under the terms of the federation agreement between them.

The program is based upon course and seminar work, reflection on practical experience, and research in public ethics. The program is designed for students wishing to specialize in public ethics at the graduate level or to prepare themselves for doctoral work; for mid-career professionals wishing to reflect and build on their professional experience and previous studies and who may wish to advance their careers, make career changes, or prepare for doctoral studies.

Program Objectives

The program is designed to prepare graduates who are public ethics analysts and consultants with competencies in the following:

1. To discern the values and ethical concerns involved in particular policy statements or social and political practices and to propose appropriate strategies for taking these values and ethical concerns into consideration in the further formulation of policy statements and establishment of such practices at regional, national and international levels;
2. To study more deeply the major ethical questions raised by society;
3. To discern the values and the ethical concerns arising from, or involved in, a society defined more and more in terms of information creation and transfer and to propose appropriate strategies for taking these values and ethical concerns into consideration in the further
evolution of an information-oriented communication society.

Admission

To be admitted to the master's program, candidates must:

1. Have obtained an honours bachelor's degree, or the equivalent, in philosophy, ethics, political science, governance studies, public policy, or in another discipline judged relevant, with a minimum grade point average of 70% (B);
2. Submit two letters of reference, at least one of which must be from a professor;
3. Be proficient in at least one of Canada's two official languages, and have a good enough reading knowledge of the other official language to be able to read texts in that language.

In exceptional cases, candidates who do not hold the equivalent of an honours bachelor's degree as defined above may be admitted to the master's program, provided they can demonstrate, to the satisfaction of the Admissions Committee, that they possess adequate knowledge and professional experience (for example, experience as a policy analyst in the public sector). Depending on the case, such candidates may be required to complete qualifying courses in pertinent disciplines prior to admission.

Program Requirements

Degree Requirements

The Master of Arts in Public Ethics program consists of coursework and a research paper or thesis.

The Master’s program with research paper is normally a one-year program, divided into three sessions, which constitute the residency requirement.

The Master’s program with thesis is normally a two-year program with the first year being divided into three sessions, which constitute the residency requirement.

Students may arrange to complete part of the program on a part-time basis as long as the three-session residency requirement will have been met. All students, whether part-time or full-time, must complete all degree requirements within four years of having first registered in the program.

Master's Program with Research Paper (24 cr.)

Compulsory courses (6 cr.)
EPE6300 MAIN ETHICAL THEORIES (3cr.)
EPE6310 SEMINAR IN PUBLIC ETHICS (3cr.)

Electives (12 cr.)
Four courses (12 cr.) chosen from among the following:
CMN5115 COMMUNICATION ETHICS (3cr.)
EC35304 ETHICAL DIMENSIONS OF CONFLICT (3cr.)
PAP6102 DEMOCRATIC GOVERNANCE (3cr.)
EPE6301 MILITARY AND PEACEKEEPING ETHICS (3cr.)
EPE6302 ENVIRONMENTAL ETHICS (3cr.)
EPE6303 ETHICS AND HUMAN RIGHTS (3cr.)
EPE6304 ETHICS AND INTERNATIONAL DEVELOPMENT (3cr.)
EPE6305 ETHICS AND HEALTH CARE (3cr.)
EPE6306 ETHICS, PRIVACY AND INFORMATION (3cr.)
EPE6320 SELECTED TOPICS IN ETHICS (3cr.)
EPE6901 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
SOC7550 RELATIONS INTERETHNIQUES : EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)

Research Paper (6 cr.)
EPE6098 MEMOIRE / RESEARCH PAPER (6cr.)

Master's Program with Thesis (24 cr.)

Compulsory courses (6 cr.)
EPE6300 MAIN ETHICAL THEORIES (3cr.)
EPE6310 SEMINAR IN PUBLIC ETHICS (3cr.)

Electives (6 cr.)
Two courses (6 cr.) chosen from among the following:
CMN5115 COMMUNICATION ETHICS (3cr.)
ECS5304 ETHICAL DIMENSIONS OF CONFLICT (3cr.)
PAP6102 DEMOCRATIC GOVERNANCE (3cr.)
EPE6301 MILITARY AND PEACEKEEPING ETHICS (3cr.)
EPE6302 ENVIRONMENTAL ETHICS (3cr.)
EPE6303 ETHICS AND HUMAN RIGHTS (3cr.)
EPE6304 ETHICS AND INTERNATIONAL DEVELOPMENT (3cr.)
EPE6305 ETHICS AND HEALTH CARE (3cr.)
EPE6306 ETHICS, PRIVACY AND INFORMATION (3cr.)
EPE6320 SELECTED TOPICS IN ETHICS (3cr.)
EPE6901 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
SOC7550 RELATIONS INTERETHNIQUES ; EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)

Master's Thesis (12 cr.)
EPE6999 THÈSE DE MAÎTRISE / MASTER'S THESIS (12cr.)

Before being allowed to register for the thesis, students must have had their detailed plan of research accepted by a potential supervisor and by the program committee.

Language of Instruction

In accordance with Saint Paul University and the University of Ottawa policy, students have a right to produce their work and to answer examination questions in French or in English.

Courses

CMN5115 COMMUNICATION ETHICS (3cr.)
Emphasis on the significance of ethical principles and responsibilities of public communicators, as well as sanctions faced when communicators fail to uphold these principles. Critique of self-regulation of the media. Analysis of argumentation. Study of legal precedents with respect to defamation.

CMN5515 ÉTHIQUE DE LA COMMUNICATION (3cr.)
L’accent sera mis sur la signification des principes éthiques et de la responsabilité des communicateurs publics ainsi que sur les sanctions auxquelles s’exposent les communicateurs qui ne respectent pas ces principes. Critique de l’autorégulation des médias. Analyse de l’argumentation. Étude de la jurisprudence en matière de diffamation.

ECS5304 ETHICAL DIMENSIONS OF CONFLICT (3cr.)
Conceptual and procedural ethical issues concerning norms of justice and reconciliation. Relation of ethical issues to self-other dialectics, dynamics of discourse and power, gender and class, memory and agency.

PAP6102 DEMOCRATIC GOVERNANCE (3cr.)
This seminar provides an examination of how democratic governments structure their decision-making processes for effectiveness, representation and accountability. A particular focus of this seminar is a critical evaluation of the New Public Management reforms, and an in-depth review of different models of government intervention and policy-making from a comparative perspective.

PAP6502 GOUVERNANCE DÉMOCRATIQUE - RENDEMENT ET IMPUTABILITÉ (3cr.)
Examen des mesures prises par les gouvernements démocratiques pour s'assurer que les processus de prise de décision répondent aux critères d'efficacité, de représentativité, et d'imputabilité. Accent sur l'examen critique des réformes récentes des modes de gestion à la fonction publique et étude approfondie des différents modes d'intervention gouvernementale et d'élaboration de politiques d'un point de vue comparatif.

EPE6300 MAIN ETHICAL THEORIES (3cr.)

EPE6301 MILITARY AND PEACEKEEPING ETHICS (3cr.)
Examination of the thought on ethics by philosophers and military personnel. Readings from Cicero, Julius Caesar, Marcus Aurelius before turning to renaissance and modern thinkers. Contemporary ethics of war, the nature of the soldier and the peacekeeper. Theoretical discussions and a detailed look at current policies and thinking at the Department of National Defence.

EPE6302 ENVIRONMENTAL ETHICS (3cr.)
Ethical analysis of environmental policies. Nature of the relationship between humans and the environment.
EPE6303 ETHICS AND HUMAN RIGHTS (3cr.)

EPE6304 ETHICS AND INTERNATIONAL DEVELOPMENT (3cr.)
Ethical components of development and underdevelopment theories. Rights and obligations of wealthy countries towards poor countries. Ethical critique of policies governing international aid.

EPE6305 ETHICS AND HEALTH CARE (3cr.)

EPE6306 ETHICS, PRIVACY AND INFORMATION (3cr.)
Analysis of the impact of the development of New Information and Communications Technologies (NTIC) on privacy and the confidentiality of personal information.

EPE6310 SEMINAR IN PUBLIC ETHICS (3cr.)
Analysis and resolution of practical problems in public ethics. Methodologies and principles of research in public ethics, using a case-study approach.

EPE6320 SELECTED TOPICS IN ETHICS (3cr.)
Study of a specialized area in ethics.

EPE6700 LES PRINCIPALES THÉORIES ÉTHIQUES (3cr.)

EPE6701 ÉTHIQUE DE L’ART MILITAIRE ET DU MAINTIEN DE LA PAIX (3cr.)
Examen de réflexions éthiques de la part de philosophes et de militaires. Lecture d’auteurs anciens (Cicéron, Jules César, Marc Aurèle) et modernes. Éthique contemporaine de la guerre, la réalité du soldat et du gardien de la paix. Discussions théoriques et examen détaillé des politiques actuelles, ainsi que de la façon de penser du Département de Défense nationale.

EPE6702 ÉTHIQUE ENVIRONNEMENTALE (3cr.)

EPE6703 ÉTHIQUE ET DROITS HUMAINS (3cr.)
La Déclaration universelle des droits de la personne. Le fondement éthique des droits humains. Les perspectives historiques et les débats contemporains.

EPE6704 ÉTHIQUE ET DÉVELOPPEMENT INTERNATIONAL (3cr.)

EPE6705 ÉTHIQUE ET SOINS DE SANTÉ (3cr.)

EPE6706 ÉTHIQUE, VIE PRIVÉE ET INFORMATION (3cr.)
Impact du développement des nouvelles technologies de l’information et des communications (NTIC) sur la vie privée et la confidentialité. Protection des données personnelles.

EPE6710 SÉMINAIRE EN ÉTHIQUE PUBLIQUE (3cr.)
L’analyse et la résolution de problèmes pratiques en éthique publique. Méthodologies et principes de recherche en éthique publique, à partir d’étude de cas.

EPE6720 THÈMES CHOISIS EN ÉTHIQUE (3cr.)
Étude d’un domaine particulier de l’éthique.

EPE6901 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
Étude avancée d’un sujet déjà analysé dans le cadre du programme, exploration d’un thème dans un domaine particulier de l’éthique. / Advanced study of a question already analysed within the framework of the program, exploration of a theme in a particular area of ethics.

EPE6998 MÉMOIRE / RESEARCH PAPER (3cr.)

EPE6999 THÈSE DE MAÎTRISE / MASTER’S THESIS (12cr.)

SOC7550 RELATIONS INTERETHNIQUES: EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)
Principales théories sociologiques des relations interethniques; l'application de ces théories dans l'analyse de la structure sociale de quelques sociétés.
Religious Education (MRE)

Master in Religious Education

Objectives

1. Enhance the attitudes, knowledge and skills of Catholic religious educators;
2. Provide additional possibilities for personal growth in faith;
3. Provide a better understanding and integration of the principles and methods of religious education;
4. Provide resources for the integration of Christian faith and service.

Admission

Admission Requirements

1. To be admitted to the MRE program a candidate must hold a baccalaureate degree from an accredited institution with a minimum 70 per cent (B) average.
2. A candidate must have successfully completed at least five 3-credit courses in the field of education. Teachers holding a teacher's certificate or a BEd are considered as having fulfilled this prerequisite.
3. A candidate must have successfully completed at least five 3-credit courses in the field of theology. Two of these courses must be introductory courses in the Old and New Testaments. At least two of the three other courses must be courses in the field of theology (biblical studies, spirituality, ethics, Church history or systematic theology). One 3-credit course may be in a field of religious studies considered acceptable by the admissions committee. For teachers in the Separate School system of the Province of Ontario, the OECTA/OSSTA Ministry Course in Religious Education (Parts I, II and III) will be recognized as the equivalent of two 3-credit courses.
4. A candidate must have experience in the teaching of religious education: (1) teachers of boards of education must have two years of teaching experience with at least one year of teaching religious education authenticated by a letter from the supervisory officer of the school board; (2) with regard to teachers of parish religious education programs or diocesan directors of religious education, this condition for admission may be fulfilled in another way deemed equivalent by the Faculty of Theology.

Degree

The MRE is conferred jointly by the University of Ottawa and Saint Paul University.

Length of Program

The MRE program is a part-time program with a three-year cycle. Students will register as part-time regular students. The program must be completed within four years.

Program Requirements

Master in Religious Education

Degree Requirements

The master's degree in religious education (MRE) is a professional program consisting of 30 credits.

The MRE program consists of two modules: a theological module and a religious education module.

As the primary objective of the program consists in training competent teachers in religious education, the program is centred on the practicum of teaching religious education. The theoretical courses are intended to facilitate the two practicums. The practicums will be implemented in accordance with the procedures...
Courses

Master in Religious Education
The theological module consists of the following courses:

THO5101 JESUS THE CHRIST AND SALVATION (3cr.)
The message and activity of Jesus of Nazareth. The meaning of the death and resurrection of Jesus as the eschatological event of salvation. The identity of Jesus and the question of God. Teaching the message and person of Jesus.

THO5102 CHURCH AND WORLD (3cr.)
The Church as institution and event. Its Christological origin. The importance of history for understanding the Church and its traditions. The Church's mission in the world with a specific focus on education. Conditions and means of membership.

THO5103 LITURGY (3cr.)
Theology and historical development of liturgy. Its major components: the liturgical seasons, the process of Christian initiation, different forms of liturgical prayer. Liturgy and youth. Liturgy and catechism.

THO5104 MORAL EXISTENCE AND CHRISTIAN LIFE (3cr.)

THO5105 FAITH AND THE CHALLENGES OF MODERN CULTURE (3cr.)
The interaction of Christian faith, religion and cultural processes. The implications for education.

The religious education module consists of the following courses:

THO5106 RELIGIOUS EDUCATION (3cr.)
The transmission of faith in the current cultural context. The main theories of religious education.

THO5107 TEACHING AND FAITH TRADITION (3cr.)
The history of catechetics. The role of the teacher in religious education. The challenges of transmitting a faith tradition in religious education.

THO5110 LEADERSHIP IN CATHOLIC INSTITUTIONS (3cr.)
Exploration of the concepts and practices of leadership for Catholic Institutions (history of Catholic institutions, models of leadership, leadership in Bible and tradition, faith leadership in schools, canonical contexts).

THO5111 ETHICAL, CULTURAL AND RELIGIOUS ISSUES FOR CATHOLIC LEADERS (3cr.)
Examination of some of the ethical, cultural and religious challenges facing leaders of Catholic educational institutions (epochal shift of modernity, community and individual, the human rights tradition, the Christian ethical and moral framework, the ecumenical and inter-religious context, spirituality).

IPA5180 SOCIOLOGICAL AND PSYCHOLOGICAL PERSPECTIVES ON RELIGIOUS DEVELOPMENT (3cr.)
The developmental religious process from a psychological perspective. Faith development as an emotional, intellectual, volitional and experiential process. The social context and variables (family, rural/urban, class, sex, etc.) of faith. Faith and human experience.

OR

THO5108 CHRISTIANITY AND WORLD RELIGIONS (3cr.)
History of the relationship of Christianity to the main spiritual traditions of the world. Convergences and divergences. Theological and anthropological ground for dialogue among the traditions. Christian education and world religions.
IPA5181 PRACTICUM IN RELIGIOUS EDUCATION I (3cr.)
Students receive training in the basic skills necessary for teaching religious education. This course helps religion teachers to plan their teaching process of a specific religious education program currently used by school boards or dioceses, to understand these programs in relation to the principles of religious education, to practice the specific program in a school or parish context, and to evaluate it. Student evaluation takes place by way of feedback from fellow students, debriefing, work samples, tape recordings, verbatim, or other reports. This practicum will be conducted under the supervision of an experienced and qualified catechist and MRE program faculty. It generally will be held during the second or the third year of the program.

IPA5182 PRACTICUM IN RELIGIOUS EDUCATION II (3cr.)
Students receive training in the planning, practice and evaluation of teaching religious education. This course helps religion teachers to plan and write original religious education materials, to teach these materials, and to evaluate both the materials and the process. Student evaluation takes place by way of feedback from fellow students, debriefing, verbatim, and other suitable reports. This practicum is a group learning and evaluation process under the supervision of an experienced and qualified catechist and MRE program faculty. It generally will be held during the second or third year of the program.

Religious Studies (MA)

Programs of Study

Programs of study leading to the degrees of master of arts (MA) in religious studies and doctor of philosophy (PhD) in religious studies are offered.

Objectives and Methods

The orientation of the Department of Classics and Religious Studies (sector: religious studies) is that of the “Science of Religions” or Religionsoziwissenschaft. Thus, the study of the religious phenomenon is pursued through teaching and research in the same manner and on the same level as any other category of facts accessible to human experience and observation.

The disciplines that play a role in the study of religions are primarily of a historical, sociological, psychological and anthropological nature. Moreover, in the modern context, such a study must take into account the plurality of religious traditions and expressions in society and examine the relationships among them.

In light of the above, the Department of Classics and Religious Studies (sector: religious studies) takes a multidisciplinary approach to the study of religious phenomena using the perspectives of historical, sociological, psychological, anthropological and literary studies to arrive at a comprehensive understanding of people as religious beings. Research on the meaning of religious phenomena is accomplished through analysis and comparison of the various means of religious expression, both in the past and present. No tradition is considered normative.

Areas of Research

The master’s program in religious studies focuses on religions in Canada, including Amerindian and Inuit traditions, and on religions in the comparative cultural context. The comparative cultural approach provides an opportunity to explore religious phenomena across different religious traditions expressly within their specific cultural contexts. The program favours the methods of anthropology, history, psychology and sociology.

Admission

Applicants who hold a baccalaureate with honours in religious studies or the equivalent with at least second-class standing may be admitted to the master’s program. Those who do not have an honours degree in religious studies may be admitted to a qualifying year during which they complete the requirements normally included in the honours program. The qualifying year comprises a minimum of five courses equivalent to selected compulsory courses of the honours program at the University of Ottawa.

Official applications for admission should be submitted by the deadlines listed on the website of the Faculty of Graduate and Postdoctoral Studies. Applications received after a deadline will be considered only if positions are available.

As part of their application, applicants must submit a statement (1-2 pages) describing their research interests.

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Collaborative Program at the Master’s Level
Program Requirements

Degree Requirements

MA with thesis:
The master's program with thesis consists of 18 credits in courses and directed studies, and the writing and defence of a thesis.

The 18 credits in courses comprise:

1. SRS5115 SEMINAR IN RELIGIOUS STUDIES (3cr.)
   or
   SRS5915 SÉMINAIRE EN SCIENCES DES RELIGIONS / SEMINAR IN RELIGIOUS STUDIES (3cr.)
2. SRS5928 PROJET DE THÈSE / THESIS PROPOSAL (3cr.)
3. two graduate courses in religious studies (6cr.)
4. one additional course or directed study in religious studies (3cr.)
5. SRS7988 RECENSION DES ÉCRITS - M.A. / LITERATURE REVIEW - MA (3cr.)

For students in a collaborative program, the 18 credits in courses comprise:

1. SRS5115 SEMINAR IN RELIGIOUS STUDIES (3cr.)
   or
   SRS5915 SÉMINAIRE EN SCIENCES DES RELIGIONS / SEMINAR IN RELIGIOUS STUDIES (3cr.)
2. SRS5928 PROJET DE THÈSE / THESIS PROPOSAL (3cr.)
3. two compulsory courses in the collaborative program (6cr.)
4. one graduate course in religious studies (3cr.)
5. SRS7988 RECENSION DES ÉCRITS - M.A. / LITERATURE REVIEW - MA (3cr.)

MA with research paper (30 credits):
The master's program with research paper consists of 24 credits in courses and directed studies, and a research paper (6 credits).

The 24 credits in courses comprise:

1. SRS5115 SEMINAR IN RELIGIOUS STUDIES (3cr.)
   or
   SRS5915 SÉMINAIRE EN SCIENCES DES RELIGIONS / SEMINAR IN RELIGIOUS STUDIES (3cr.)
2. two graduate courses in religious studies (12cr.)
3. two additional courses or directed studies in religious studies
4. SRS7988 RECENSION DES ÉCRITS - M.A. / LITERATURE REVIEW - MA (3cr.)

For students in a collaborative program, the 24 credits in courses comprise:

1. SRS5115 SEMINAR IN RELIGIOUS STUDIES (3cr.)
   or
   SRS5915 SÉMINAIRE EN SCIENCES DES RELIGIONS / SEMINAR IN RELIGIOUS STUDIES (3cr.)
2. two compulsory courses in the collaborative program (6cr.)
3. three graduate courses in religious studies (9cr.)
4. one additional course or directed study in religious studies (3cr.)
5. SRS7988 RECENSION DES ÉCRITS - M.A. / LITERATURE REVIEW - MA (3cr.)

Graduate students are allowed to take undergraduate courses for no more than one third of their course work, provided that they do additional work to the satisfaction of the professor.

Literature Review
Student must complete a directed study (SRS7988) on the scholarly literature in the field of their research project. This literature review should be broader than, and does not replace, the more specific review of literature that normally forms part of a thesis or research paper. Students survey and discuss the literature in a paper approximately 25 pages in length. The reading list must be approved in advance by the student’s thesis supervisor. The paper is evaluated SNS by the

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professor directing the study and one other professor. Instructions regarding the literature review can be obtained from the Director of Graduate Studies in the department.

**Thesis**

After consultation with the research supervisor and not later than the second session of studies, the student must present a thesis topic to the Graduate Studies Committee for approval.

Before the end of the first year of studies, the thesis project must be presented for examination and discussion at a colloquium attended by professors and students of the department. After the colloquium, the project must be submitted to the Graduate Studies Committee for approval. Instructions regarding the colloquium and the thesis project can be obtained from the Director of Graduate Studies in the department.

For additional information on deadlines and on the writing, submission, examination, and revision of the thesis, please consult the general regulations of the Faculty of Graduate and Postdoctoral Studies as well as the guide «Preparing a Thesis or a Research Paper» available on the website: http://www.etudesup.uottawa.ca/Default.aspx?tabid=1381.

**Research Paper**

The research paper, which is worth six credits, is a critical study of approximately 40 pages directed by a full-time professor of religious studies chosen by the student. Registration for this research paper (SRS 5999) should be done following the approval by the professor selected. The paper will be evaluated by the professor who has directed the research and by another professor appointed by the department. This paper should demonstrate the student's research potential and ability to investigate a problem in detail.

Three copies of this research paper must be submitted to the department.

**Colloquium**

Participation in the department's regular research colloquia is compulsory for all registered graduate students.

**Residence**

The residence requirement is three sessions for students admitted on a full-time basis.

**Time limit**

Students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

**Transfer from Master’s to PhD Program**

Students enrolled in the MA program in Religious Studies at the University of Ottawa may be allowed to transfer to the PhD program. For additional information, please consult the “Admission” section of the PhD program.

The transfer to the PhD must be completed by the end of the fourth session following initial registration in the MA program. The total number of credits to be completed for the Master's and PhD combined is 30 credits.

**Courses**

**SRS5101 SECOND TEMPLE JUDAISM** (3cr.)

Central questions and recent developments in the study of Judaism in the period of the Second Temple.

**SRS5102 PSYCHOANALYSIS AND RELIGION** (3cr.)

Psychoanalytic thought relating to religion since the work of Sigmund Freud; therapeutic traditions and theories derived from the writings of Melanie Klein, D.W. Winnicott, W.R.D. Fairbairn and Jacques Lacan.

**SRS5103 FREUD, JUNG AND RELIGION** (3cr.)

An examination of Sigmund Freud’s and Carl Jung’s writings pertaining to religion and mythology.

**SRS5107 ORIGINS OF CHRISTIANITY** (3cr.)

Current questions and recent developments in the study of the origins of Christianity.

**SRS5115 SEMINAR IN RELIGIOUS STUDIES** (3cr.)

An orientation to the study of religion at an advanced level.

**SRS5116 CURRENT APPROACHES TO THE STUDY OF RELIGION** (3cr.)

The methodological terrain of the current study of religion: the history, theoretical and methodological contributions, and influence of various approaches.
SRS5203 RELIGION AND SOCIETY IN CROSS-CULTURAL ANALYSIS (3cr.)
Comparative sociological analysis of the relations between religion and society in different cultures and regions.

SRS5320 RELIGION AND ANTHROPOLOGY - SELECTED TOPICS (3cr.)
Major theories and debates in anthropological analyses of religion and the associated methodology of ethnography.

SRS5502 RELIGIONS AFRICAINES (3cr.)
Étude des religions et cultures africaines dans leurs dimensions politiques, économiques, conflictuelles et identitaires, depuis les réalités ancestrales et les cultes traditionnels jusqu’au foisonnement des spiritualités contemporaines.

SRS5520 RELIGION ET ANTHROPOLOGIE - THÈMES CHOISIS (3cr.)
Théories et débats à la base des analyses anthropologiques du religieux, et de la méthodologie ethnographique dont elles sont inséparables.

SRS5901 HISTOIRE DES SCIENCES DES RELIGIONS / HISTORY OF RELIGIOUS STUDIES (3cr.)
Analyse historique des théories et des approches méthodologiques de l’étude de la religion; développement institutionnel des sciences des religions. / Analysis of theories and methodological approaches in the historical study of religion; the institutional development of religious studies.

SRS5902 TEXTES ET RÉCITS RELIGIEUX / RELIGIOUS TEXTS AND NARRATIVES (3cr.)
Approches actuelles dans l’étude des textes et récits religieux. Études d’aspects tels que l’oralité, l’intertextualité, l’expression, l’écoute et l’idéologie. / Current approaches to the study of religious texts and narratives, exploring such aspects as orality, intertextuality, performance, reception, and ideology.

SRS5903 RITES ET SYMBOLES RELIGIEUX / RELIGIOUS RITES AND SYMBOLS (3cr.)
Approches actuelles dans l’étude des rites et symboles religieux. Étude de la dynamique du symbolisme, de la corporelité, de la communauté, de l’expression et de l’identité. / Current approaches to the study of religious rites and symbols, exploring the dynamics of symbolism, embodiment, performance, community, and identity.

SRS5915 SÉMINAIRE EN SCIENCES DES RELIGIONS / SEMINAR IN RELIGIOUS STUDIES (3cr.)
Introduction approfondie à l’étude savante du religieux. / An orientation to the study of religion at an advanced level.

SRS5918 RELIGION, ART ET CULTURE / RELIGION, ART AND CULTURE (3cr.)
Étude de la représentation du religieux dans les arts (arts visuels, musique, théâtre, littérature, cinéma) ou de la contribution des arts à la religion. / An examination of the representation of religion in the arts (visual art, music, drama, literature, and film) or of the contribution of the arts to religion.

SRS5920 APPROCHES ACTUELLES DANS L’ÉTUDE DE LA RELIGION / CURRENT APPROACHES TO THE STUDY OF RELIGION (3cr.)
Le domaine méthodologique de l’étude contemporaine de la religion, y compris l’historicité, les contributions théoriques ou méthodologiques et l’influence de diverses approches. / The methodological terrain of the current study of religion: the history, theoretical and methodological contributions, and influence of various approaches.

SRS5923 LES DÉESSES ET LES FEMMES DANS LE MYTHE ET LE SYMBOLE / GODDESSES AND WOMEN IN MYTH AND SYMBOL (3cr.)
Étude des théoriciens actuels qui fondent leur analyse critique de l’idéologie et de la culture sur les représentations féminines dans l’imagier religieux. / An examination of the work of current theorists who make use of female representations in religious imagery for the purpose of critical analysis of ideology and culture.

SRS5924 LE JUDAÏSME DU SECONDE TEMPLE / SECOND TEMPLE JUDAISM (3cr.)
Questions essentielles et développements récents dans l’étude du judaïsme du Second Temple. / Central questions and recent developments in the study of Judaism in the period of the Second Temple.

SRS5925 ORIGINES DU CHRISTIANISME / ORIGINS OF CHRISTIANITY (3cr.)
Questions actuelles et développements récents dans l’étude des origines du christianisme / Current questions and recent developments in the study of the origins of Christianity.

SRS5926 RELIGION DANS L’ANTIQUITÉ TARDIVE / RELIGION IN LATE ANTIQUITY (3cr.)
Étude de la religion dans le monde méditerranéen de l’Antiquité tardive, en particulier des questions de transformation religieuse, de discours, de conflit, de pluralisme et d’identité. / An examination of religion in the Mediterranean world in Late Antiquity, with particular attention to religious transformation, discourse, conflict, pluralism, and identity.

SRS5927 TRADITIONS CHAMANIQUES / SHAMANIC TRADITIONS (3cr.)
Étude anthropologique des visions du monde chamane et des religions utilisant la transe, ainsi que des pratiques rituelles, thérapeutiques ou artistiques qui y sont associées. / Anthropological study of shamanic worldviews and trance-based religions, and the associated ritual, therapeutic and artistic practices they inform.
SRS5928 PROJET DE THÈSE / THESIS PROPOSAL (3cr.)
La planification et réalisation d’une thèse : définition d’un cadre théorique, formulation de la problématique, mise au point de la méthodologie, détermination des hypothèses et de l’argumentation, préparation d’une description détaillée du projet de thèse, présentation du projet dans un colloque, évaluation et approbation déontologiques, planification et exécution de la recherche et de la rédaction. Réservé aux étudiants inscrits à un programme avec thèse. Prérequis: SRS5115/SRS5915 ou SRS8115/SRS8915. The planning and implementation of a thesis: establishing a theoretical framework, formulating the question, refining the methodology, defining the hypotheses and lines of argumentation, preparing a detailed description of the thesis project, presenting the project in a colloquium, obtaining ethics approval, planning and carrying out the research and writing. Restricted to students registered in a program with thesis. Prerequisites: SRS5115/SRS5915 or SRS8115/SRS8915.

SRS5999 MÉMOIRE / RESEARCH PAPER (6cr.)

SRS6100 RELIGION AND LAW (3cr.)
An examination of the ways in which law defines and regulates religion, focusing especially on the treatment of minority religious groups and the concept of religious diversity.

SRS6101 RELIGION AND HUMAN RIGHTS (3cr.)
An examination of the intersection of human rights regimes and the ways in which they define and delimit religion in the context of current issues.

SRS6900 ÉTUDE COMPARATIVE DU RELIGIEUX / COMPARATIVE STUDY OF RELIGION (3cr.)
Étude comparative d’un thème ou d’un aspect du religieux tel qu’il se manifeste dans diverses cultures. / A comparative study of a theme or aspect of religion as manifested in diverse cultures.

SRS6905 RELIGION ET SOCIÉTÉ / RELIGION AND SOCIETY (3cr.)
Étude de diverses perspectives méthodologiques et théoriques s’appliquant à la dynamique entre religion et société. / An examination of the dynamic between religion and society through a variety of theoretical and methodological perspectives.

SRS6906 RELIGION ET PSYCHOLOGIE / RELIGION AND PSYCHOLOGY (3cr.)
Étude de théories psychologiques actuelles telles que la psychologie critique, la psychologie des profondeurs et la psychologie de l’ego, et de leur rapport aux sciences des religions. / An examination of current psychological theories, such as critical psychology, depth psychology, and ego psychology, as they relate to topics in religious studies.

SRS6907 THÈMES CHOISIS EN CHRISTIANISME / SELECTED TOPICS IN CHRISTIANITY (3cr.)
Étude d’un sujet particulier concernant le christianisme, circonscrit dans un cadre temporel, géographique ou thématique. / Examination of a specific topic in Christianity, defined temporally, geographically or thematically.

SRS6913 THÈMES CHOISIS EN HISTOIRE DES RELIGIONS AU CANADA / SELECTED TOPICS IN THE HISTORY OF RELIGIONS IN CANADA (3cr.)
Étude approfondie des aspects particuliers de l’histoire des religions dans un contexte canadien. / An in-depth examination of particular aspects of the history of religions in a Canadian context.

SRS6915 SYSTÈMES RELIGIEUX DES AMÉRindiens ET DES INUIT / AMERICAN AND INUIT RELIGIOUS SYSTEMS (3cr.)
Étude de l’expression et de la conceptualisation de la religion chez les Amérindiens et les Inuits. / An examination of the expression and conceptualization of religion in Amerindian and Inuit cultures.

SRS6920 LES RELIGIONS DANS LE CONTEXTE MONDIAL / RELIGIONS IN A GLOBAL CONTEXT (3cr.)
Analyse critique des formes, des concepts et du contenu des religions dans le contexte mondial; théories et débats actuels en sciences des religions. / Critical examination of the forms, concepts, and content of religions in a global context; current theories and discussions in religious studies.

SRS6921 LA RELIGION DANS LE CANADA D’AUJOURD’HUI / RELIGION IN CONTEMPORARY CANADA (3cr.)
La religion au Canada depuis la Deuxième Guerre mondiale; analyses sociologiques, anthropologiques ou historiques. / Religion in Canada since the Second World War; sociological, anthropological or historical analyses.

SRS6922 THÈMES CHOISIS EN JUDAïSME / SELECTED TOPICS IN JUDAISM (3cr.)
Étude approfondie d’un sujet particulier relevant du judaïsme, depuis les traditions rabbiniques jusqu’à la vie des juifs d’aujourd’hui. / A close examination of a specific topic in Judaism from Rabbinic traditions to contemporary Jewish life.

SRS6923 RELIGIONS DE L’ASIE / RELIGIONS OF ASIA (3cr.)
Étude d’un ou plusieurs systèmes religieux de l’Asie, à partir de théories et méthodes actuelles en sciences des religions, telles que les approches interprétivistes, materialistes, phénoménologiques, historiques, philosophiques, ethnographiques, poststructurales, postcoloniales, etc. / An exploration of one or more religious systems of Asia, using current theoretical and methodological approaches in religious studies (e.g., interpretivist, materialist, phenomenological, historical, philosophical, ethnographic, poststructural, postcolonial, etc.).

SRS6924 LA RELIGION DANS LA PENSÉE FÉMINISTE ACTUELLE / RELIGION AND CURRENT FEMINIST THOUGHT (3cr.)
Étude de l’influence des théories féministes actuelles sur les méthodes et théories en sciences des religions. / An examination of the influence of current feminist
theory on methods and theories in religious studies.

**SRS6925 GENRE ET RELIGION / GENDER AND RELIGION** (3cr.)
Étude des débats entourant la notion de genre comme catégorie d’analyse dans les sciences des religions. / An examination of developments within religious studies pertaining to the use of gender as a category of analysis.

**SRS6980 ÉTUDES DIRIGÉES I / DIRECTED STUDY I** (3cr.)

**SRS7080 ÉTUDES DIRIGÉES II / DIRECTED STUDY II** (6cr.)

**SRS7988 RECENSION DES ÉCRITS - M.A. / LITERATURE REVIEW - M.A.** (3cr.)
Vue d'ensemble de la littérature savante du champ d'études dans lequel se situe le mémoire ou la thèse de maîtrise. Rapport écrit à évaluer par le professeur qui l'a dirigé plus un autre professeur. Évalué S/NS. Prérequis: SRS5115/SRS5915. / Review of the scholarly literature in the field of study in which the master's research paper or thesis is situated. Paper to be evaluated by the professor who supervised it and another professor. Evaluated S/NS. Prerequisite: SRS5115/SRS5915.

**SRS7989 THÈSE DE MAÎTRISE / MA THESIS**

**SRS8016 TRAVAUX DIRIGÉS II / SUPERVISED RESEARCH II** (6cr.)

**SRS8115 SEMINAR IN RELIGIOUS STUDIES** (3cr.)
An orientation to the study of religion at an advanced level.

**SRS8915 SÉMINAIRE EN SCIENCES DES RELIGIONS / SEMINAR IN RELIGIOUS STUDIES** (3cr.)
Introduction approfondie à l’étude savante du religieux. / An orientation to the study of religion at an advanced level.

**SRS8916 TRAVAUX DIRIGÉS I / SUPERVISED RESEARCH I** (3cr.)

**SRS9989 THÈSE DE DOCTORAT / PhD THESIS**

**SRS9998 EXAMEN DE SYNTHÈSE (Ph.D.) / COMPREHENSIVE EXAMINATION (PhD)**

**Service social (M.S.S.)**

**Mission**
Le programme de maîtrise en service social a pour mission d’offrir une formation professionnelle axée sur l’analyse des inégalités sociales, des contextes minoritaires et des besoins et caractéristiques de la population francophone de l’Ontario.

L’objectif du programme est de préparer des intervenants à assumer un rôle de chef de file sur le plan du développement, de la prestation et de l’évaluation des pratiques et des politiques sociales. Le programme vise aussi à promouvoir, par l’action sociale, la reconnaissance des droits des populations marginalisées ou vivant en contextes minoritaires, ainsi que leur accès aux services sociaux.

La maîtrise en service social vise à former des « praticiens-chercheurs » qui auront acquis une pensée analytique et critique en ce qui a trait à la pratique du service social et des connaissances liées à cette pratique.

L’École de service social veut atteindre ces objectifs au moyen d’une démarche de recherche-intervention dans les deux champs d’étude suivants : famille-enfance et santé.

**Renseignements généraux**
L’École de service social offre un programme d’études supérieures sanctionné par le grade de maîtrise en service social (M.S.S.). L’École est membre de l’Association canadienne pour la formation en travail social (ACFTS) (anciennement l’Association canadienne des écoles de service social (ACCESS)) et le programme de M.S.S. est agréé de plein droit par le Bureau de l’Agrément des programmes.

Le programme de M.S.S. est composé de deux années de formation. La première permet d’acquérir les fondements théoriques et pratiques de la profession de travail social. La deuxième vise à approfondir les connaissances dans l’un des deux champs d’étude : celui de la santé ou celui de la famille-enfance.

Les règlements qui régissent ce programme sont établis par la Faculté des études supérieures et postdoctorales. Ces règlements sont disponibles sur Internet au lien suivant :

www.etudesup.uottawa.ca/règlements/généraux
Les conditions d’admission sont les suivantes :

1. détenir un baccalauréat général de 4 ans ou un baccalauréat spécialisé en sciences sociales, en sciences de la santé, ou l’équivalent;
2. avoir maintenu une moyenne d’au moins « B »;
3. posséder une expérience en service social ou connexe à la profession;
4. avoir obtenu un minimum de six crédits de méthodes de recherche ou l’équivalent;
5. démontrer son aptitude à poursuivre en français des études supérieures. Un test de compétence linguistique pourrait être exigé;
6. démontrer son aptitude à poursuivre des études professionnelles (voir la section intitulée “Pièces au dossier d’admission”);
7. présenter un projet de formation précisant le domaine d’études envisagé, la problématique de recherche proposée ainsi que l’expérience de stage prévu.

Les titulaires d’un baccalauréat avec spécialisation en service social peuvent obtenir des équivalences.

Pièces au dossier d’admission

Les pièces à soumettre au Comité des études supérieures de l’École de service social pour demander l’admission au programme sont les suivantes :

1. un résumé de son expérience, professionnelle ou autre, pertinente aux études en service social;
2. une description de ses projets professionnels justifiant sa demande d’admission au programme et son choix de champ d’étude;
3. trois lettres de recommandation de la part de personnes connaissant ses aptitudes scolaires et professionnelles

Propédeutique

Si les exigences minimales d’admission en première année ne sont pas remplies, il est possible de s’inscrire à un programme propédeutique dont le contenu est déterminé individuellement. Pour passer de la propédeutique à la maîtrise, il faut présenter une nouvelle demande d’admission.

Équivalences

Sujet à l’approbation de la Faculté des études supérieures et postdoctorales certaines équivalences sont accordées, sur étude des dossiers individuels et sur recommandation de l’École de service social, pour des expériences de travail supervisées par un professionnel d’expérience, à condition de démontrer clairement que les objectifs de formation pratique prévus au stage d’intervention de 1re année (SVS 5601) auront été pleinement atteints lors de ces expériences de travail. Des critères précis et rigoureux s’appliquent et cette clause ne sera utilisée qu’exceptionnellement pour les personnes possédant une solide expérience de travail professionnel.

Les personnes détenant un certificat de 30 crédits en service social ou dans un champ d’étude connexe, peuvent obtenir 3 crédits de cours optionnels. Les personnes ayant deux certificats peuvent obtenir jusqu’à 6 crédits de cours optionnels.

Les titulaires d’un baccalauréat avec spécialisation en service social peuvent obtenir des équivalences (approximativement la première année).

Des équivalences de cours (maximum 9 crédits optionnels de 1re année) peuvent être accordées aux personnes ayant réussi avec une note minimale de B+ des cours similaires aux niveaux du deuxième et troisième cycle, selon la pertinence des cours réussis et les normes d’agrément de l’Association canadienne pour la formation en travail social (ACFTS) (anciennement l’Association canadienne des écoles de service social [ACCESS]).

Résidence et scolarité

Toutes les exigences du programme de maîtrise en service social doivent être remplies en quatre ans, selon les règlements de la Faculté des études supérieures et postdoctorales. Le programme est offert normalement à temps plein. Toutefois, l’inscription à temps partiel est possible dans des cas particuliers. Le maximum de crédits permis lors d’une inscription à temps partiel est de six.

Première année

Il faut avoir réussi 21 crédits de cours obligatoires de cote 5000, y compris le stage d’intervention, et 9 crédits de cours optionnels.

Il est possible de s’inscrire à certains cours optionnels de cote 6000 à condition d’avoir réussi les cours obligatoires SVS 5500 et SVS 5510 et d’avoir obtenu la permission du professeur responsable du cours de cote 6000 en question.

Deuxième année

L’inscription à temps plein pendant une période de deux sessions (septembre-décembre et janvier-avril) est requise pour compléter la deuxième année du programme. Les titulaires d’un baccalauréat avec spécialisation en service social s’inscrivant en 2e année à temps plein doivent s’inscrire à temps plein pendant au moins 3 sessions.

Les personnes autorisées à s’inscrire à temps partiel en 2e année du programme doivent s’inscrire à temps plein à la session où elles suivent les cours concomitants SVS 6530, 6515 et 6601 ou SVS 6801.
Langue du programme

La langue du programme, y compris celle de la supervision des mémoires et des stages, est le français.

Mémoire de recherche

Le mémoire constitue l’aboutissement du projet de maîtrise. Il vise à démontrer les capacités de recherche et d’intervention dans le champ d’étude choisi.

Stages

La région de la capitale du Canada offre une grande variété de stages d’intervention aux niveaux municipal, provincial et fédéral. L’École de service social a établi des ententes avec des organismes sociaux en vue d’offrir un apprentissage spécialisé en recherche-intervention dans le champ d’étude santé et celui de famille-enfance.

Program Requirements

Les cours obligatoires sont offerts tous les ans. Les cours optionnels ne sont pas tous offerts chaque année.

Première année
Trente crédits sont exigés pour réussir la première année, soit 21 obligatoires et 9 optionnels.

Cours obligatoires : (21 cr.)

SVS5500 FONDEMENTS THÉORIQUES DU SERVICE SOCIAL (3cr.)
SVS5510 ANALYSE SOCIOHISTORIQUE DES POLITIQUES SOCIABLES ET DU SERVICE SOCIAL AU CANADA (3cr.)
SVS5530 MÉTHODES D’INTERVENTION EN SERVICE SOCIAL (3cr.)
SVS5601 STAGE D’INTERVENTION EN SERVICE SOCIAL (6cr.)
SVS5709 LABORATOIRE DE PRÉPARATION AUX STAGES DE MAÎTRISE (3cr.)
SVS5710 SEMINAIRES D’INTÉGRATION THÉORIE-PRATIQUE (3cr.)

Cours optionnels : (9 cr.)

SVS5501 CHANGEMENT SOCIAL ET SERVICE SOCIAL (3cr.)
SVS5512 ANALYSE DES PROBLÈMES SOCIAUX ET PRATIQUE DU SERVICE SOCIAL (3cr.)
SVS5511 ANALYSE DES POLITIQUES SOCIABLES ET SERVICE SOCIAL (3cr.)
SVS5512 ANALYSE COMPARATIVE DES SERVICES SOCIAUX (3cr.)
SVS5532 INTERVENTION AUPRÈS DES INDIVIDUS ET DES FAMILLES (3cr.)
SVS5533 INTERVENTION COMMUNAUTAIRE (3cr.)
SVS5534 INTERVENTION INTERCULTURELLE ET SERVICE SOCIAL (3cr.)
SVS5535 INTERVENTION FéMINISTE ET SERVICE SOCIAL (3cr.)

Deuxième année
Trente crédits sont exigés pour réussir la deuxième année, soit 6 obligatoires, 18 dans le champ d’étude choisi et 6 optionnels.

Cours obligatoires : (6 cr.)

SVS6530 SEMINAIRES D’INTÉGRATION EN RECHERCHE-INTERVENTION (3cr.)
SVS6515 PRÉPARATION AU MéMOIRE DE RECHERCHE (3cr.)

Option 1

Champ d’étude santé : (18 cr.)

SVS6500 PROBLÉMATIQUE DE LA PRATIQUE ET DE LA RECHERCHE DANS LE DOMAINE DE LA SANTÉ (3cr.)
SVS6510 MÉTHODES DE RECHERCHE QUALITATIVE ET QUANTITATIVE DANS LE DOMAINE DE LA SANTÉ (3cr.)
SVS6601 STAGE DE RECHERCHE-INTERVENTION EN MILIEU DE SANTÉ (6cr.)
SVS6620 MÉMOIRE DE RECHERCHE : DOMAINE SANTÉ (6cr.)

OU

Champ d’étude famille-enfance : (18 cr.)

SVS6700 PROBLÉMATIQUE DE LA PRATIQUE ET DE LA RECHERCHE DANS LE DOMAINE FAMILLE-ENFANCE (3cr.)
SVS6710 MÉTHODES DE RECHERCHE QUALITATIVE ET QUANTITATIVE DANS LE DOMAINE FAMILLE-ENFANCE (3cr.)
Many professors in Information Technology and Engineering, Mathematics and Statistics, Administration, Economics, and other disciplines are

The Systems Science Program provides qualified students with the opportunity for master's-level study in a broad range of areas that emphasize

LIN5915 PHONOLOGIE I / PHONOLOGY I

ESP7903 ASPECTS DE LA LITTÉRATURE HISPANO­AMÉRICAINE DE XXe SIÈCLE / ASPECTS OF TWENTIETH­CENTURY SPANISH-AMERICAN LITERATURE I

ESP7902 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XXe SIÈCLE / ASPECTS OF TWENTIETH­CENTURY SPANISH LITERATURE I

ESP5957 ASPECTS DE LA THÉORIE DE LA LITTÉRATURE I / ASPECTS OF THE THEORY OF LITERATURE I

ESP5920 LA GÉNÉRATION DE 1898 / THE GENERATION OF 1898

METHODS AND BIBLIOGRAPHY IN HISPANIC LITERATURE AND CULTURE

Tous les cours sont donnés en espagnol.

B- Master's degree with research paper

All students begin by enrolling in the MA with research paper. Students may apply for admission into the other option at the end of their first

AMÉRICAINES

triangulation; issues of validation; the relationship between methodology, theory, and research findings.

Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

In depth examination of the main theoretical currents in sociology or anthropology.

prepared under the guidance of the supervisor.

Registration for the thesis proposal should take place preferably in the student's second session or at the latest in the third session. Each student is assigned to a

Analyse des enjeux reliés au vieillissement de la population (santé, travail, rôle social et économique, retraite); évaluation des approches d'intervention auprès de

Genèse et analyse des problèmes sociaux. Implications pour le service social.

Examen critique des modèles, théories et paradigmes sous­jacents à la pratique du service social.

SVS6620 MÉMOIRE DE RECHERCHE : DOMAINE SANTÉ

SVS5534 INTERVENTION INTERCULTURELLE ET SERVICE SOCIAL

SVS5511 ANALYSE DES POLITIQUES SOCIALES ET SERVICE SOCIAL (3cr.)

SVS5512 ANALYSE COMparative DES SERVICES SOCiaux (3cr.)

Étude comparative des divers systèmes de services sociaux aux niveaux national et international.
SVS5530 MÉTHODES D'INTERVENTION EN SERVICE SOCIAL (3cr.)

SVS5531 INTERVENTION AUPRÈS DES INDIVIDUS ET DES FAMILLES (3cr.)
Évaluation des problèmes personnels et interpersonnels ; développement d'habiletés et de méthodes d'intervention appropriées.

SVS5532 INTERVENTION AUPRÈS DES GROUPES (3cr.)
Connaissance et appréciation des principaux types d'interventions sociales au niveau des groupes et des réseaux.

SVS5533 INTERVENTION COMMUNAUTAIRE (3cr.)
Intervention communautaire et organisationnelle en service social ; émergence historique des modèles d'intervention ; mouvements sociaux, bénévolat et entraide.

SVS5534 INTERVENTION INTERCULTURELLE ET SERVICE SOCIAL (3cr.)
À partir d'une compréhension des caractéristiques des diversités culturelles, développement de méthodes d'intervention appropriées.

SVS5535 INTERVENTION FÉMINISTE ET SERVICE SOCIAL (3cr.)
Analyse des approches d'intervention auprès des femmes et applications en service social.

SVS5601 STAGE D'INTERVENTION EN SERVICE SOCIAL (6cr.)
Sous supervision professionnelle, intégration dans la pratique, des attitudes, connaissances, méthodes et habiletés propres à la profession de travail social. Préalables : SVS5530 et SVS5570.

SVS5709 LABORATOIRE DE PRÉPARATION AUX STAGES DE MAÎTRISE (3cr.)
Réflexions sur les liens entre les diverses formes de savoirs sous-tendant la pratique du service social, en tenant compte de problématiques sociales et de contextes organisationnels variés ; orientation axée sur la préparation nécessaire pour le stage d'intervention. Préalables : SVS5500 et SVS5510.

SVS5710 Séminaire d'intégration théorie-pratique (3cr.)
Concomitant au stage SVS 5601. Réflexions sur les théories et sur l'éthique de la pratique, dans le contexte de leur application à l'expérience en milieu de stage. Préalables : SVS5530 et SVS5709.

SVS5711 THÈMES CHOISIS EN POLITIQUES SOCIALES I (3cr.)

SVS5712 THÈMES CHOISIS EN POLITIQUES SOCIALES II (3cr.)

SVS5713 THÈMES CHOISIS EN INTERVENTION I (3cr.)

SVS5714 THÈMES CHOISIS EN INTERVENTION II (3cr.)

SVS5715 THÈMES CHOISIS EN SERVICE SOCIAL I (3cr.)

SVS5716 THÈMES CHOISIS EN SERVICE SOCIAL II (3cr.)

Deuxième année

PRÉALABLES : SVS 5601 ET SVS 5710

SVS5601 STAGE D'INTERVENTION EN SERVICE SOCIAL (6cr.)
Sous supervision professionnelle, intégration dans la pratique, des attitudes, connaissances, méthodes et habiletés propres à la profession de travail social. Préalables : SVS5530 et SVS5709.

SVS5710 Séminaire d'intégration théorie-pratique (3cr.)
Concomitant au stage SVS 5601. Réflexions sur les théories et sur l'éthique de la pratique, dans le contexte de leur application à l'expérience en milieu de stage. Préalables : SVS5530 et SVS5709.

Cours obligatoires :

SVS6515 PRÉPARATION AU MÉMOIRE DE RECHERCHE (3cr.)
Examen critique de textes et documents dont la liste a été approuvée par la directrice ou le directeur de mémoire. Approfondissement de la problématique et de la méthodologie choisies pour le mémoire. Rédaction d'un travail préparatoire au mémoire. Noté Alpha. Préalables : SVS6500 et 6510 ou 6700 et 6710.
SVS6530 SÉMINAIRE D'INTÉGRATION EN RECHERCHE-INTERVENTION (3cr.)
Réflexion globale et systématique sur l'expérience de stage afin de comprendre et d'appliquer les concepts de recherche-intervention. Noté S/NS. Préalables : SVS6500 et 6510 ou 6700 et 6710.

Champ d'étude santé

SVS6500 PROBLÉMATIQUE DE LA PRATIQUE ET DE LA RECHERCHE DANS LE DOMAINE DE LA SANTÉ (3cr.)
Analyse de diverses conceptions de la santé / maladie et des liens avec les conditions sociales et les politiques publiques. Étude des enjeux de la « médicalisation / professionnalisation du social » et implications pour l'intervention et la recherche en service social. Préalables : SVS5601 et SVS5710.

SVS6510 MÉTHODES DE RECHERCHE QUALITATIVE ET QUANTITATIVE DANS LE DOMAINE DE LA SANTÉ (3cr.)

SVS6601 STAGE DE RECHERCHE-INTERVENTION EN MILIEU DE SANTÉ (6cr.)
Suite au choix d'un champ d'intervention relié à la santé, évaluation des compétences mises en pratique en recherche-intervention. Préalables : SVS6500 et SVS6510.

SVS6620 MÉMOIRE DE RECHERCHE : DOMAINE SANTÉ (6cr.)

Champ d'étude famille-enfance

SVS6700 PROBLÉMATIQUE DE LA PRATIQUE ET DE LA RECHERCHE DANS LE DOMAINE FAMILLE-ENFANCE (3cr.)
Analyse critique des divers modèles et enjeux de la pratique et de la recherche en famille-enfance, en tenant compte des facteurs structurels en place; liens entre pratique, recherche et identité. Préalables : SVS5601 et SVS5710.

SVS6710 MÉTHODES DE RECHERCHE QUALITATIVE ET QUANTITATIVE DANS LE DOMAINE FAMILLE-ENFANCE (3cr.)

SVS6801 STAGE DE RECHERCHE-INTERVENTION FAMILLE-ENFANCE (6cr.)
À partir d'une expérience structurée, apprentissage combiné de l'intervention et de la recherche en famille-enfance. Préalables : SVS6700 et SVS6710.

SVS6820 MÉMOIRE DE RECHERCHE : DOMAINE FAMILLE-ENFANCE (6cr.)

Cours optionnels

SVS6801 PROMOTION DE LA SANTÉ ET PRATIQUES PRÉVENTIVES EN SERVICE SOCIAL (3cr.)
Débat épistémologique entourant les notions de promotion et la prévention; examen critique des pratiques en service social et des programmes en santé et famille-enfance.

SVS6802 POLITIQUES SOCIALES EN SANTÉ ET EN FAMILLE-ENFANCE (3cr.)
Examen des enjeux sous-jacents aux politiques de santé et de famille-enfance : contrôle social, expertise, coûts et bénéfices; évaluation des orientations de ces politiques et des enjeux qui les sous-tendent.

SVS6803 SANTÉ MENTALE ET SOCIÉTÉ (3cr.)
Analyse des liens entre des problématiques de santé mentale et le contexte socioculturel. Étude des diverses perspectives conceptuelles et pratiques en égard à la santé / maladie mentale et implications pour l'intervention en service social.

SVS6804 TOXICOMANIES ET CONTEXTE SOCIAL (3cr.)
Situation de la toxicomanie dans le contexte social, politique et économique actuel; examen des diverses théories explicatives du phénomène et des modèles d'intervention qui s'en dégagent.

SVS6701 MODÈLES CONTEMPORAINS DE PRATIQUE DANS LE DOMAINE FAMILLE-ENFANCE (3cr.)
Étude des grands courants pratiques du service social familial et les présupposés idéologiques qu'ils véhiculent; enjeux pour la clientèle et pertinence pour le milieu francophone.

SVS6703 GÉRONTOLOGIE ET SERVICE SOCIAL (3cr.)
Analyse des enjeux reliés au vieillissement de la population (santé, travail, rôle social et économique, retraite); évaluation des approches d'intervention auprès de
this clientele.

SVS6704 ENFANCE ET JEUNESSE EN DIFFICULTÉ (3cr.)
Examen des problèmes concernant l'enfance et la jeunesse ainsi que les pratiques aussi bien sociales que pénales qui s'y greffent. Évaluations de ces pratiques.

SVS6705 PROBLÉMATIQUE DE LA VIOLENCE ET INTERVENTION SOCIALE (3cr.)
Examen des problèmes liés à la violence au sein de la famille, compte tenu des personnes en cause. Stratégies d'intervention et évaluation de celles-ci.

SVS6706 FEMMES, SERVICE SOCIAL ET POLITIQUES SOCIALES (3cr.)
Promotion des femmes en milieu professionnel; impact des politiques sociales sur les femmes; étude des politiques en matière d'emploi : équité salariale, discrimination et harcèlement sexuel.

SVS6707 POPULATIONS AUTOCHTONES ET SERVICE SOCIAL (3cr.)
Examen des problématiques propres à ces populations; stratégies d'intervention appropriées.

SVS6708 ADMINISTRATION DES SERVICES DE SANTÉ ET DE FAMILLE-ENFANCE (3cr.)
Theories et modèles d'organisation et de gestion des organismes de santé et de famille-enfance; planification stratégique, supervision du personnel.

SVS6511 THÈMES CHOISIS EN SANTÉ I (3cr.)
SVS6512 THÈMES CHOISIS EN SANTÉ II (3cr.)
SVS6711 THÈMES CHOISIS EN FAMILLE-ENFANCE I (3cr.)
SVS6712 THÈMES CHOISIS EN FAMILLE-ENFANCE II (3cr.)
SVS6730 THÈMES CHOISIS INTÉGRÉS : SANTÉ ET FAMILLE-ENFANCE I (3cr.)
SVS6731 THÈMES CHOISIS INTÉGRÉS : SANTÉ ET FAMILLE-ENFANCE II (3cr.)
SVS6561 LECTURES DIRIGÉES : DOMAINE SANTÉ (3cr.)
SVS6761 LECTURES DIRIGÉES : DOMAINE FAMILLE-ENFANCE (3cr.)

Sociology (MA)

The Department of Sociology and Anthropology offers programs leading to the Master of Arts (MA) and PhD in sociology. The MA program is offered both full- and part-time whereas the PhD program is offered full-time only. Both programs are offered in French and in English. All students must, however, complete at least two courses given in French. Linguistic support for partial French immersion is available. In accordance with University of Ottawa policy, examinations, assignments and the research paper or thesis may be written either in English or French. Two options are available for the MA, the MA with thesis and the MA with research paper. In addition, students have the possibility of obtaining a specialization in women’s studies at the master’s level and a specialization in Canadian Studies at the PhD level. All programs operate under the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) which can be accessed at www.grad.uottawa.ca.

Admission

Students who have a BA with honours or major in sociology with a minimum average of 70% (B), calculated in accordance with FGPS guidelines, may be admitted to the MA program.

Students who have an honours BA with a minimum average of 70% (B) in another discipline, calculated in accordance with FGPS guidelines, may be accepted into a qualifying program, requiring them to complete a maximum of eight courses.

All students must be capable of reading and understand texts in French and in English. Students must indicate in their application the language in which they plan to take the majority of their courses. The department reserves the right to require a language test for either language.

Collaborative program in Women's Studies at the master's level

The Department of sociology and anthropology is one of the units participating in the collaborative program in Women's Studies at the master's level. This program was created to enable students to enrich their education in sociology by adding the interdisciplinary dimension of women's studies. The women's studies program consists of two compulsory women's studies (FEM) courses as well as a thesis or a research paper on a
subject linked to women’s studies. “FEM” courses are recognized by the sociology master’s program, and students enrolled in the collaborative program do not have to take additional courses.

Application for admission to the collaborative program must normally be submitted at the same time as the application for the MA program in sociology. For additional information, please refer to the description of the women’s studies collaborative program on the website of the Faculty of Graduate and Postdoctoral Studies.

Transfer from Master's to PhD

Students in the MA program in sociology at the University of Ottawa who have maintained an A- average over the last two years of their undergraduate program may be allowed, on an exceptional basis, to transfer to the doctoral program without completing the master’s thesis or research paper.

The conditions for transfer are as follows:

- successful completion of at least five graduate courses (15 credits) with a minimum grade of A- in each;
- written approval of the supervisor as well as members of the thesis committee;
- approval of the Graduate Studies Committee in sociology.

The transfer must occur within 16 months of the student's initial enrolment in the master’s program. Following transfer, students must successfully complete four courses (12 credits) in addition to the five (15 credits) already completed, prepare and pass qualifying exams (within 24 months after transfer), develop a thesis proposal, and write the doctoral thesis.

Program Requirements

MA Program Requirements

The main areas of specialization at the master's level include:

1. interethnic relations
2. development
3. political sociology
4. gender relations

Students are not limited to these areas of specialization in their choice of a research topic. A complete picture of the wide range of research being undertaken by the department can be obtained by consulting the listing of professors and their areas of interest, which extend far beyond the areas of specialization mentioned above.

Students admitted to the program with the intention of taking most of their courses in English must successfully complete at least two specific courses/seminars given in French. These seminars, reserved for students opting to take the majority of their courses in English, may vary from year to year and offer linguistic support for partial French immersion. In accordance with University of Ottawa policy, examinations, assignments and the research paper or thesis may be written in either English or French.

Two options are available: the MA with thesis and the MA with research paper

MA with thesis

The requirements of the MA with thesis are the following:

1. 15 credits of courses;
2. SOC7139 THESIS OR MAJOR RESEARCH PAPER PROPOSAL (3cr.)
3. SOC7999 MA THESIS

Registration for the thesis proposal should take place preferably in the student’s second session or at the latest in the third session. Each student is assigned to a thesis committee, which consists of three faculty members, including the supervisor, who are proposed by the supervisor in consultation with the student and then appointed by the Graduate Studies Committee.

One graduate course (3 credits) from another program may be counted as part of the coursework for a master’s with thesis, subject to the approval of the supervisor of graduate studies in sociology and after consultation with the department responsible for the course. Two graduate courses (FEM 5103 and FEM 5300) are allowed for students enrolled in the collaborative master’s program in Women’s Studies.

SOC7139 THESIS OR RESEARCH PAPER PROPOSAL (3cr.)

Students should begin the process of selecting a thesis topic and supervisor immediately upon commencing the program. The supervisor must be a member of the department and of the Faculty of Graduate and Postdoctoral Studies. The topic and supervisor must be registered with the Faculty of Graduate and Postdoctoral Studies no later than the end of the second session in the program. Once the topic and supervisor have been chosen, the thesis proposal is prepared under the guidance of the supervisor.
The aim of the proposal is to develop:

- the capacity to formulate a clear research protocol;
- familiarity with the scholarly literature related to the project;
- the ability to circumscribe the limits and scope of the project both conceptually and in terms of methodology;
- the ability to carry out the remaining steps leading from the proposal to the completion of the master's thesis.

The proposal must be approved by the thesis committee.

SOC7999 THÈSE DE MAÎTRISE / MA THESIS

Once the proposal has been approved, preparation of the thesis proceeds. For information regarding the thesis, consult the program website, Section G of the General Regulations of the FGPS and the guide Preparing a Thesis or a Research Paper, which can both be accessed through the FGPS Website: www.grad.ouluottawa.ca

MA with research paper

The requirements of the MA with research paper are the following:

1. completion of 21 course credits, including one theory and one methods course;
   SOC7139 THESIS OR RESEARCH PAPER PROPOSAL (3cr.)
   SOC7938 MÉMOIRE / RESEARCH PAPER (6cr.)

Up to two graduate courses (6 credits) from another program may be counted as coursework for the master’s program with research paper, subject to the approval of the supervisor of graduate studies in sociology and after consultation with the department responsible for the course concerned.

SOC7139 THESIS OR RESEARCH PAPER PROPOSAL (3cr.)

Students should begin the process of selecting a research paper topic and supervisor immediately upon commencing the program and the process must be completed by the end of the second session. The supervisor must be a member of the department. The proposal must be approved by a committee consisting of two professors, including the supervisor, proposed by the supervisor in consultation with the student and then appointed by the chair of the department or the supervisor of graduate studies.

The aim of the proposal is to develop:

- the capacity to formulate a clear research protocol;
- familiarity with the scholarly literature related to the project;
- the ability to circumscribe the limits and scope of the project both conceptually and in terms of methodology.

SOC7938 MÉMOIRE / RESEARCH PAPER (6cr.)

Once the proposal has been approved, preparation of the research paper proceeds. For information regarding the research paper, consult the program website, Section G of the General Regulations of the FGPS and the guide Preparing a Thesis or a Research Paper, which can both be accessed through the FGPS Website: www.grad.ouluottawa.ca

Minimum standards

The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), or whose research progress is deemed unsatisfactory are required to withdraw.

Residence

Students admitted full-time must register full-time for at least three sessions.

Duration of the program

Students in the thesis option are expected to complete all requirements within two years of full-time study, and those in the research paper option within four sessions (16 months) of full-time study. The maximum time permitted, whether full- or part-time, is four years from the date of initial registration in the program.

Courses

SOC5101 SELECTED TOPICS IN SOCIOLOGY OR IN ANTHROPOLOGY (3cr.)
In-depth examination of a topic, a theoretical approach, or a contemporary author in sociology or anthropology.

SOC5501 THÈMES EN SOCIOLOGIE OU EN ANTHROPOLOGIE (3cr.)
Examen approfondi d'une problématique, d'un courant théorique ou d'une auteure ou d'un auteur contemporain en sociologie ou en anthropologie.
SOC7110 CONTEMPORARY SOCIOLOGICAL OR ANTHROPOLOGICAL THEORIES (3cr.)
In depth examination of the main theoretical currents in sociology or anthropology.

SOC7510 THÉORIES SOCIOLOGIQUES OU ANTHROPOLOGIQUES CONTEMPORAINES (3cr.)
Examen approfondi des principaux courants théoriques sociologiques ou anthropologiques.

SOC7112 SELECTED TOPICS IN CONTEMPORARY SOCIOLOGY OR ANTHROPOLOGY I (3cr.)
In depth examination of an issue or question linked to new trends or research areas in sociology or anthropology.

SOC7512 THÈMES EN SOCIOLOGIE OU ANTHROPOLOGIE CONTEMPORAINES I (3cr.)
Analyse approfondie d’une problématique ou d’une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

SOC7120 SOCIOLOGICAL EPistemology (3cr.)
Issues related to the social shaping of science; critical examination of sociological knowledge.

SOC7520 ÉPISTÉMLOGIE SOCIOLOGIQUE (3cr.)
Problèmes de la détermination sociale de la science et examen critique de la connaissance sociologique.

SOC7122 SELECTED TOPICS IN CONTEMPORARY SOCIOLOGY OR ANTHROPOLOGY II (3cr.)
In depth examination of an issue or question linked to new trends or research areas in sociology or anthropology.

SOC7522 THÈMES EN SOCIOLOGIE OU ANTHROPOLOGIE CONTEMPORAINES II (3cr.)
Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

SOC7132 SELECTED TOPICS IN CONTEMPORARY SOCIOLOGY OR ANTHROPOLOGY III (3cr.)
In depth examination of an issue or question linked to new trends or research areas in sociology or anthropology.

SOC7532 THÈMES EN SOCIOLOGIE OU ANTHROPOLOGIE CONTEMPORAINES III (3cr.)
Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

SOC7139 THESIS OR MAJOR RESEARCH PAPER PROPOSAL (3cr.)
Critical review of readings selected by the student’s supervisor. Drafting of a thesis or major research paper proposal. Submission of proposal to the thesis or major paper committee. Graded S/NS.

SOC7539 PRÉPARATION DU PROJET DE THÈSE OU DE MÉMOIRE ET LECTURE DIRIGÉES (3cr.)
Examen critique approfondi de documents dont la liste est établie par le directeur ou la directrice de thèse ou de mémoire. Rédaction d'un projet de thèse ou d'un projet de mémoire. Soumission du projet aux membres du comité de thèse ou de mémoire. Noté S/NS.

SOC7140 QUANTITATIVE ANALYSIS OF SOCIOLOGICAL DATA (3cr.)
Overview of the principal quantitative methods and techniques used in sociology. Multivariate analysis. Formulation of sociological theories suitable for quantitative data analysis. The use of these methods in the sociological literature. Research project.

SOC7540 ANALYSE QUANTITATIVE DES DONNÉES SOCIOLOGIQUES (3cr.)
Investigation des méthodes quantitatives de recherche, par exemple, l'analyse multivariée. Formulation des théories sociologiques pour permettre une vérification quantitative. L'emploi de ces méthodes dans la littérature sociologique. Projet de recherche.

SOC7141 DEBATES IN SOCIOLOGICAL METHODOLOGY (3cr.)
Qualitative analysis of sociological data; case-oriented analysis and variable-oriented analysis ; the qualitative-quantitative continuum; discourse analysis; triangulation; issues of validation; the relationship between methodology, theory, and research findings.

SOC7541 DÉBATS SUR LA MÉTHODOLOGIE SOCIOLOGIQUE (3cr.)
Analyse qualitative des données sociologiques; analyse de cas et analyse de variables; continuum qualitatif-quantitatif; analyse du discours; triangulation; problèmes de validation; rapport entre méthodologie, théorie et résultats.

SOC7150 INTERETHNIC RELATIONS: CRITICAL EXAMINATION OF THEORIES AND RESEARCH (3cr.)
Principal sociological theories in interethnic relations, and the use of these theories in the analysis of the social structure of a number of multiethnic societies, especially Canada.

SOC7550 RELATIONS INTERETHNIQUES: EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)
Principales théories sociologiques des relations interethniques; l'application de ces théories dans l'analyse de la structure sociale de quelques sociétés multiethniques, notamment le Canada.

SOC7151 RESEARCH SEMINAR IN INTERETHNIC RELATIONS (3cr.)
Overview and assessment of the main research findings in the area.

SOC7551 SÉMINAIRE DE RECHERCHE EN RELATIONS INTERETHNIQUES (3cr.)
Évaluation des recherches dans le domaine.

SOC7152 SELECTED TOPICS IN INTERETHNIC RELATIONS (3cr.)
In depth examination of a topic in interethnic relations.

SOC7552 PROBLÈMES CHOISIS EN RELATIONS INTERETHNIQUES (3cr.)
Analyse approfondie d'une question de relations interethniques.

SOC7156 GENDER RELATIONS AND INTERETHNIC RELATIONS (3cr.)
Examination of modes of differentiation according to gender, ethnicity, and race in contemporary societies and of the theoretical linkages among them.

SOC7556 RAPPORTS SOCIAUX DE SEXES ET MINORISATION (3cr.)
Examen des modes de différenciation selon le sexe, l'ethnie et la race dans les sociétés contemporaines et leur articulation théorique.

SOC7160 DEVELOPMENT: CRITICAL EXAMINATION OF THEORIES AND RESEARCH (3cr.)

SOC7560 DÉVELOPPEMENT: EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)

SOC7161 RESEARCH SEMINAR IN DEVELOPMENT (3cr.)
Evaluation of research in the area.

SOC7561 SÉMINAIRE DE RECHERCHE EN DÉVELOPPEMENT (3cr.)
Évaluation des recherches dans le domaine.

SOC7162 SELECTED TOPICS IN DEVELOPMENT (3cr.)
In depth analysis of a topic in the sociology of development.

SOC7562 PROBLÈMES CHOISIS EN DÉVELOPPEMENT (3cr.)
Analyse approfondie d'une question de sociologie du développement.

SOC7166 DEVELOPMENT AND GENDER RELATIONS (3cr.)
Deconstruction of the concepts of gender and development. International power relations and gender. Women in the global South and their theorizing of gender relations.

SOC7566 DÉVELOPPEMENT: RAPPORTS SOCIAUX DE SEXES (3cr.)
Déconstruction des concepts de genre et de développement.Réflexion sur les rapports internationaux de domination. Étude des modalités d'organisation des femmes dans les sociétés du Sud et analyse de leur théorisation des rapports sociaux de sexes.

SOC7170 POLITICAL SOCIOLOGY: CRITICAL EXAMINATION OF THEORIES AND RESEARCH (3cr.)
In depth examination of the main concepts of political sociology such as power, the state, social classes, civil society, democracy, political space, political culture, and citizenship.

SOC7570 SOCIOLOGIE POLITIQUE: EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)
Examen approfondi des concepts de sociologie politique, tels le pouvoir, l'État, les classes, la société civile, la démocratie, l'espace politique, la culture politique et la citoyenneté.

SOC7171 RESEARCH SEMINAR IN POLITICAL SOCIOLOGY (3cr.)
Overview and assessment of the main research findings in the area.

SOC7571 SÉMINAIRE DE RECHERCHE EN SOCIOLOGIE POLITIQUE (3cr.)
Évaluation des recherches dans le domaine.

SOC7172 SELECTED TOPICS IN POLITICAL SOCIOLOGY (3cr.)
In depth examination of a topic in political sociology.

SOC7572 PROBLÈMES CHOISIS EN SOCIOLOGIE POLITIQUE (3cr.)
Analyse approfondie d'une question de la sociologie politique.
Aucun texte extrait de document.
The Systems Science Program provides qualified students with the opportunity for master’s-level study in a broad range of areas that emphasize research. Depending on their research project, students could take some of the following courses offered by the Department of Linguistics, provided they meet the requirements. Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

Spanish (MA)

The Department of Modern Languages and Literatures offers the degrees of Master of Arts (MA) and Doctor of Philosophy (PhD) in Spanish. The objective of the program is to provide advanced training in Hispanic literature by studying the major authors of the literature and culture of Spain and Latin America, as well as by expanding their knowledge of Hispanic linguistics. Graduates will acquire critical and analytical skills. The program has two fields of research:

- Hispanic Literatures and Cultures;
- Hispanic Linguistics.

The MA program offers two options: the MA with thesis and the MA with research paper.

The programs operate within the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate program in Spanish is governed by the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS). Applications are evaluated based on the following criteria:

1. Be the holder of a bachelor’s degree with a specialization, or a major in Spanish (or equivalent) with a minimum average of 70% (B);
2. Students may be asked to complete a preliminary period of study before being admitted to the program. Students will be expected to have some knowledge of the general areas (a) and (b) if they intend to specialize in Hispanic Literatures and Cultures and of area (c) if they intend to specialize in Hispanic Linguistics.
   a) Spanish Peninsular Literature: Medieval and Golden Age periods; nineteenth and twentieth centuries.
   b) Spanish-American-Literature: the colonial period, the nineteenth century, the novel and poetry of the twentieth century from modernismo onwards.
   c) General and/or Hispanic linguistics: descriptive grammar, morphosyntax, methodology of teaching foreign languages, sociolinguistics, language contact, translation.
3. It is desirable that students know both official languages. They must possess a good written and oral command of Spanish, since all courses will be given in Spanish.
4. Wherever possible, candidates for admission to the program should be interviewed by a professor or professors assigned by the Section.
5. Once students are admitted to the program, their progress will be monitored by a director of studies assigned by the Section.

Program Requirements

All students begin by enrolling in the MA with research paper. Students may apply for admission into the other option at the end of their first session or at the beginning of their second session. For details concerning the procedures to be followed when submitting a thesis topic, please consult the director of graduate studies.

A- Master's degree with thesis option

1. Successful completion of ESP 5001 or ESP 5002;
2. Successful completion of 9 credits at the 5000 level or above*;
3. Presentation and defense of a thesis (ESP7999) based on original research carried out under the direct supervision of a faculty member. The thesis should be between 80 and 120 pages in length.
*Students enrolled in the MA option with thesis are encouraged to take two courses in the field from which their thesis topic is selected. The remaining courses may be taken in any other area covered by the program.

Note: A student can choose to write the thesis in English, French or Spanish. When registering for the thesis, the student must notify the director of graduate studies, in writing, of the language chosen. This choice will be subject to departmental approval. A student who receives permission to write the thesis in Spanish will be expected to be able to defend it in English or in French.

**B- Master's degree with research paper**

1. Successful completion of ESP 5901 or ESP 5902;
2. Successful completion of 15 credits at the 5000 level or above*;
3. Successful completion of a research paper (ESP7997).

*Students enrolled in the MA with research paper option are strongly encouraged to take courses in all areas covered by the program.

Note: The research paper will be evaluated by both the supervisor and a second reader.

**Courses**

Pour la liste des cours offerts durant l'année, consultez le Livret de l'étudiant et de l'étudiante (disponible au Département). Tous les cours indiqués, à l'exception de ESP 7997, 7999, 9998 et 9999, sont des cours de trois crédits. Ils exigent normalement 30 heures de présence en classe et durent une session.

Tous les cours sont donnés en espagnol.

Courses offered in a given year are listed in the Student Handbook (available at the Department). All courses listed, with the exception of ESP 7997, 7999, 9998 and 9999, are worth three credits. They normally require 30 hours of class time and last one session.

All courses are given in Spanish.

**ESP5901 MÉTHODES DE RECHERCHE ET BIBLIOGRAPHIE EN LITTÉRATURE ET CULTURE HISPANIQUES / RESEARCH METHODS AND BIBLIOGRAPHY IN HISPANIC LITERATURE AND CULTURE**  (3cr.)
Outils et méthodes de la recherche; débats scolaires dans ce champ; approches théoriques à l’étude de la littérature et culture; rédaction de thèse, de demandes de bourses et de précis de conférences. / Research tools and methods; scholarly debates in the field; different theoretical approaches to the study of literature and culture; writing of theses, grant proposals and conference abstracts.

**ESP5902 MÉTHODES DE RECHERCHE ET BIBLIOGRAPHIE EN LINGUISTIQUE HISPANIQUE / RESEARCH METHODS AND BIBLIOGRAPHY IN HISPANIC LINGUISTICS**  (3cr.)
Concepts de la recherche; cadres théoriques et hypothèses dans les projets descriptifs et dans la recherche fondée sur les bases de données; ressources pour trouver des références; débats scolaires dans ce champ; rédaction de thèse, de demandes de bourses et de précis de conférences; procédures pour obtenir l’autorisation du comité d’Ethique dans le but de faire de la recherche impliquant des sujets humains. / Research concepts; theoretical frameworks and hypotheses in descriptive projects and data-based research; reference resources, scholarly debates in the field; writing of theses, grant proposals, conference abstracts; procedures to obtain ethics approval to carry out research involving humans.

**ESP5912 ASPECTS DE LA LITTÉRATURE ESPAGNOLE MÉDIÉVALE / ASPECTS OF MEDIEVAL SPANISH LITERATURE**  (3cr.)

**ESP5914 ASPECTS DE LA LITTÉRATURE DE L’ÂGE D’OR I / ASPECTS OF THE LITERATURE OF THE GOLDEN AGE I**  (3cr.)

**ESP5918 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XIXe SIÈCLE / ASPECTS OF NINETEENTH-CENTURY SPANISH LITERATURE**  (3cr.)

**ESP5920 LA GÉNÉRATION DE 1898 / THE GENERATION OF 1898**  (3cr.)

**ESP5922 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XXe SIÈCLE I / ASPECTS OF TWENTIETH-CENTURY SPANISH LITERATURE**  (3cr.)

**ESP5924 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XXe SIÈCLE II / ASPECTS OF TWENTIETH-CENTURY SPANISH LITERATURE**  (3cr.)

**ESP5930 ASPECTS DE LA LITTÉRATURE HISPANO-AMÉRICaine DU XIXe SIÈCLE / ASPECTS OF NINETEENTH-CENTURY SPANISH-AMERICAN LITERATURE**  (3cr.)
ELSP932 LE MODERNISME HISPANO-AMÉRICAIN / SPANISH-AMERICAN MODERNISM (3cr.)
ELSP934 ASPECTS DE LA LITTÉRATURE HISPANO-AMÉRICaine DU XXe SIÈCLE I / ASPECTS OF TWENTIETH-CENTURY SPANISH-AMERICAN LITERATURE I (3cr.)
ELSP935 ASPECTS DE LA LITTÉRATURE HISPANO-AMÉRICaine DU XXe SIÈCLE II / ASPECTS OF TWENTIETH-CENTURY SPANISH-AMERICAN LITERATURE II (3cr.)
ELSP941 TRADUCTION AVANCÉE DE L’ESPAGOL VERS L’ANGLAIS / ADVANCED TRANSLATION FROM SPANISH INTO ENGLISH (3cr.)
ELSP942 TRADUCTION AVANCÉE DE L’ESPAGOL VERS LE FRANÇAIS / ADVANCED TRANSLATION FROM SPANISH INTO FRENCH (3cr.)
ELSP947 ASPECTS DE LA LINGUISTIQUE HISPANIQUE I / ASPECTS OF HISPANIC LINGUISTICS I (3cr.)
ELSP948 ASPECTS DE LA LINGUISTIQUE HISPANIQUE II / ASPECTS OF HISPANIC LINGUISTICS II (3cr.)
ELSP949 ASPECTS DE LA LINGUISTIQUE HISPANIQUE III / ASPECTS OF HISPANIC LINGUISTICS III (3cr.)
ELSP950 ASPECTS DE LA LINGUISTIQUE HISPANIQUE IV / ASPECTS OF HISPANIC LINGUISTICS IV (3cr.)
ELSP957 ASPECTS DE LA THÉORIE DE LA LITTÉRATURE I / ASPECTS OF THE THEORY OF LITERATURE I (3cr.)
ELSP958 ASPECTS DE LA THÉORIE DE LA LITTÉRATURE II / ASPECTS OF THE THEORY OF LITERATURE II (3cr.)
ELSP959 ASPECTS DE LA THÉORIE DE LA LITTÉRATURE III / ASPECTS OF THE THEORY OF LITERATURE III (3cr.)
ELSP962 SÉMINAIRE SPÉCIAL I / SPECIAL SEMINAR I (3cr.)
ELSP963 SÉMINAIRE SPÉCIAL II / SPECIAL SEMINAR II (3cr.)
ELSP972 ÉTUDES DIRIGÉES I / DIRECTED STUDIES I (3cr.)
ELSP974 ÉTUDES DIRIGÉES II / DIRECTED STUDIES II (3cr.)
ELSP941 TRADUCTION AVANCÉE DE L’ANGLAIS VERS L’ESPAGOL / ADVANCED TRANSLATION FROM ENGLISH TO SPANISH (3cr.)
ELSP942 TRADUCTION AVANCÉE DU FRANÇAIS VERS L’ESPAGOL / ADVANCED TRANSLATION FROM FRENCH TO SPANISH (3cr.)
ELSP972 ÉTUDES DIRIGÉES / DIRECTED STUDIES (3cr.)
ELSP7901 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DE L’ÂGE D’OR / ASPECTS OF SPANISH GOLDEN AGE LITERATURE (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.
ELSP7902 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XXe SIÈCLE / ASPECTS OF TWENTIETH-CENTURY SPANISH LITERATURE (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.
ELSP7903 ASPECTS DE LA LITTÉRATURE HISPANO-AMÉRICaine DE XXe SIÈCLE / ASPECTS OF TWENTIETH-CENTURY SPANISH-AMERICAN LITERATURE (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.
ESP7904 ASPECTS DE LA THÉORIE DE LA LITTÉRATURE / ASPECTS OF THE THEORY OF LITERATURE (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.

ESP7905 ASPECTS DE LA LINGUISTIQUE HISPANIQUE / ASPECTS OF HISPANIC LINGUISTICS (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.

ESP7910 SÉMINAIRE DE RECHERCHE EN LITTÉRATURE ESPAGNOLE / RESEARCH SEMINAR IN SPANISH LITERATURE (3cr.)
Séminaire de recherche sur certains sujets dans des domaines spécifiques avec accent sur la participation de l’étudiant. Travaux écrits.
Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

ESP7911 SÉMINAIRE DE RECHERCHE EN LITTÉRATURE HISPANO-AMÉRICaine / RESEARCH SEMINAR IN SPANISH-AMERICAN LITERATURE (3cr.)
Séminaire de recherche sur certains sujets dans des domaines spécifiques avec accent sur la participation de l’étudiant. Travaux écrits.
Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

ESP7915 SÉMINAIRE DE RECHERCHE EN THÉORIE DE LA LITTÉRATURE / RESEARCH SEMINAR IN THEORY OF LITERATURE (3cr.)
Séminaire de recherche sur certains sujets dans des domaines spécifiques avec accent sur la participation de l’étudiant. Travaux écrits.
Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

ESP7916 SÉMINAIRE DE RECHERCHE EN LINGUISTIQUE HISPANIQUE / RESEARCH SEMINAR IN HISPANIC LINGUISTICS (3cr.)
Séminaire de recherche sur certains sujets dans des domaines spécifiques avec accent sur la participation de l’étudiant. Travaux écrits.
Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

ESP7920 SÉMINAIRE SPÉCIAL / SPECIAL SEMINAR (3cr.)
This course offers a flexible seminar code for some special areas of expertise of professors, particularly invited professors.

ESP7997 MÉMOIRE DE MAÎTRISE / MA RESEARCH PAPER

ESP7999 THÈSE DE MAÎTRISE / MA THESIS

ESP9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION

ESP9999 THÈSE DE DOCTORAT / PhD THESIS
Prérequis : ESP 9998 / Prerequisite: ESP 9998

Selon leur projet de recherche, les étudiants pourront suivre les cours suivants offerts par le Département de linguistique, pourvu qu’ils aient les préalables ou la permission du professeur.

Depending on their research project, students could take some of the following courses offered by the Department of Linguistics, provided they meet the prerequisites or obtain permission of the instructor:

LIN5903 SOCIO LINGUISTIQUE 1 / SOCIOLINGUISTICS 1 (3cr.)
LIN5915 PHONOLOGIE 1 / PHONOLOGY 1 (3cr.)
The Systems Science Program provides qualified students with the opportunity for master's-level study in a broad range of areas that emphasize transdisciplinary work in the context of general systems analysis. The emphasis in Systems Science is on the development of analytical and integration skills for use in the resolution of complex applied problems that require a broad-based perspective.

Many professors in Information Technology and Engineering, Mathematics and Statistics, Administration, Economics, and other disciplines are active in the Systems Science program as instructors, student advisers and thesis directors. Others are interested in ongoing Systems Science activities including the seminar series, and Systems Science applications days. Their areas of research, both theoretical and applied, span a wide variety of fields in operations research, deterministic and probabilistic modelling, optimization, computer science, information systems, control, and economic modelling.

General Information

The graduate program in Systems Science is specially designed for those who are interested in the analysis and modelling (mathematical and computer) of natural and man-made systems. It provides the professional with skills and knowledge required to understand, control, predict and optimize behaviour in a variety of fields from engineering and computer science to management and applied economics. An interdisciplinary program of the Faculty of Graduate and Postdoctoral Studies, it is supervised by a Committee composed of representatives from the Department of Economics, the School of Information Technology and Engineering, the Telfer School of Management, and the Department of Mathematics and Statistics.

You are invited to consult the site www.systems-science.uottawa.ca for additional information about the Program.

The Program offers streams leading to three different credentials: a graduate certificate; a master's in Systems Science; an MSc. Each stream is described separately below. To accommodate part-time students, the core courses are usually offered in the late afternoon or evening.

The program operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link:

www.etudesup.uottawa.ca/generalregulations

Admission

Admission Requirements

A four-year undergraduate degree in Computer Science, Economics, Engineering, Mathematics, Operations Research, Science or a related area with at least a "B" average is required for admission to the Program.

Undergraduate courses in probability, linear algebra, differential equations and computer programming are prerequisites for the core courses of the Program. Details regarding the level and content of prerequisite courses are included in the information package which is sent to all applicants. If a student lacks any of these courses, he will normally be required to complete them as a condition of admission. Entering students who lack the required undergraduate preparation may be permitted to enter a qualifying program.

Admission is offered either on a full-or part-time basis. Students admitted full-time to the master's are required to register full-time for three sessions. Specific admission requirements are listed at the beginning of the description of each stream.

Students should specify on the application form whether they are applying for the graduate certificate, the MSc in systems science or the master's in systems science.

Students are normally admitted initially to the graduate certificate and are admitted to the master's only upon successful completion of the core courses and a positive recommendation from the program committee.

No equivalencies or advanced standing are granted. A student who has already successfully completed some of the compulsory credits, may be
allowed to replace those credits with elective credits. For details, see the general regulations of the FGPS, section B 2.7 c).

Applicants to the MSc in systems science must submit a research outline not to exceed 350 words and clearly select the program with thesis on their application form.

Applicants to the master’s in systems science are invited to include with their application a letter of intent stating their motivation for studying systems science and outlining their preferences for key areas of study in the program. They must clearly select the program without thesis on their application form.

Language Requirements

Candidates who have not graduated from a French-speaking or an English-speaking university must pass the computerized Test of English as a Foreign Language (TOEFL), or equivalent, before admission. For additional information, please click on “Apply Now” or visit the website: http://www.etudesup.uottawa.ca/Default.aspx?tabid=1624.

Program Requirements

Master’s Degree Requirements

1. MSc (SYSTEMS SCIENCE) - (30 credits)

All students must complete 30 credits as follows:

1. Core courses (15 credits):
   - Four among the following five courses:
     - SYS5100 SYSTEMS ENGINEERING (3cr.)
     - SYS5110 FOUNDATIONS OF MODELLING AND SIMULATION (3cr.)
     - SYS5120 APPLIED PROBABILITY (3cr.)
     - SYS5130 SYSTEMS OPTIMIZATION AND MANAGEMENT (3cr.)
     - SYS5140 ECONOMIC SYSTEM DESIGN (3cr.)

   and

   - SYS5160 SYSTEMS INTEGRATION (3cr.)

2. One elective course (3 cr.)
   - SYS7990 PROPOSITION DE THÈSE DE MAÎTRISE / MASTER’S THESIS PROPOSAL
   - SYS7999 THÈSE DE MAÎTRISE / MASTER’S THESIS

The regulations for the thesis and for the selection of elective courses are given below.

SYS7990 PROPOSITION DE THÈSE DE MAÎTRISE / MASTER’S THESIS PROPOSAL

Candidates registered for the MSc degree must submit to the program committee, by the middle of their third session of registration in the MSc program, a clearly defined research proposal that has been approved by their thesis director. Approval of the proposal must normally be obtained by the end of the session. A student must register in the Master’s Thesis (SYS7999) in the session immediately following the approval of the proposal. A student whose proposal is not approved on the first attempt may be permitted to submit a second proposal. Failure to obtain approval following the second submission will lead to withdrawal from the MSc program. Students required to withdraw from the MSc but who have successfully completed all the core courses are eligible to receive the graduate certificate.

Thesis Committee

Upon submission, the completed thesis will be examined by a committee of at least two professors who are members of the Faculty of Graduate and Postdoctoral Studies.

2. MASTER’S IN SYSTEMS SCIENCE - (30 credits)

Students are normally admitted initially to the graduate certificate and are admitted to the master’s in systems science only upon successful completion of the core courses and a positive recommendation from the program committee.

All students must complete 30 credits as follows:

1. Core courses (15 credits):
   - Four among the following five courses:
SYS5100 SYSTEMS ENGINEERING (3cr.)
SYS5110 FOUNDATIONS OF MODELLING AND SIMULATION (3cr.)
SYS5120 APPLIED PROBABILITY (3cr.)
SYS5130 SYSTEMS OPTIMIZATION AND MANAGEMENT (3cr.)
SYS5140 ECONOMIC SYSTEM DESIGN (3cr.)

and

SYS5160 SYSTEMS INTEGRATION (3cr.)

2. Five elective courses (15 cr.)

See "Elective Courses" within the course list for the regulations for the selection of elective courses.

Students enrolled in the Master's who have successfully completed the core courses (15 credits) and who are not continuing in the Program, may be awarded the Graduate Certificate in Systems Science.

Courses

SYS5100 SYSTEMS ENGINEERING (3cr.)
Controllability and observability, Euler-Lagrange equations, Pontryagin maximum principle, dynamic programming, linear quadratic regulator problem, matrix Ricatti differential equations and properties of their solution, design of optimal regulator based on steady state solution of the Ricatti differential equation, time optimal control, LaSalle bang-bang principle, applications to motor speed control, satellite attitude control, etc.

SYS5110 / CSI4124 FOUNDATIONS OF MODELLING AND SIMULATION (3cr.)

SYS5120 / MAT4371 APPLIED PROBABILITY (3cr.)
An introduction to stochastic processes, with emphasis on regenerative phenomena. Review of limit theorems and conditioning. The Poisson process. Renewal theory and limit theorems for regenerative processes; Discrete-time and continuous-time Markov processes with countable state space. Applications to queueing.

SYS5130 SYSTEMS OPTIMIZATION AND MANAGEMENT (3cr.)
Analysis of user requirements and model design. Data mining. Use of optimization software. Systems thinking and its application to economic systems and hierarchical systems. Applications to economic systems simulation, modeling, optimization and management.

SYS5140 / ECO6108 ECONOMIC SYSTEM DESIGN (3cr.)
Introduction to the epistemology of systems thinking and its application to economic systems. Basic concepts of complex systems thinking including hierarchical systems and economic systems simulation and behaviour. Soft systems thinking. Examples from other fields of application will be reviewed from an interdisciplinary perspective.

SYS5160 SYSTEMS INTEGRATION (3cr.)
Planning, design of complex systems from continuous to discrete time. Synthesis of systems methodology. State estimation. Parameters indentification. Discretization and stochastic effects. Dynamic, logic control. Modelling, discrete event, simulation examples. Prerequisites: Two of the following: SYS 5100, SYS 5110, SYS 5120, SYS 5130, SYS 5140.

Cours au choix / Elective Courses

La liste suivante des cours au choix est agencée pour suggérer des programmes d'études dans les domaines clés de la recherche appliquée en science des systèmes. La description de chaque cours est donnée dans la brochure consacrée à l'unité scolaire qui l'offre.

ADM = Administration
CSI = Informatique
ECO = Science économique
ELG = Génie électrique
EMP = Gestion en ingénierie
GEG = Géographie
MAT = Mathématiques
Les cours durent une session et ont une valeur de 3 crédits, à moins d'une indication contraire. Les cours mentionnés ci-dessous ne sont pas nécessairement offerts chaque année. Les étudiants sont invités à consulter leur conseiller scolaire quant à la sélection du domaine de recherche et des cours au choix, dont les cotes peuvent se rapporter à d'autres unités scolaires de l'Université, par exemple BIO = Département de biologie, SEG = École d'ingénierie et de technologie de l'information.

Note sur les cours préalables: il revient aux étudiants de s'assurer qu'ils satisfassent aux préalables des cours au choix qu'ils désirent suivre. Après consultation avec le conseiller scolaire, ils devront, le cas échéant, obtenir la permission des professeurs enseignant ces cours.

The following lists of elective courses are provided as suggested programs of study in key areas of Applied Systems Science. Course descriptions may be found in the listing of the academic unit concerned.

ADM = Administration
CSI = Computer Science
ECO = Economics
ELG = Electrical Engineering
EMP = Engineering Management
GEG = Geography
MAT = Mathematics
MCG = Mechanical Engineering
SYS = Systems Science

Courses last one session and carry 3 credits, unless otherwise noted. The courses listed below are not necessarily offered each year. Students are asked to confer with their academic advisers concerning their area of choice and selection of elective courses, which may have codes related to other academic units of the University, e.g. BIO = Department of Biology, SEG = School of Information Technology and Engineering.

Note on prerequisite courses: It is the students’ responsibility to verify that they have the prerequisites for the elective courses that they wish to take. After consultation with the academic adviser, they may be required to obtain permission from the professors teaching these courses.

Génie logiciel / Software Engineering

CSI4106 INTRODUCTION TO ARTIFICIAL INTELLIGENCE (3cr.)

CSI4506 INTRODUCTION À L'INTELLIGENCE ARTIFICIELLE (3cr.)

CSI5109 (COMP 5701) SPECIFICATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CSI5110 (COMP 5707) PRINCIPLES OF FORMAL SOFTWARE DEVELOPMENT (3cr.)
Methodologies in formal software specification, development, and verification. The use of theorem proving, automated deduction, and other related formal methods for software correctness. Applications in program verification, mobile code safety, and protocol verification.

CSI5111 (COMP 5501) SOFTWARE QUALITY ENGINEERING (3cr.)

CSI5112 (COMP 5207) SOFTWARE ENGINEERING (3cr.)
Topics of current interest in Software Engineering, such as software development systems, structured systems analysis and design, management of software, software tools, validation and verification, programming environments.

CSI5118 (COMP 5302) AUTOMATED VERIFICATION AND VALIDATION OF SOFTWARE (3cr.)
Topics in formal test derivation methods, test management, high-level, CASE-based verification and validation, data-flow & control-flow measures and metrics
for assessing quality of designs and code, regression analysis & testing. Prerequisite: a four-year undergraduate degree in computer science, computer engineering, or software engineering.

CSI5122 (COMP 5301) SOFTWARE USABILITY (3cr.)
Design principles and metrics for usability. Qualitative and quantitative methods for the evaluation of software system usability. Heuristic evaluation, usability testing, usability inspections and walkthroughs, cognitive walkthroughs, formal usability experimentation. Ethical concerns when performing studies with test users. Economics of usability. Integration of usability engineering into the software engineering lifecycle.

CSI5125 SIMULATION
Topics in modelling and simulation within the context of both discrete and continuous systems. Estimation of model parameters. Experiment design and statistical analysis of simulation results. Distributed simulation. Stiffness and discontinuity handling in continuous system simulation. Artificial Intelligence in modelling and simulation. Validation and quality assurance of simulation models.

CSI5180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE (3cr.)
A programming-oriented introduction to selected topics in Artificial Intelligence (A.I.). Topics for consideration include: A.I. programming techniques, pattern matching systems, natural language systems rule-based systems, constraint systems, learning systems, and cognitive systems. Assignments will be both (a) programming-oriented, requiring implementation and/or extensions of prototypes in Lisp and/or Prolog and (b) research-oriented, requiring readings of special topics in current A.I. journals.

CSI5304 (COMP 5602) KNOWLEDGE ENGINEERING (3cr.)
Review of basic concepts from artificial intelligence for knowledge engineering. Types of knowledge and knowledge representations. The importance of logic and natural language. Expert systems and other knowledge-based software. Knowledge acquisition tools and techniques. The relation to software engineering. Exercises in knowledge acquisition, representation, and processing will be given.

CSI5307 EXPERT SYSTEMS
Survey of some landmark expert systems; types of architecture and knowledge representation; inferencing techniques; approximate reasoning; truth maintenance; explanation facilities; knowledge acquisition. A project to implement a small expert system will be assigned.

CSI5386 (COMP 5505) NATURAL LANGUAGE PROCESSING (3cr.)
Definitions, applications, challenges, lexicons, thesauri, corpora and other linguistic resources. Morphological analysis; tagging. Selected syntactic theories: phrase structure grammars, unification-based grammars. Parsing techniques: chart, deterministic parsing, logic grammars. Selected semantic representations: logic, logical forms, conceptual graphs. Element of semantic and pragmatic analysis: reference, scope, focus. Elements of statistical language processing and text mining. Introduction to corpus linguistics. Term projects, one on syntax and one on semantics, will be done in Prolog and logic grammars. Prerequisite: CSI 4106 or permission of the program director.

CSI5510 (COMP 5707) PRINCIPES DE DÉVELOPPEMENT FORMEL DE LOGICIELS (3cr.)

CSI5580 (COMP 5100) SUJETS EN INTELLIGENCE ARTIFICIELLE (3cr.)

Systèmes de communications / Communication Systems

ADM6270 SYSTEMS FOR ELECTRONIC COMMERCE
ADM6271 BUSINESS TELECOMMUNICATIONS SYSTEMS (1.5cr.)
Concepts of voice, data, image and video communications and their integration into local and long distance networks. Business communication systems examples.

CSI5169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
Computational aspects and applications of design and analysis of mobile and wireless networking. Topics include Physical, Link Layer, Media Access Control, Wireless, Mobile LANs (Local Area Networks), Ad-Hoc, Sensor Networks, Power Consumption optimization, Routing, Searching, Service Discovery, Clustering, Multicasting, Localization, Mobile IP/TCP (Internet Protocol/Transmission Control Protocol), File Systems, Mobility Models, Wireless Applications. (Cannot be combined for credit with ELG 6168)

CSI5171 (COMP 5303) NETWORK ARCHITECTURES, SERVICES, PROTOCOLS AND STANDARDS (3cr.)
Contemporary network architectures and protocols, with special consideration of telephony and mobility standards. Wireline and wireless network evolution. Telephony features and the feature interaction problem. Intelligent network architecture. Cellular networks and personal communications systems. Seamless network architectures. Mobile data communications. The Open Distributed Processing Reference model and derived architectures. Discussion of sample current architectures and issues, such as General System for Mobile Communication, IEA/TIA 41, Wireless Intelligent Networks, International Mobile Telephony
The study of one or more aspects of the relationship between liturgy and spirituality.

THO6366 HISTORY OF SPIRITUAL TRADITIONS I

The study of a major thinker, period, movement or theme in the history of spiritual traditions. Theological implications of this study.

Rôle de l’Écriture dans l’élaboration d’une interprétation théologique par rapport à un penseur, à une question ou à un sujet important.

Rôle de l’histoire dans le développement d’une question théologique par rapport à un penseur, à une question ou à un sujet important.

THO6136 STUDIES IN SYSTEMATIC THEOLOGY II

THO6742 ÉTHIQUE ET SCIENCES DE LA SANTÉ

The origin and historical development of an ethical question (e.g., contraception, bioethics).

Éthique / Ethics

THO6324 CONTEMPORARY READINGS AND INTERPRETATIONS I

THO6322 SEMIOTIC APPROACHES

THO6788 TEXTES FONDAMENTAUX DE THÉOLOGIE LITURGIQUE DU CHRISTIANISME ORIENTAL

Hermeneutical questions and methodological foundations of contemporary ethical reflection analysed from a theological perspective.

Principles and methods of interpretation. History of interpretation: the Church Fathers, Middle Ages, the Reformation, 19th and 20th centuries.

Duration of the program

The MA(Th) degree consists of 30 credits.

Concentrations

The program is intended for candidates who already have a good basic formation in Theology, with courses in various areas of Theology such as production work. For a list of topics, please refer to THE 5931 Graduate Directing Seminar I.

THE5933 Séminaire III / GRADUATE DIRECTING SEMINAR III

THE5903 PRODUCTION III / PRODUCTION III

Duration of the program

A total of 42 credits are required as follows:

The program operates within the framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the questions in French or in English.

Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se

scène; le théâtre et les conventions; le théâtre et les autres arts; le théâtre et ses publics. La description du séminaire est disponible plusieurs mois

THE5902 PRODUCTION II / PRODUCTION II

develop specific practical and analytical skills.

lieux de diffusion habituelle et le cyber­spectacle. Exercices de rédaction en vue de la production de travaux universitaires et professionnels. Étude

étudiants à rédiger avec succès des articles savants, des communications et une thèse de maîtrise.

THE5110 METHODOLOGY

Four core courses (12cr.)

Both programs are offered full-time and extend over two years. They can be pursued in English and in French.

CSI5174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)


ELG5103 OPTICAL COMMUNICATIONS SYSTEMS (3cr.)

Optical communication system concepts and basic characteristics. Optical Transmitters. Optical detection. Optical noise sources and their mathematical models. Non-coherent (direct) detection: system model, direct detection of intensity modulation, application of photo-multiplication, optimal post-detection processing, and subcarrier systems. Coherent detection: heterodyne receivers, the field matching problem and receiver performance. Optical binary digital system, single-mode binary and heterodyne binary systems. Block coded digital optical communication systems: PPM, PAM, PSK, and FSK signalling. Integration of device technology and system architecture. Selected topics in optical communications and networking. Prerequisites: ELG 5119, and ELG 5375 or the equivalents.

ELG5119 (EACJ 5109) STOCHASTIC PROCESSES (3cr.)


ELG5122 (EACJ 5202) MODELLING, ANALYSIS AND PERFORMANCE EVALUATION IN COMPUTER COMMUNICATIONS (3cr.)

Network performance issues and their mathematical analysis techniques. Intermittently available server model, probing and tree search, delay cycle, switch/network topology and reliability. Analysis of controlled and random access methods, routing allocation/control, topological design. Selected topics from current literature on various network applications. Precludes additional credit for ELG 7186 (EACJ 5606). Prerequisites: ELG 5120 (EACJ 5200), ELG 5374 (EACJ 5607), or SYSC 5201 (ELG 6121), or the equivalents.

ELG5125 (EACJ 5208) QUALITY OF SERVICE MANAGEMENT FOR MULTIMEDIA APPLICATIONS (3cr.)

Design principles: layering, protocols, interface: models for open distributed processing: real-time requirement; request-response and stream processing, real-time scheduling, design for performance and scalability; other quality of services issues; user perspective versus system performance parameters, cost/performance trade-off, negotiations; adaptive and mobile applications; examples of multimedia applications and protocols. Prerequisite: ELG 5374 (EACJ 5607) or SYSC 5201 (ELG 6121) or equivalent.

ELG5180 (EACJ 5704) ADVANCED DIGITAL COMMUNICATIONS (3cr.)

Techniques and performance of digital signalling and equalization over linear bandlimited channels with additive Gaussian noise. Fading multipath channels: diversity concepts, modelling and error probability performance evaluation. Synchronization in digital communications. Spread spectrum in digital transmission over multipath fading channels. Precludes additional credit for SYSC 5605. Prerequisite: SYSC 5504 or ELG 5375 or the equivalent.

ELG5382 (EACJ 5108) SWITCHING AND TRAFFIC THEORY FOR INTEGRATED BROADBAND NETWORKS (3cr.)

Principles of switching theory. Asynchronous Transfer Mode switching architectures. Principle of teletraffic engineering. Queueing theory and performance evaluation techniques as applied to the study of computer network architectures. Current topics in computer network modelling analysis and traffic control for high-speed multimedia networks. Prerequisite: ELG 5374 (EACJ 5607) or ELG 6121 (SYSC 5201), or the equivalent. Co-requisite: ELG 5119 (EACJ 5109) or ELG 6153 (SYSC 5303) or ELG 6103 (SYSC 5003), or the equivalent.

ELG5375 (EACJ 5506) PRINCIPLES OF DIGITAL COMMUNICATION (3cr.)

Elements of communication theory and information theory applied to digital communications systems. Characterization of noise and channel models. Analysis of digital data transmission techniques for additive Gaussian noise channels. Efficient modulation and coding for reliable transmission. Spread spectrum and line coding techniques. Prerequisite: ELG 5119 or SYSC 5503, or the equivalent (may be taken concurrently).

ELG5376 (EACJ 5507) DIGITAL SIGNAL PROCESSING (3cr.)


ELG5776 (EACJ 5508) TRAITEMENT NUMÉRIQUE DES SIGNAUX (3cr.)


ELG5378 (EACJ 5509) IMAGE PROCESSING AND IMAGE COMMUNICATIONS (3cr.)

ADM6272 PLANNING AND DEVELOPMENT OF INFORMATION SYSTEMS

CSI5114 (COMP 5504) AUTOMATED OFFICE SYSTEMS (3cr.)
Study of office automation and its extension into commerce and marketing. Tools for collaboration, information transformation, data gathering, storage and retrieval, office agents and CSCW, funds transfer, electronic mail systems and messaging, use of WWW. Ergonomic, legal and regulatory aspects, social and economic factors.

CSI5514 (COMP 5504) BUREAUTIQUE (3cr.)
Une étude de la bureautique. Les systèmes de bureautique, réseaux locaux, systèmes de traitement de texte, transferts de fonds, messageries et échanges de documents. La politique économique, sociale et légale des systèmes bureautiques.

CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decomposition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.

CSI5170 (COMP 5800) DISTRIBUTED DATA PROCESSING (3cr.)
Graph- and non-graph-related algorithms in a distributed environment, such as breadth-first-search, selection in a ring, distributed file sorting, etc. Approaches to distributed database management design: distributed query and update processing, concurrency control, optimal allocation of resources and users, etc. Modelling techniques for distributed systems, such as Petri-nets, etc. Security in a distributed environment.

CSI5180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE (3cr.)
A programming-oriented introduction to selected topics in Artificial Intelligence (A.I.). Topics for consideration include: A.I. programming techniques, pattern matching systems, natural language systems rule-based systems, constraint systems, learning systems, and cognitive systems. Assignments will be both (a) programming-oriented, requiring implementation and/or extensions of prototypes in Lisp and/or Prolog and (b) research-oriented, requiring readings of special topics in current A.I. journals.

CSI5386 (COMP 5505) NATURAL LANGUAGE PROCESSING (3cr.)
Definitions, applications, challenges, lexicons, thesauri, corpora and other linguistic resources. Morphological analysis; tagging. Selected syntactic theories: phrase structure grammars, unification-based grammars. Parsing techniques: chart, deterministic parsing, logic grammars. Selected semantic representations: logic, logical forms, conceptual graphs, Element of semantic and pragmatic analysis: reference, scope, focus. Elements of statistical language processing and text mining. Introduction to corpus linguistics. Term projects, one on syntax and one on semantics, will be done in Prolog and logic grammars. Prerequisite: CSI 4106 or permission of the program director.

CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)

ELG5170 (EACJ 5501) INFORMATION THEORY (3cr.)
Measure of information: entropy, relative entropy, mutual information, asymptotic equipartition property, entropy rates for stochastic processes; Data compression: Huffman code, arithmetic coding; Channel capacity: random coding bound, reliability function, Blahut-Arimoto algorithm, Gaussian channels, colored Gaussian noise and "water-filling"; Rate distortion theory; Network information theory. Prerequisite: ELG 5119 (EACJ 5109) or SYSC 5503 (ELG 5119) or the equivalent.

ADM6280 CURRENT PRACTICES IN OPERATIONS MANAGEMENT (1.5cr.)

ADM6281 SUPPLY CHAIN MANAGEMENT (1.5cr.)
Introduction to supply chain management; overview of its role in the organization as an operational, a strategic, and a competitive tool; role of information systems and technology in supply chain management; managing the flow of materials, and inventory management across the supply chain; developing and maintaining supply chain relationships; future challenges including sharing risks in inter-organizational relationships, managing the global supply chain and design for supply chain management. Prerequisite: MBA 5380 or equivalent for MBA students or EMP 5101 for EMP students.

ADM6282 INTRODUCTION TO QUALITY MANAGEMENT (1.5cr.)

EMPS159 / MCG5159 ADVANCED PRODUCTION PLANNING AND CONTROL (3cr.)
EMP5169 / MCG5169 ADVANCED TOPICS IN RELIABILITY ENGINEERING (3cr.)

EMP5179 / MCG5179 MANUFACTURING SYSTEMS ANALYSIS (3cr.)

Modélisation de la gestion de l'entreprise / Corporate Managerial Modelling

ADM6262 TECHNOLOGY IN THE NATIONAL AND INTERNATIONAL ENVIRONMENTS (1.5cr.)
ADM6263 TECHNOLOGY ADAPTATION AND INNOVATION IN A CORPORATE ENVIRONMENT (1.5cr.)
ADM6264 TECHNOLOGY R & D (1.5cr.)
ADM6265 HIGH-TECH ENTREPRENEURSHIP
ADM6284 MANAGING TECHNOLOGICAL RISK (1.5cr.)
MAT5307 (MATH 5804) TOPICS IN OPERATIONS RESEARCH (3cr.)

Systèmes économiques de l'environnement / Environmental Economic Systems

Les systèmes économiques de l'environnement étudient l'impact des décisions en matière de gestion sur l'écosystème. Ce programme est mené conjointement avec plusieurs départements de l'Université et l'Institut de recherche sur l'environnement et l'économie (IREE). Les étudiants de ce domaine sont encouragés à participer aux séminaires et ateliers de cet institut pour parfaire leurs connaissances.

Environmental Economic Systems examines the impact of management decision making on the ecosystem. This study program is carried out in conjunction with several University departments and the Institute for Research on the Environment and Economy (IREE). Students in this area are invited to attend the IREE's regular seminars, and to participate in workshops as part of their systems study in this area.

ECO6143 (ECON 5803) ECONOMICS OF NATURAL RESOURCES (3cr.)

ECO6543 ÉCONOMIE DES RESSOURCES NATURELLES (3cr.)

ECO6151 (ECON 5804) ECONOMICS OF THE ENVIRONMENT (3cr.)
The environment as natural capital; environmental valuation techniques; elements of environmental income accounting; sustainable development theories and practice; institutional questions and policy issues.

ECO6551 ÉCONOMIE DE L'ENVIRONNEMENT (3cr.)
L'environnement comme capital naturel; techniques d'évaluation environnementale; comptabilité environnementale; théorie et pratique de développement durable; questions institutionnelles et problèmes de politique publique.

GEG5102 RESTRUCTURING AND GLOBALISATION
Advanced analysis of the global systems and their consequences at the international, national, regional and intra-urban scales.

GEG5502 RESTRUCTURATION ET MONDIALISATION
Analyse approfondie des systèmes mondiaux et de leurs conséquences aux échelles internationale, nationale, régionale et intra-urbaine.

GEG6101 DATA ANALYSIS AND MODELLING (3cr.)
Techniques of analysis of empirical data: quantitative, semi-quantitative and qualitative. Multivariate and time-series data analysis.
**GEG6103 SPATIAL DATA ANALYSIS** (3cr.)
Visualisation and analysis of spatial data: point-pattern analysis, spatial interpolation and estimation, spatial autocorrelation. Analysis of spatial interaction and spatio-temporal dynamics.

**GEG6501 ANALYSE DE DONNÉES ET MODÉLISATION** (3cr.)
Modes de traitement appropriés à différents types de données empiriques : quantitatives, semi-quantitatives et qualitatives. Examen des méthodes d'analyse multivariées et temporelles.

**GEG6503 ANALYSE DES DONNÉES SPATIALES** (3cr.)
Visualisation et analyse de données spatiales : analyse de configurations spatiales, interpolation et estimation spatiales, autocorrélation spatiale. Analyse des interactions dans l'espace et de la dynamique spatiotemporelle.

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**SYSS180 TOPICS IN SYSTEMS SCIENCE** (3cr.)

**SYSS580 THÈMES EN SCIENCE DES SYSTÈMES** (3cr.)

**SYSS590 LECTURES DIRIGÉES EN SCIENCE DES SYSTÈMES** (3cr.)

**SYSS591 SÉMINAIRE DE RECHERCHE SUR LES SYSTÈMES ENVIRONNEMENTAUX / RESEARCH SEMINAR ON ENVIRONMENTAL SYSTEMS**

**SYSS5975 PROJET EN SCIENCE DES SYSTÈMES /PROJECT IN SYSTEMS SCIENCE** (3cr.)
Prerequisite: SYSS5180

**SYSS5980 THÈMES EN SCIENCE DES SYSTÈMES / TOPICS IN SYSTEMS SCIENCE** (3cr.)

**SYS7990 PROPOSITION DE THÈSE DE MAÎTRISE / MASTER'S THESIS PROPOSAL**

**SYS7999 THÈSE DE MAÎTRISE / MASTER'S THESIS**
Prerequisite: SYS7990

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**Theatre (MA)**

**General Information**

The Department of Theatre offers two graduate programs, one leading to a Master of Arts (MA) in theatre, and the other to a Master of Fine Arts (MFA) in directing for the theatre.

The MA in theatre includes a thesis and is focused on the fields of theatre theory and dramaturgy. The objective of this program is to bridge theoretical and practical approaches to the study of theatre by encouraging dialogue and understanding between practitioners and theoreticians. The program enables students to broaden their academic scope with regard to the epistemological and interdisciplinary specificities of theatre as an art form and as a discipline of study; it encourages the analysis of the Western world’s principal theatrical traditions from various discursive perspectives; it fosters a greater understanding of Canada’s two principal theatrical traditions and helps develop scholarly discourse in regards to each.

The Master of Fine Arts (MFA) in directing focuses on the practice and theory of directing. It allows students to develop their skills in the art of directing, and offers the unique opportunity to study both English and French theatre practices and traditions in a bilingual and bicultural setting. The program is designed to prepare students to work as directors in both the professional and academic theatre.

Both programs are offered full-time and extend over two years. They can be pursued in English and in French.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The program operates within the framework of the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**
Admission to the graduate program in Theatre is governed by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

All applicants must be able to understand speak and write proficiently either English or French. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

**Admission requirements for the MA program:**

1. A bachelor’s degree with a specialization or a major, or the equivalent, in Theatre with a minimum average of 75% (B+) in the last two years and a 70 % (B) average overall;
2. Theoretical grounding in the social, historical, and structural aspects of theatre, as well as a solid background in the literature and theory of drama;
3. Working knowledge of theatrical practice, including an understanding of the basic techniques of acting, directing, production, and theatre administration.

**Documents required:**

1. A detailed up-to-date curriculum vitae;
2. Academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. A statement of purpose of no more than three pages indicating the career goals and the interests in the proposed research area;
4. A sample of an undergraduate paper (scholarly writing);
5. Three letters of recommendation from professors who have known the applicant and are familiar with the student work.

**Program Requirements**

### Degree Requirements

Candidates pursue individualized research in areas of interest that may include dramaturgy, theory of performance, theatre criticism or history of theatre.

The program requires successful completion of 27 credits, consisting of four compulsory courses, one elective, a thesis proposal and a thesis.

**The requirements of the MA in theatre program are as follows:**

**Four core courses (12 cr.)**

- THE5110 METHODOLOGY (3 cr.)
- THE5120 EPISTEMOLOGY OF THEATRE STUDIES (3 cr.)
- THE5130 DRAMATURGY (3 cr.)
- THE5140 THEORY OF PERFORMANCE (3 cr.)

**One elective course (3 cr.)**

The elective seminar or course can be taken either within or outside the Department of Theatre. It allows students to take advantage of the wide range of theatre-related expertise available in departments throughout the Faculty of Arts and elsewhere in the University of Ottawa, particularly, but not exclusively, in literature and language, in fine arts departments, in history and in communication. The choice of elective is subject to the approval of the program director. Students are responsible for ensuring that they have any prerequisites that the course may require.

- THE6990 Thesis proposal
- THE6999 Master’s thesis (12 cr.)

### Duration of the program

Full-time MA students are expected to complete all program requirements within two years of initial registration. The maximum time permitted is four years from the date of the initial registration.

### Residence

All students admitted full-time must complete a minimum of three sessions of full-time registration.
Courses

THE5110 METHODOLOGY (3cr.)
Advanced academic research and writing skills; commonly used in theatre studies – archival research, collection of pertinent data, forms of empirical research, conceptual research, etc. – practical exercises leading to the students’ successful writing of academic papers, conference presentations, and a MA thesis paper.

THE5120 EPISTEMOLOGY OF THEATRE STUDIES (3cr.)
Philosophical and sociological theories generated by a range of disciplines – from literature to political science – as applied to theatre studies, as well as theories generated within the field of theatrical studies as such. Review of the theoretical writings available to the contemporary scholar, and articulation of a theoretical framework for the students’ own research. Students will also be required to situate their own research within the broader context of today’s epistemologies.

THE5130 DRAMATURGY (3cr.)
The dramatic text as a point of departure for a theatrical performance. The art of dramaturgy considered as the analysis of the poetics of dramatic text as well as the study of its structural specificities and norms. Major elements of, and theories related to, new play development, both in a historical perspective as well as a conceptual one. Acquisition of the skills necessary for pursuing a career as a Dramaturge or a Literary Adviser in a professional theatre.

THE5140 THEORY OF PERFORMANCE (3cr.)
Examination of a range of performance forms that define contemporary practice including performance art, fine art, film, site-specific theatre and cyber-spectacle. Exercises in academic and professional writing for the theatre. Major elements of performance studied both in historical and conceptual perspectives.

THE5510 MÉTHODOLOGIE (3cr.)
Formation avancée en recherche et en rédaction pertinente pour les études universitaires dans le champ des études théâtrales – recherche en archives, collecte de données pertinentes, formes de recherche empirique, recherche théorique, etc. – exercices pratiques devant mener les étudiants à rédiger avec succès des articles savants, des communications et une thèse de maîtrise.

THE5520 ÉPISTÉMÉLOGIE DES ÉTUDES THÉÂTRALES (3cr.)
Étude des théories philosophiques et sociologiques issues de plusieurs disciplines – depuis la littérature jusqu’aux sciences politiques – telles qu’appliquées dans le champ des études théâtrales, de même que des théories issues du domaine des études théâtrales lui-même. Survol des écrits théoriques disponibles pour les chercheurs contemporains et développement d’un cadre théorique approprié aux recherches particulières des étudiants. Les étudiants seront aussi tenus de situer leurs propres recherches dans le contexte plus large des approches théoriques actuelles.

THE5530 DRAMATURGIE (3cr.)
La dramaturgie conçue en tant que point de départ de la représentation théâtrale. L’étude de l’art de la dramaturgie entendu comme l’analyse de la poétique du texte dramatique et de ses structures et normes spécifiques. L’étude des éléments importants du développement dramaturgique, et des théories qui s’y rattachent, dans une perspective à la fois historique et théorique. L’acquisition des compétences nécessaires pour la poursuite d’une carrière de dramaturge et de conseiller littéraire au sein d’une compagnie théâtrale professionnelle.

THE5540 ANALYSE DE LA REPRÉSENTATION (3cr.)
Étude des diverses formes de spectacles qui définissent les pratiques contemporaines telles que la performance, les beaux-arts, le théâtre hors des lieux de diffusion habituelle et le cyber-spectacle. Exercices de rédaction en vue de la production de travaux universitaires et professionnels. Étude des principaux éléments de l’événement théâtral dans une perspective historique et théorique.

THE5901 PRODUCTION I / PRODUCTION I (3cr.)
Encadré par un professeur ou un metteur en scène professionnel, chaque étudiant effectue une série d’exercices sur la mise en scène et travaille des scènes posant un problème spécifique de mise en scène afin de développer ses habiletés pratiques ainsi que ses capacités d’analyse. / Students, under the supervision of faculty members, or a professional director, undertake a series of directing exercises and problem scenes designed to develop specific practical and analytical skills.

THE5902 PRODUCTION II / PRODUCTION II (3cr.)
Encadré par un professeur ou un metteur en scène professionnel, chaque étudiant étudie et dirige une pièce en un acte ou une longue scène tirée d’une pièce. / Students research and direct a one-act play or an extended scene from a full-length play under the guidance of a professor or professional director.

THE5903 PRODUCTION III / PRODUCTION III (3cr.)
Encadré par un professeur ou un metteur en scène professionnel, chaque étudiant étudie et dirige une pièce en un acte ou une longue scène tirée d’une pièce. / Students research and direct a one-act play or an act from a full-length play with the guidance of a professor or professional director.

THE5931 SÉMINAIRE I / GRADUATE DIRECTING SEMINAR I (3cr.)
Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se présentent aux étudiants dans le cadre de leur production. Les problèmes à traiter seront choisis parmi les suivants et varieront d’une session à l’autre : les traditions françaises et anglaises de la mise en scène; du texte à la scène; les collaborations au théâtre; les méthodologies de la mise en scène; le théâtre et les conventions; le théâtre et les autres arts; le théâtre et ses publics. La description du séminaire est disponible plusieurs mois à l’avance au Département. / Seminar focussing on a selected aspect of the directorial process and providing a forum for the discussion of problems and issues encountered in production work. Topics will vary from session to session and will be chosen from among the following: the
French and English traditions of directing; from text to stage; theatrical collaboration; approaches to directing; theatrical conventions; theatre and the other arts; and the theatre and its audiences. A description of the specific seminar topic is available several months in advance from the Department.

THE5932 SÉMINAIRE II / GRADUATE DIRECTING SEMINAR II (3cr.)
Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se présentent aux étudiants dans le cadre de leur production. Pour la liste des problèmes à traiter, veuillez vous référer à THE 5931 Séminaire I. / Seminar focussing on a selected aspect of the directorial process and providing a forum for the discussion of problems and issues encountered in production work. For a list of topics, please refer to THE 5931 Graduate Directing Seminar I.

THE5933 SÉMINAIRE III / GRADUATE DIRECTING SEMINAR III (3cr.)
Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se présentent aux étudiants dans le cadre de leur production. Pour la liste des problèmes à traiter, veuillez vous référer à THE 5931 Séminaire I. / Seminar focussing on a selected aspect of the directorial process and providing a forum for the discussion of problems and issues encountered in production work. For a list of topics, please refer to THE 5931 Graduate Directing Seminar I.

THE5934 SÉMINAIRE IV / GRADUATE DIRECTING SEMINAR IV (3cr.)
Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se présentent aux étudiants dans le cadre de leur production. Pour la liste des problèmes à traiter, veuillez vous référer à THE 5931 Séminaire I. / Seminar focussing on a selected aspect of the directorial process and providing a forum for the discussion of problems and issues encountered in production work. For a list of topics, please refer to THE 5931 Graduate Directing Seminar I.

THE5952 ANALYSE FORMELLE DE LA PRÉ-PRODUCTION / FORMAL PRE-PRODUCTION ANALYSIS (3cr.)
Les étudiants doivent préparer une analyse détaillée de la pièce retenue pour leur production finale comprenant une analyse historique et dramatique, une étude de la place qu'elle tient dans l'oeuvre de l'auteur, une proposition détaillée de la mise en scène, en plus d'une bibliographie critique des travaux qui se rapportent à la pièce et à la production. / Students prepare a substantial analysis of the play chosen for their final production, including a historical and dramatic analysis, a study of the play's place within the author's oeuvre, a production history and a detailed production concept, as well as a critical bibliography of works pertaining to the play and to the production.

THE6001 PRODUCTION FINALE / FINAL PRODUCTION (6cr.)
L'étudiant dirige une pièce. Après la production finale, l'étudiant présente une analyse de la préparation, des répétitions, de la représentation et de la réception de son spectacle. / Students direct a full-length play. After the production they will submit a post-production analysis of the preparation, rehearsal, performance and reception of the play.

THE6901 STAGE / DIRECTING PRACTICUM (3cr.)
Chaque étudiant fait un stage à titre d'observateur auprès d'un metteur en scène aguerri dirigeant une production professionnelle. À la fin du stage, l'étudiant présente un rapport détaillé et une analyse du processus de mise en scène auquel il a participé. Noté : S/NS / Students observe a senior director mount a professional production. At the conclusion of the production, the student will submit a detailed record and analysis of the directorial process in which they have participated. Graded: S/NS

THE6990 PROJET DE THÈSE / THESIS PROPOSAL
Lectures intensives, sous la supervision du directeur de thèse, dans le domaine de recherche de la thèse. Développement d’un cadre théorique approprié et rédaction de la proposition de thèse. Noté S (satisfaisant) ou NS (non satisfaisant). / Intensive reading, under the direction of the thesis adviser, in the research area of the thesis. Development of an appropriate theoretical framework and writing of the thesis proposal. Graded S (satisfactory) or NS (not satisfactory).

THE6997 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION
L'examen comporte une épreuve orale et une épreuve écrite. Les questions sont relatives à la liste des ouvrages recommandés et aux problèmes soulevés lors des critiques de la production. Toute personne qui subit un échec n’a droit qu’à une seule reprise Noté : S/NS / A written and oral examination covering the student's reading list and issues raised in production critiques. In case of failure, the examination may be repeated once. Graded: S/NS.

THE6999 THÈSE DE MAÎTRISE / MASTER'S THESIS (12cr.)

Theatre - Master of Fine Arts in Theatre (Directing) (MFA)

General Information
The Department of Theatre offers two graduate programs, one leading to a Master of Arts (MA) in Theatre, and the other to a Master of Fine Arts (MFA) in Theatre with specialization in Directing.

The Master of Arts (MA) in theatre (with thesis) focuses on the field of theatre theory and dramaturgy. The objective of this program is to bridge theoretical and practical approaches to the study of theatre by encouraging dialogue and understanding between practitioners and theoreticians. The program enables students to broaden their academic scope with regard to the epistemological and interdisciplinary specificities of theatre as an art form and as a discipline of study; it encourages the analysis of the Western world’s principal theatrical traditions from various discursive perspectives; it fosters a greater understanding of Canada’s two principal theatrical traditions and helps develop scholarly discourse in regards to each.
The Master of Fine Arts (MFA) in directing focuses on the practice and theory of directing. It allows students to develop their skills in the art of directing, and offers the unique opportunity to study both English and French theatre practices and traditions in a bilingual and bicultural setting. The program is designed to prepare students to work as directors in both the professional and academic theatre.

Both programs are offered full-time and extend over two years. They can be pursued in English and in French.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The program operates within the framework of the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate program in Theatre is governed by the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS).

All applicants must be able to understand speak and write proficiently either English or French. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the "Admission" section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

Admission requirements for the MFA program:

1. A bachelor's degree with a specialization or a major, or the equivalent, in Theatre with a minimum average of 75% (B+) in the last two years and a 70% (B) average overall;
2. A solid background in the literature, theory and history of the theatre;
3. A working knowledge of how theatre is done, including an understanding of the basic techniques of acting, production and theatre administration;
4. Experience and a demonstrable skill and talent for theatre directing;
5. Some successful pursuit of theatre work beyond the university setting;
6. Proficiency in one of the two official languages and at least a passive knowledge of the other; a passive knowledge implies the ability to follow courses in both official languages, and to appreciate the English and French theatrical traditions, culture and practice.

Documents Required

1. A detailed up-to-date curriculum vitae;
2. Academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. A statement of purpose of no more than three pages indicating the career goals and the interests in the proposed research area;
4. A sample of an undergraduate paper (scholarly writing);
5. Three letters of recommendation from professors who have known the applicant and are familiar with the student's work.

Program Requirements

Degree Requirements

The program combines two compulsory courses, production courses, directing seminars, one elective, and a practicum where students observe a senior director mount a production in a professional theatre. Students must pass two examinations, a diagnostic examination upon entry into the program, and a comprehensive examination in order to graduate.

A total of 42 credits are required as follows:

Compulsory Courses (6cr.)
THE5130 DRAMATURGY (3cr.)
- and -
THE5140 THEORY OF PERFORMANCE (3cr.)

Production Courses (18cr.)
THE5901 PRODUCTION I / PRODUCTION I (3cr.)
THE5902 PRODUCTION II / PRODUCTION II (3cr.)
THE5903 PRODUCTION III / PRODUCTION III (3cr.)
Cours

THE5110 METHODOLOGY (3cr.)
Advanced academic research and writing skills; commonly used in theatre studies – archival research, collection of pertinent data, forms of empirical research, conceptual research, etc. – practical exercises leading to the students’ successful writing of academic papers, conference presentations, and an MA thesis paper.

THE5120 EPISTEMOLOGY OF THEATRE STUDIES (3cr.)
Philosophical and sociological theories generated by a range of disciplines – from literature to political science – as applied to theatre studies, as well as theories generated within the field of theatrical studies as such. Review of the theoretical writings available to the contemporary scholar, and articulation of a theoretical framework for the students’ own research. Students will also be required to situate their own research within the broader context of today’s epistemologies.

THE5130 DRAMATURGY (3cr.)
The dramatic text as a point of departure for a theatrical performance. The art of dramaturgy considered as the analysis of the poetics of dramatic text as well as the study of its structural specificities and norms. Major elements of, and theories related to, new play development, both in a historical perspective as well as a conceptual one. Acquisition of the skills necessary for pursuing a career as a Dramaturge or a Literary Adviser in a professional theatre.

THE5140 THEORY OF PERFORMANCE (3cr.)
Examination of a range of performance forms that define contemporary practice including performance art, fine art, film, site-specific theatre and cyber-spectacle. Exercises in academic and professional writing for the theatre. Major elements of performance studied both in historical and conceptual perspectives.

THE5510 MÉTHODOLOGIE (3cr.)
Formation avancée en recherche et en rédaction pertinente pour les études universitaires dans le champ des études théâtrales – recherche en archives, collecte de données pertinentes, formes de recherche empirique, recherche théorique, etc. – exercices pratiques devant mener les étudiants à rédiger avec succès des articles savants, des communications et une thèse de maîtrise.

THE5520 ÉPISTÉMOLOGIE DES ÉTUDES THÉÂTRALES (3cr.)
Étude des théories philosophiques et sociologiques issues de plusieurs disciplines – depuis la littérature jusqu’aux sciences politiques – telles qu’appliquées dans le champ des études théâtrales, de même que des théories issues du domaine des études théâtrales lui-même. Survol des écrits théoriques disponibles pour les chercheurs contemporains et développement d’un cadre théorique approprié aux recherches particulières des étudiants. Les étudiants seront aussi tenus de situer leurs propres recherches dans le contexte plus large des approches théoriques actuelles.

THE5530 DRAMATURGIE (3cr.)
La dramaturgie conçue en tant que point de départ de la représentation théâtrale. L’étude de l’art de la dramaturgie entendu comme l’analyse de
la poétique du texte dramatique et de ses structures et normes spécifiques. L’étude des éléments importants du développement dramaturgique, et des théories qui s’y rattachent, dans une perspective à la fois historique et théorique. L’acquisition des compétences nécessaires pour la poursuite d’une carrière de dramaturge et de conseiller littéraire au sein d’une compagnie théâtrale professionnelle.

THEG540 ANALYSE DE LA REPRÉSENTATION (3cr.)
Étude des diverses formes de spectacles qui définissent les pratiques contemporaines telles que la performance, les beaux-arts, le théâtre hors des lieux de diffusion habituelle et le cyber-spectacle. Exercices de rédaction en vue de la production de travaux universitaires et professionnels. Étude des principaux éléments de l’événement théâtral dans une perspective historique et théorique.

THEG901 PRODUCTION I / PRODUCTION I (3cr.)
Encadré par un professeur ou un metteur en scène professionnel, chaque étudiant effectue une série d’exercices sur la mise en scène et travaille des scènes posant un problème spécifique de mise en scène afin de développer ses habiletés pratiques ainsi que ses capacités d’analyse. / Students, under the supervision of faculty members, or a professional director, undertake a series of directing exercises and problem scenes designed to develop specific practical and analytical skills.

THEG902 PRODUCTION II / PRODUCTION II (3cr.)
Encadré par un professeur ou un metteur en scène professionnel, chaque étudiant étudie et dirige une pièce en un acte ou une longue scène tirée d’une pièce. / Students research and direct a one-act play or an extended scene from a full-length play under the guidance of a professor or professional director.

THEG903 PRODUCTION III / PRODUCTION III (3cr.)
Encadré par un professeur ou un metteur en scène professionnel, chaque étudiant étudie et dirige une pièce en un acte ou une longue scène tirée d’une pièce. / Students research and direct a one-act play or an act from a full-length play with the guidance of a professor or professional director.

THE5931 SÉMINAIRE I / GRADUATE DIRECTING SEMINAR I (3cr.)
Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se présentent aux étudiants dans le cadre de leur production. / Seminar focussing on a selected aspect of the directorial process and providing a forum for the discussion of problems and issues encountered in production work. Topics will vary from session to session and will be chosen from among the following: the French and English traditions of directing; from text to stage; theatrical collaboration; approaches to directing; theatrical conventions; theatre and the other arts; and the theatre and its audiences. A description of the specific seminar topic is available several months in advance from the Department.

THE5932 SÉMINAIRE II / GRADUATE DIRECTING SEMINAR II (3cr.)
Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se présentent aux étudiants dans le cadre de leur production. / Seminar focussing on a selected aspect of the directorial process and providing a forum for the discussion of problems and issues encountered in production work. For a list of topics, please refer to THE 5931 Graduate Directing Seminar I.

THE5933 SÉMINAIRE III / GRADUATE DIRECTING SEMINAR III (3cr.)
Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se présentent aux étudiants dans le cadre de leur production. / Seminar focussing on a selected aspect of the directorial process and providing a forum for the discussion of problems and issues encountered in production work. For a list of topics, please refer to THE 5931 Graduate Directing Seminar I.

THE5934 SÉMINAIRE IV / GRADUATE DIRECTING SEMINAR IV (3cr.)
Séminaire portant sur un aspect spécifique du processus de mise en scène et permettant des échanges fructueux relatifs aux problèmes qui se présentent aux étudiants dans le cadre de leur production. / Seminar focussing on a selected aspect of the directorial process and providing a forum for the discussion of problems and issues encountered in production work. For a list of topics, please refer to THE 5931 Graduate Directing Seminar I.

THEG952 ANALYSE FORMELLE DE LA PRÉ-PRODUCTION / FORMAL PRE-PRODUCTION ANALYSIS (3cr.)
Les étudiants doivent préparer une analyse détaillée de la pièce retenue pour leur production finale comprenant une analyse historique et dramatique, une étude de la place qu’elle tient dans l’œuvre de l’auteur, une proposition détaillée de la mise en scène, en plus d’une bibliographie critique des travaux qui se rapportent à la pièce et à la production. / Students prepare a substantial analysis of the play chosen for their final production, including a historical and dramatic analysis, a study of the play’s place within the author’s oeuvre, a production history and a detailed production concept, as well as a critical bibliography of works pertaining to the play and to the production.

THE6001 PRODUCTION FINALE / FINAL PRODUCTION (6cr.)
L’étudiant dirige une pièce. Après la production finale, l’étudiant présente une analyse de la préparation, des répétitions, de la représentation et de la réception de son spectacle. / Students direct a full-length play. After the production they will submit a post-production analysis of the preparation, rehearsal, performance and reception of the play.

THE6991 STAGE / DIRECTING PRACTICUM (3cr.)
Chaque étudiant fait un stage à titre d’observateur auprès d’un metteur en scène aguerri dirigeant une production professionnelle. À la fin du stage, l’étudiant présente un rapport détaillé et une analyse du processus de mise en scène auquel il a participé. Noté: S/NS / Students observe a senior director mount a professional production. At the conclusion of the production, the student will submit a detailed record and analysis of the directorial process in which they have participated. Graded: S/NS

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The elective course must be approved by the director of the program and must normally be either at the graduate or at the fourth-year undergraduate level.

Admission to the graduate program in Theatre is governed by the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS). The requirements of the MA in theatre program are as follows:

1. Master of Arts in Theology;
2. PhD in Theology;
3. Master of Pastoral Theology;
4. Doctor of Ministry;
5. Master in Religious Education.

**Admission Requirements**

1. To be admitted to the master's program the candidate must hold a specialized baccalaureate (60 credits in theology) or its equivalent, with a minimum 70 per cent (B) average;
2. Each candidate registers in a concentration. To be admitted to a particular concentration the candidate must demonstrate a certain level of knowledge in the concentration chosen;
3. To be admitted to the MA program the candidate must master either English or French and possess a passive knowledge (ability to follow lectures and to read) of the other language.
4. A candidate who registers in the biblical studies concentration must have a basic knowledge (Level 1 - Introduction) of Hebrew and of Greek.
Degree

MA(Th) is a civil degree conferred jointly by the University of Ottawa and Saint Paul University.

Master of Pastoral Theology

Objectives

The master of pastoral theology (MPT) offers theological knowledge and professional pastoral education to students planning to engage in ministry after an undergraduate degree in theology. Its scope is to prepare the "general practitioner" for ministry.

The MPT is a professional program. It consists of 30 credits of university-level courses.

The degree is conferred jointly by Saint Paul University and the University of Ottawa.

Admission requirements

1. The candidate must hold a specialized baccalaureate in theology (BTh) or an honours baccalaureate with 60 credits of theology, with a minimum 70 per cent average (B).

2. The candidate must supply three letters of reference, using forms supplied by the University. One of the letters must be written by a person from an academic milieu. An interview is normally required.

Program Requirements

Master's Degree Requirements

Master of Arts with Major Research Paper

The MA(Th) degree consists of 30 credits.

A) All concentrations with the exception of Eastern Christian Studies

1. Eight courses as follows:

   Four Foundation courses:

   THO6310 THEOLOGICAL HERMENEUTICS (3cr.)
   THO6318 THE INTERPRETATION OF BIBLICAL TEXTS (3cr.)
   THO6333 METHODS AND APPROACHES IN CONTEMPORARY ETHICS (3cr.)
   THO6358 SPIRITUALITY: METHODS; RELATIONSHIPS WITH THE HUMAN SCIENCES (3cr.)

   - One methodology course (THO 6399 Methodologies in Theology, 3 cr.) related to the research paper

   - Three courses in the concentration (9 credits).

2. THO 6998 Mémoire / Research Paper (6 cr.)

B) Eastern Christian Studies

1. Two foundation courses (6 credits) from:

   THO6375 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN CHURCH HISTORY (3cr.)
   THO6376 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN SPIRITUALITY (3cr.)
   THO6377 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN LITURGICAL HISTORY (3cr.)
   THO6382 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN THEOLOGY (3cr.)
   THO6388 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN LITURGICAL THEOLOGY (3cr.)
   THO6397 FOUNDATIONAL TEXTS IN EAST-WEST ECUMENISM (3cr.)

2. One methodology course (THO 6378 Resources and Methods for the Study of Eastern Christianity, 3 cr.) related to the research paper.

3. Three other courses (9 credits) from the following:

   THO6352 STUDIES IN EASTERN CHRISTIANITY (3cr.)
   THO6379 ISSUES IN EASTERN CHRISTIAN HERMENEUTICS & EXEGESIS (3cr.)
   THO6380 PATRISTIC THEOLOGY (3cr.)
   THO6381 CONTEMPORARY EASTERN THEOLOGY (3cr.)
   THO6382 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN THEOLOGY (3cr.)
Master of Pastoral Theology

The MPTh is a 30-credit program composed of the following elements:

1. Six academic courses: 18 credits
   - a. three foundational courses (9 credits):
     - TH05301 PASTORAL THEOLOGY (3cr.)
     - IPA5321 PASTORAL MINISTRY AND PSYCHOLOGY (3cr.)
     - IPA5322 PASTORAL MINISTRY AND SOCIOLOGY (3cr.)
   - b. two courses (6 credits) chosen from among:
     - TH05302 CATECHETICAL PASTORAL THEOLOGY (3cr.)
     - TH05303 LITURGICAL PASTORAL THEOLOGY (3cr.)
     - DCA5310 CHURCH LAW AND PASTORAL MINISTRY (3cr.)
     - TH05304 CHRISTIAN COMMUNITY IN ITS SOCIAL DIMENSION (3cr.)
     - TH05305 CHRISTIAN COMMUNITY AND ITS DEVELOPMENT (3cr.)
   - c. one elective (3 credits) to be chosen from:
     - i) the previous list
     - ii) THO 5307 Studies in Pastoral Practice I. (3 cr.) THO 5308 Studies in Pastoral Practice II. (3 cr.)
     - iii) any other course which, in the judgment of the faculty, fulfills the objectives of the program.

   Students may propose any course which they consider relevant to their particular future ministry. Given the present context of the Church, the following areas are particularly suggested: spiritual direction, basic counselling skills, ecumenical ministry, mission and new evangelization.

2. Two practicums: 12 credits
   - IPA5481 PROFESSIONAL MINISTRY PRACTICUM I (6cr.)
   - IPA5482 PROFESSIONAL MINISTRY PRACTICUM II (6cr.)

Duration of the program

Students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

Courses

Cours de base / Foundation Courses

TH06310 THEOLOGICAL HERMENEUTICS (3cr.)
Principles and history of interpretation in theology. Recent developments and debates. The role of classic texts and the question of historical consciousness.

TH06318 THE INTERPRETATION OF BIBLICAL TEXTS (3cr.)
Principles and methods of interpretation. History of interpretation: the Church Fathers, Middle Ages, the Reformation, 19th and 20th centuries.

TH06333 METHODS AND APPROACHES IN CONTEMPORARY ETHICS (3cr.)
Hermeneutical questions and methodological foundations of contemporary ethical reflection analysed from a theological perspective.

TH06355 SPIRITUALITY: METHODS; RELATIONSHIPS WITH THE HUMAN SCIENCES (3cr.)
Analysis of the methods used in the theological study of spirituality. Spirituality in relation to the human sciences.
THO6375 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN CHURCH HISTORY (3cr.)
In-depth reading, analysis and evaluation of key historical source material from the fourth century to the present.

THO6376 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN SPIRITUALITY (3cr.)
In-depth reading, analysis and evaluation of basic spiritual classics of Eastern Christianity from the fourth century to the present.

THO6377 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN LITURGICAL HISTORY (3cr.)
In-depth reading, analysis and evaluation of basic sources that illustrate the evolution of Eastern Christian worship from the fourth century to the present.

THO6382 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN THEOLOGY (3cr.)
In-depth reading, analysis and evaluation of basic texts that have helped shape Eastern Christian theology from the third century to the present.

THO6388 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN LITURGICAL THEOLOGY (3cr.)
In-depth reading, analysis and evaluation of basic texts from the fourth century to the present.

THO6397 FOUNDATIONAL TEXTS IN EAST-WEST ECUMENISM (3cr.)
In-depth reading, analysis and evaluation of key documents that have shaped East-West rapprochement from 1902 to the present.

THO6710 HERMÉNEUTIQUE THÉOLOGIQUE (3cr.)

THO6718 INTERPRÉTATION DU TEXTE BIBLIQUE (3cr.)

THO6733 APPROCHES ET MÉTHODES EN ÉTHIQUE CONTEMPORAINE (3cr.)
Questions herméneutiques et méthodologiques fondamentales de la réflexion éthique contemporaine analysées dans une perspective théologique.

THO6758 SPIRITUALITÉ : SES MÉTHODES, SES RAPPORTS AVEC LES SCIENCES HUMAINES (3cr.)
Analyse des méthodes utilisées dans l'étude théologique de la spiritualité. La spiritualité dans ses rapports avec les sciences humaines.

THO6775 TEXTES FONDAMENTAUX EN HISTOIRE DE L'ÉGLISE DU CHRISTIANISME ORIENTAL (3cr.)
Lecture approfondie, analyse et évaluation des sources historique importantes, à partir du quatrième siècle jusqu'à nos jours.

THO6776 TEXTES FONDAMENTAUX EN SPIRITUALITÉ DU CHRISTIANISME ORIENTAL (3cr.)
Lecture approfondie, analyse et évaluation de textes spirituels classiques du christianisme oriental, à partir du quatrième siècle jusqu'à nos jours.

THO6777 TEXTES FONDAMENTAUX EN HISTOIRE LITURGIQUE DU CHRISTIANISME ORIENTAL (3cr.)
Lecture approfondie, analyse et évaluation des sources principales illustrant l'évolution du culte dans le christianisme oriental, à partir du quatrième siècle jusqu'à nos jours.

THO6782 TEXTES FONDAMENTAUX EN THÉOLOGIE DU CHRISTIANISME ORIENTAL (3cr.)
Lecture approfondie, analyse et évaluation des textes fondamentaux qui ont permis l'élaboration de la théologie du christianisme oriental, à partir du quatrième siècle jusqu'à nos jours.

THO6788 TEXTES FONDAMENTAUX DE THÉOLOGIE LITURGIQUE DU CHRISTIANISME ORIENTAL (3cr.)
Lecture approfondie, analyse et évaluation de textes fondamentaux, à partir du quatrième siècle jusqu'à nos jours.

THO6797 TEXTES FONDAMENTAUX DE L'OEUCMÉNISME ORIENT-OCIDENT (3cr.)
Lecture approfondie, analyse et évaluation des documents importants qui ont permis le rapprochement de l'Est et de l'Ouest depuis 1902 jusqu'à nos jours.

Cours de Méthodologie / Methodology Courses

THO6378 RESOURCES AND METHODS FOR THE STUDY OF EASTERN CHRISTIANITY (3cr.)
An examination of various research tools related to Eastern Christianity and religion in general. An overview of key methods in Eastern Christian exegesis, theology, liturgy, spirituality and Church history and their interface with modern and classical Western approaches.

THO6399 METHODOLOGIES IN THEOLOGY (3cr.)
A study of methodologies found in different theological fields. Introduction to the diverse resources available for theological research. Preparation of a master's research paper.

THO6778 RESSOURCES ET MÉTHODES POUR L'ÉTUDE DU CHRISTIANISME ORIENTAL (3cr.)
Examen des divers outils de recherche reliés au christianisme oriental et à la religion en général. Survol des principales méthodes utilisées dans le christianisme
oriental pour l'exégèse, la théologie, la liturgie, la spiritualité et l'histoire de l'Église, et leur rapport avec les approches classiques et modernes de l'Occident.

**THO6799 MÉTHODOLOGIES EN THÉOLOGIE** (3cr.)

**Études bibliques / Biblical Studies**

**THO6165 BIBLICAL STUDIES I** (3cr.)

**THO6166 BIBLICAL STUDIES II** (3cr.)

**THO6317 THE FORMATION OF THE BIBLICAL TEXT** (3cr.)

**THO6319 BIBLICAL TEXTS: AUTHOR(S) I** (3cr.)
Historical critical methods. Literary and textual criticism. History of forms and redaction history. Life setting (Sitz im Leben). From text to history. Application.

**THO6320 BIBLICAL TEXTS: AUTHOR(S) II** (3cr.)
Historical critical methods. Literary and textual criticism. History of forms and redaction history. Life setting (Sitz im Leben). From text to history. Application.

**THO6321 RHETORICAL ANALYSIS** (3cr.)

**THO6322 SEMIOTIC APPROACHES** (3cr.)

**THO6323 NARRATIVE OR POETIC APPROACHES** (3cr.)

**THO6324 CONTEMPORARY READINGS AND INTERPRETATIONS I** (3cr.)
A study of seminal works in biblical theology. Application to scriptural texts or passages (e.g., psychological, sociological, or feminist readings, liberation theology, etc.)

**THO6325 CONTEMPORARY READINGS AND INTERPRETATIONS II** (3cr.)
A study of seminal works in biblical theology. Application to scriptural texts or passages (e.g., psychological, sociological, or feminist readings, liberation theology, etc.)

**THO6326 HISTORY OF ISRAEL** (3cr.)
A study of the major periods of the history of Israel from its origins to 70 A.D.

**THO6327 ARCHAEOLOGY OF THE HOLY LAND** (3cr.)
Archaeology of the Near East in relation to the Bible.

**THO6328 JUDAISM: GRECO-ROMAN PERIOD** (3cr.)
Apocalyptic literature, Qumran, Alexandrian Judaism.

**THO6329 HISTORY OF THE CHRISTIAN COMMUNITY: 1ST CENTURY** (3cr.)
Historical and cultural background to the New Testament literature.

**THO6330 BIBLICAL HEBREW: READING OF BIBLICAL TEXTS** (3cr.)
A study of biblical Hebrew based on a reading of selected texts. *Prerequisite: THO 2193.*

**THO6331 BIBLICAL GREEK: READING OF BIBLICAL TEXTS** (3cr.)
A study of biblical Greek based on a reading of selected texts. *Prerequisite: THO 2194.*

**THO6332 BIBLE AND COMPUTER-ASSISTED RESEARCH** (3cr.)
Use of computers in the study of Scripture and related texts (e.g., machine-readable texts, text retrieval and analysis, communication).

**THO6565 ÉTUDES BIBLIQUES I** (3cr.)

**THO6566 ÉTUDES BIBLIQUES II** (3cr.)
THO6717 FORMATION DU TEXTE BIBLIQUE (3cr.)

THO6719 TEXTES BIBLIQUES: AUTEUR(S) I (3cr.)

THO6720 TEXTES BIBLIQUES: AUTEUR(S) II (3cr.)

THO6721 ANALYSE ET RHÉTORIQUE (3cr.)

THO6722 APPROCHES SÉMIOTIQUES (3cr.)

THO6723 APPROCHES NARRATIVES OU POÉTIQUES (3cr.)

THO6724 LECTURES ET INTERPRÉTATIONS CONTEMPORAINES I (3cr.)
Une étude d'ouvrages-pionniers en théologie biblique; application à des livres ou à des passages bibliques (e.g. lectures psychologiques, sociologiques, féministes, théologie de la libération, etc.).

THO6725 LECTURES ET INTERPRÉTATIONS CONTEMPORAINES II (3cr.)
Une étude d'ouvrages-pionniers en théologie biblique; application à des livres ou à des passages (e.g. lectures psychologiques, sociologiques, féministes, théologie de la libération, etc.).

THO6726 HISTOIRE D'ISRAËL (3cr.)
Étude des principales périodes de l'histoire d'Israël, des origines à l'année 70 de l'ère présente.

THO6727 ARCHÉOLOGIE DE LA TERRE SAINTE (3cr.)
Archéologie du Proche-Orient en relation avec la Bible.

THO6728 JUDAÏSME: PÉRIODE GRÉCO-ROMAINE (3cr.)
Littérature apocalyptique, Qumrân, judaïsme alexandrin.

THO6729 HISTOIRE DE LA COMMUNAUTÉ CHRÉTIENNE: 1ER SIÈCLE (3cr.)
Milieu socio-culturel et historique de la littérature néotestamentaire.

THO6730 HÉBREU BIBLIQUE: LECTURE DE TEXTES BIBLIQUES (3cr.)
Hébreu biblique à partir de textes choisis. Préalable : THO 2593.

THO6731 GREC BIBLIQUE: LECTURE DE TEXTES BIBLIQUES (3cr.)
Grec biblique à partir de textes choisis. Préalable : THO 2594.

THO6732 BIBLE ET INFORMATIQUE (3cr.)
Rôle de l'informatique dans l'étude de la Bible et textes apparentés (ex. traitement informatique des textes, système de recherche et d'analyse documentaire, système de communication informatisé).

Éthique / Ethics

THO6145 STUDIES IN MORAL THEOLOGY (3cr.)

THO6334 ISSUES AND DEBATES IN CONTEMPORARY ETHICS (3cr.)
Analyses, from a theological perspective, of major issues and debates characterizing ethical research in its present context.

THO6335 ETHICS AND BIBLICAL HERMENEUTICS (3cr.)
The reciprocal contributions of contemporary ethics to biblical hermeneutics and/or of contemporary biblical hermeneutics to contemporary ethics. Illustration and discussion.

THO6336 ETHICAL THEMES IN SCRIPTURE (3cr.)
Ethical language and perspectives in the Bible and their relation to contemporary ethics.

**THO6337 ETHICS AND HISTORY (3cr.)**
Nature of historical considerations in ethical reflection. Illustration and discussion.

**THO6338 HISTORY OF ETHICAL THOUGHT (3cr.)**
The study of the methods and perspectives belonging to ethical reflection in a period or school of thought (e.g., patristic period, Thomist school).

**THO6339 HISTORY OF AN ETHICAL QUESTION (3cr.)**
The origin and historical development of an ethical question (e.g., contraception, bioethics).

**THO6340 SEXUAL ETHICS (3cr.)**
Theoretical studies (e.g., ethical criteriology, contribution of sexology, theoretical model, relationship to faith experience) and applications (e.g., sexual education, homosexuality, pleasure, adolescent sexuality) in ethics and sexuality.

**THO6341 POLITICAL ETHICS (3cr.)**
Theories and issues in ethics and political society from a theological perspective. Discussions include topics in political theology, liberation theology, and social and political justice.

**THO6342 ETHICS AND HEALTH SCIENCES (3cr.)**
Examination of a problem in bioethics (e.g., human experimentation, medical genetics, allocation of limited resources). The study of a question in clinical ethics (e.g., informed consent, cessation of treatment, professional responsibility). Methodological and theological problems posed by this kind of applied ethics.

**THO6343 SOCIAL ETHICS (3cr.)**
Theoretical and issue-related studies in ethics and society from a theological perspective. Social ethics as a mediating role between the social sciences and social policy.

**THO6344 ECONOMIC ETHICS (3cr.)**
Ethical issues arising, from a theological perspective, in the theory and practice of economics, in the routines of economic living, and in the efforts responsibly to direct the course of economic society.

**THO6345 ETHICS AND SPIRITUALITY (3cr.)**
The study of particular schools of spirituality with a view toward identifying and evaluating ethical questions raised by these schools. Study of the role of spirituality in ethics.

**THO6346 ETHICS OF SPEECH (3cr.)**
A theoretical (e.g., relation between ethics and linguistics, humanizing purposes of speech, theoretical models) and applied study (e.g., truthfulness and lying, reputation and defamation, promise and fidelity) of the ethics of speech analyzed from a theological perspective. The study may be directly tied to a special field of speech (e.g., the media, care-giving professions, business, politics, courts).

**THO6545 ÉTUDES EN THÉOLOGIE MORALE (3cr.)**

**THO6734 PROBLÈMES ET DÉBATS EN ÉTHIQUE CONTEMPORAINE (3cr.)**
Analyse, dans une perspective théologique, des problèmes et débats majeurs qui caractérisent la recherche éthique dans son contexte contemporain.

**THO6735 ÉTHIQUE ET HERMÉNEUTIQUE BIBLIQUE (3cr.)**
Contributions réciproques de l'éthique contemporaine à l'herméneutique biblique et/ou de l'herméneutique biblique contemporaine à l'éthique. Illustration et discussion.

**THO6736 THÈMES ÉTHIQUES DANS L'ÉCRITURE (3cr.)**
Discours éthiques dans l'Écriture et leurs rapports à l'éthique contemporaine.

**THO6737 ÉTHIQUE ET HISTOIRE (3cr.)**
Nature de la considération historique dans la réflexion éthique. Illustration et discussion.

**THO6738 HISTOIRE DE LA PENSEÉ ÉTHIQUE (3cr.)**
Étude des conceptions et méthodes éthiques d'une période ou d'une école (e.g. la période patristique, l'école thomiste).

**THO6739 HISTOIRE D'UNE QUESTION ÉTHIQUE (3cr.)**
Origine et développement historique d'une question éthique (e.g. la contraception, la bioéthique).

**THO6740 ÉTHIQUE SEXUELLE (3cr.)**
Études théoriques (e.g. criteriology éthique, apport de la sexologie, modèles théoriques, rapport à l'expérience de foi) et appliquées (e.g. éducation sexuelle, homosexualité, plaisir, sexualité adolescente) en éthique et sexualité.
THO641 ÉTHIQUE POLITIQUE (3cr.)
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Étude d'un thème particulier, d'un auteur ou d'un courant en théologie orientale contemporaine, ex. théologie philosophique moderne (par exemple la sophiologie), et en particulier les écoles de théologie systématicque ou de théologie morale grecques, russes, ukrainiennes, méchites et romanes.

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Supervised ministry in a local church or other ministerial setting. Emphasis on the receptive skills and attitudes of the pastoral minister. Theological, sociological, and psychological theories are introduced which will enable the pastoral agent to observe, analyze, and integrate events within the religious community. Cognitive, behavioural, motivational, and emotional components are related to people's individual, social, and interpersonal life. Professional ethical issues are addressed. Codes of ethics in allied professions are used when appropriate. Supervision occurs in small groups under the guidance of a supervisor from the Saint Paul University.

IPA5482 PROFESSIONAL MINISTRY PRACTICUM II (6cr.)
In collaboration with a supervisor the student actively addresses a segment of his ministry drawn from Practicum I (e.g., relationships, or the community, or individuals). Action plans are formulated and carried out. Implications for religious structure, liturgy, homiletics, sacraments are developed and implemented. Emphasis is placed on critical, informed involvement, resource and time management in the exercise of collegial and co-responsible lay and ordained leadership in preaching, liturgical presiding, and community facilitation. Supervision occurs in small groups under the guidance of a supervisor from the Saint Paul University. *Prerequisite: IPA 5481.*

IPA5881 FORMATION PROFESSIONNELLE AU MINISTÈRE: STAGE I (6cr.)
Ministère supervisé dans une église locale ou un autre contexte ministériel. Importance attachée aux capacités d'écoute et aux attitudes de l'agent pastoral. Présentation de théories théologiques, sociologiques et psychologiques qui amèneront l'agent pastoral à observer, analyser et intégrer les événements dans la vie religieuse de la communauté. La connaissance, le comportement, la motivation et les émotions en tant que composantes liées à la vie privée, sociale et interpersonnelle de la personne. Problèmes d'éthique professionnelle. Utilisation des codes d'éthique des professions connexes selon les cas. Supervision en petits groupes sous la direction d'un superviseur de l'Université Saint-Paul.

IPA5882 FORMATION PROFESSIONNELLE AU MINISTÈRE: STAGE II (6cr.)
En collaboration avec un superviseur, l'étudiant évalue une partie du ministère exercé au cours du Practicum I (c.-à-d., les relations, la communauté ou l'individu). Formulation et mise en œuvre de plans d'action. Incidences sur les structures religieuses, la liturgie, l'homélie et les sacrements. Accent mis sur la participation critique et compétente, la gestion du temps et des ressources dans l'exercice collégial et co-responsable du ministère, laïque ou ordonné, de la prédication, de la présidence des célébrations liturgiques et de l'animation communautaire. Supervision en petits groupes sous la direction d'un superviseur de l'Université Saint-Paul. **Préalable : IPA 5881.**

La supervision du programme se fait par rétroaction des autres étudiants, de comptes rendus, échantillonnage de travaux, enregistrements sonores, échanges et autres rapports.

Eighteen hours (including a minimum of ten hours on site) of preparation and work each week, over one semester. Program supervision takes place by way of feedback from other students, debriefing, work samples, tape recordings and verbatim or other reports.

Translation - Conference Interpreting (MCI)

This is a professionally-oriented graduate program intended for graduates who wish to specialize in conference interpreting, which is a branch of the translation profession requiring intensive training. The program is intended primarily for full-time students.

Languages

The aim of the program is to train interpreters primarily for the Canadian market. All courses, therefore, may be conducted in either English or French. All students are expected to interpret both from English into French and from French into English, though it is recognized that they may not achieve equal proficiency in both directions. Other languages may be used in addition if the number of students speaking those languages warrants it.
Admission

Admission Requirements

1. a) An honours BA in Translation; or

b) a degree in any other subject plus a qualifying program; or

c) a university certificate or diploma in translation, and relevant experience; or

d) an accreditation certificate of a professional association of translators or interpreters recognized by the Canadian Translators and Interpreters Council, the International Federation of Translators or the International Association of Conference Interpreters, in addition to relevant experience; or

e) classification as TR2 or above in the Public Service of Canada, or equivalent classification in another jurisdiction or in private enterprise.

2. Successful completion of the STI's entrance examination.

Qualifying Program

Candidates without a BA in Translation or without recognized experience in translation will be required to take an entrance examination for admission to a qualifying year to assess their aptitude for translation and interpretation (see STI for details). After the qualifying year, candidates will be required to submit a new application for admission to the interpretation program and to take another entrance examination (see STI for details). These conditions also apply to candidates whose dominant language is neither English nor French.

Admission Procedure

In addition to completing our on-line application and paying the application fee to the Ontario Universities' Application Centre, students must also assemble all relevant documentation and forward the complete application package to the director of the School of Translation and Interpretation. Applications will not be processed without the application fee and complete file.

To find the application deadline, please check the "program-specific requirements" under Application Procedures and Information at the following address: www.grad.uottawa.ca/apply.

Entrance Examination

Applicants will be required to complete an entrance examination which will test their linguistic skills, aptitude for interpretation and general knowledge.

The offer of admission is valid for one year. If applicants have not registered in the program by the end of this period, they will have to sit the entrance examination again.

Program Requirements

Master's Degree Requirements

Period of Study

The program can be completed in one year and is therefore intended primarily for full-time students. Students admitted full-time are subject to a residence requirement of three sessions. Nevertheless, it is possible to take the program part-time.

Requirements (33 credits)

1. Six compulsory courses of 3 credits (TRA 5951, TRA 5952, TRA 5921, TRA 6950, TRA 6951, TRA 6952) - 18 credits
2. Four workshop laboratories of 3 credits (TRA 5970, TRA 5971, TRA 6970 and TRA 6971) - 12 credits
3. TRA6910
   (Those who do not meet the prerequisites of the practicum may be required to take one or two additional practical training courses.)
4. TRA6998

TRA6910 STAGE/PRACTICUM (3cr.)
A minimum of 10 full working days (or equivalent time) as an interpreter at actual meetings approved by the practicum supervisor, with an attestation of satisfactory performance at each meeting.

Arrangements for meetings are made by the STI except in cases where students cannot perform at a near-professional level or refuse interpretation days offered.
to them. Prerequisite: a minimum grade of "B" in all simultaneous interpreting courses and workshops, or permission of the STI.

TRA6998 EXAMEN FINAL / FINAL EXAMINATION
Examinations are conducted by a board of external examiners appointed by the STI. Students are tested in simultaneous and consecutive interpretation and sight interpretation.

Students must sit the final examination during the examination session that immediately follows the end of their practicum. The examination is only held once a year. Admission to the examination is conditional on having passed all courses and the practicum. Students who fail at the first attempt must take the supplemental examination at the following examination session. Students who fail at the second attempt must withdraw from the program.

Courses

On pourra obtenir plus de renseignements concernant le contenu des cours en s'adressant au secrétariat de l'École de traduction et d'interprétation.

The School of Translation and Interpretation will be happy to send prospective students full course descriptions.

TRA5904 FORMATION PRATIQUE EN INTERPRÉTATION I / INTERPRETATION PRACTICE I

TRA5908 FORMATION PRATIQUE EN INTERPRÉTATION II / INTERPRETATION PRACTICE II

TRA5911 INTERPRÉTATION JUDICIAIRE ET QUASI-JUDICIAIRE / COURT AND COMMUNITY INTERPRETING (3cr.)

TRA5921 DOCUMENTATION DE CONFÉRENCE I / CONFERENCE DOCUMENTATION I (3cr.)

TRA5950 TECHNIQUES DE TRAITEMENT DE L'INFORMATION PAR L'INTERPRÈTE / INFORMATION PROCESSING SKILLS FOR INTERPRETERS (3cr.)

TRA5951 INTERPRÉTATION CONSÉCUTIVE DE L'ANGLAIS VERS LE FRANÇAIS / CONSECUTIVE INTERPRETATION FROM ENGLISH TO FRENCH (3cr.)

TRA5952 INTERPRÉTATION CONSÉCUTIVE DU FRANÇAIS VERS L'ANGLAIS / CONSECUTIVE INTERPRETATION FROM FRENCH TO ENGLISH (3cr.)

TRA5970 ATELIER D'INTERPRÉTATION CONSÉCUTIVE DE L'ANGLAIS VERS LE FRANÇAIS / CONSECUTIVE INTERPRETATION WORKSHOP FROM ENGLISH TO FRENCH (3cr.)

TRA5971 ATELIER D'INTERPRÉTATION CONSÉCUTIVE DU FRANÇAIS VERS L'ANGLAIS / CONSECUTIVE INTERPRETATION WORKSHOP FROM FRENCH TO ENGLISH (3cr.)

TRA6907 THÉORIE DE L'INTERPRÉTATION / THEORY OF INTERPRETATION (3cr.)

TRA6910 STAGE/PRACTICUM (3cr.)

TRA6950 INTERPRÉTATION SIMULTANÉE DE L'ANGLAIS VERS LE FRANÇAIS / SIMULTANEOUS INTERPRETATION FROM ENGLISH TO FRENCH (3cr.)
Préalables: TRA 5951, TRA 5970 ou permission de l'ÉTL. Prerequisites: TRA 5951, TRA 5970 or permission of the STI.

TRA6951 INTERPRÉTATION SIMULTANÉE DU FRANÇAIS VERS L'ANGLAIS / SIMULTANEOUS INTERPRETATION FROM FRENCH TO ENGLISH (3cr.)
Préalables : TRA 5952, TRA 5971 ou permission de l'ÉTL. Prerequisites: TRA 5952, TRA 5971 or permission of the STI.

TRA6952 DOCUMENTATION DE CONFÉRENCE II / CONFERENCE DOCUMENTATION II (3cr.)

TRA6970 ATELIER D'INTERPRÉTATION SIMULTANÉE DE L'ANGLAIS VERS LE FRANÇAIS / SIMULTANEOUS INTERPRETATION WORKSHOP FROM ENGLISH TO FRENCH (3cr.)
Préalables : TRA 5951, TRA 5970 ou permission de l'ÉTL. Prerequisites: TRA 5951, TRA 5970 or permission of the STI.

TRA6971 ATELIER D'INTERPRÉTATION SIMULTANÉE DU FRANÇAIS VERS L'ANGLAIS / SIMULTANEOUS INTERPRETATION WORKSHOP FROM FRENCH TO ENGLISH (3cr.)
Préalables : TRA 5952, TRA 5971 ou permission de l'ÉTL. Prerequisites: TRA 5952, TRA 5971 or permission of the STI.
Translation - Legal Translation

The objective of this professionally-oriented program is to train legal translators or revisers, primarily to meet the needs of Canada, where two legal systems (common law and civil law) operate. It is intended for law graduates who wish to specialize in legal translation and revision from English to French. Graduates of this program will be able to work as legal translators or revisers in government, industry or law firms.

Languages

Given that the demand for legal translators and revisers is primarily for those working from English into French, the program is intended for students whose dominant language is French. Courses in this program will be offered in French.

Admission

Admission Requirements

1. An undergraduate degree in Law, or the equivalent, with a minimum 70 per cent (B) average, calculated in accordance with FGPS guidelines;
2. Successful completion of the School of Translation and Interpretation (STI) entrance examination.

Students whose entrance examination results reveal slight weaknesses in either French or English will be required to register for an additional language course. The results of the examination are valid for one year. Individuals reapplying after that time must retake it.

Students who meet requirements 1 and 2 above and who, in addition, have completed university courses in translation, may be granted equivalencies for some or all of the 15 credits of undergraduate translation courses that are normally required for the master's program. To be eligible, they must achieve an excellent result (above 80%) in the entrance examination.

Admission Procedure

In addition to completing our on-line application and paying the application fee to the Ontario Universities' Application Centre, students must also assemble all relevant documentation and forward the complete application package to the director of the School of Translation and Interpretation. Applications will not be processed without the application fee and the complete file.

To find the application deadline, please check the "program-specific requirements" under Application Procedures and Information at the following address: www.grad.uottawa.ca/apply.

Program Requirements

Master's Degree Requirements

Period of Study

Courses are offered over four sessions and are intended mainly for full-time students, who are subject to a three-session residency requirement. Nevertheless, it is possible to take the program part-time. In all cases, the program must be completed within four years.

Requirements (51 credits)

1. Fifteen Compulsory 3-credit courses (45 credits)
   (TRA 2522, TRA 3524, TRA 3534, TRA 3589, TRA 3155, TRA 5514, TRA 5515, TRA 5524, TRA 5534, TRA 5903, TRA 6515, TRA 6516, TRA 6524, TRA 6534, TRA 6535)

2. TRA 7011

Courses
TRA2522 Traduction générale de l'anglais vers le français (L1) I (3cr.)

TRA3524 Traduction générale de l'anglais vers le français (L1) III (3cr.)
Consolidation des connaissances pratiques acquises dans les cours TRA 2522 et TRA 2524. Exercices de traduction de difficulté supérieure liée au transfert interlinguistique. Traduction de textes pragmatiques généraux.

TRA3534 Traduction spécialisée de l'anglais vers le français (L1) I (3cr.)
Initiation à la traduction de textes économiques, commerciaux, administratifs, publicitaires, etc. Étude du vocabulaire et de la phraséologie. Exercices variés sur certaines difficultés de traduction propres à ce genre de textes.

TRA3589 Techniques d'expression écrite dans l'optique de la traduction et de la rédaction bilingue (3cr.)
Techniques de perfectionnement de l'expression écrite. Rédaction de divers textes professionnels à partir d'une documentation en anglais ou en français et en fonction des besoins des destinataires.

TRA3155 Introduction to Terminology and Terminotites (3cr.)
Terminological research methods. Term and subject-field research. Creation and use of terminological databases. Integration of terminology management tools with other types of computer-aided translation tools.

TRA3555 Initiation à la terminologie et à la terminotique (3cr.)
Méthodes de recherche en terminologie. Recherche ponctuelle et recherche thématique. Création et utilisation de bases de données terminologiques. Intégration des outils de gestion terminologique dans d'autres types d'outils de traduction assistée par ordinateur.

TRA5514 TERMINOLOGIE TRANS-SYSTÉMIQUE ET DOCUMENTATION - BIURIDISME ET BILINGUISME (3cr.)
TRA5515 TRADUCTION LÉGISLATIVE ET RÉGLEMENTAIRE DE L'ANGLAIS VERS LE FRANÇAIS I (3cr.)
TRA5524 TRADUCTION JUDICIAIRE DE L'ANGLAIS VERS LE FRANÇAIS I - COURS FÉDÉRALE (3cr.)
TRA5534 TRADUCTION JURIDIQUE SPÉCIALISÉE DE L'ANGLAIS VERS LE FRANÇAIS I - VALEURS MOBILIÈRES (3cr.)
TRA5903 INFORMATIQUE ET TRADUCTION / COMPUTERS AND TRANSLATION (3cr.)
TRA6515 TRADUCTION LÉGISLATIVE ET RÉGLEMENTAIRE DE L'ANGLAIS VERS LE FRANÇAIS II (3cr.)
TRA6516 TRADUCTION ET RÉVISION JURIDIQUE ET PARAJURIDIQUE DE L'ANGLAIS VERS LE FRANÇAIS (3cr.)
TRA6524 TRADUCTION JUDICIAIRE DE L'ANGLAIS VERS LE FRANÇAIS II - COUR SUPRÈME (3cr.)
TRA6534 TRADUCTION JURIDIQUE SPÉCIALISÉE DE L'ANGLAIS VERS LE FRANÇAIS II - PROSPECTUS (3cr.)
TRA6535 TRADUCTION JURIDIQUE SPÉCIALISÉE DE L'ANGLAIS VERS LE FRANÇAIS III - FUSIONS ET ACQUISITIONS (3cr.)
TRA7011 STAGE /PRACTICUM (6cr.)

Translation Studies (MA)

The master's program in Translation is intended to develop research capability in various fields of translation, as well as to provide advanced training in areas such as terminology, computerized translation or translation teaching. It is desirable that students have practical experience in translation before entering the program.

This program consists of compulsory and optional seminars and courses, followed by a basic or applied research requirement. It may be undertaken full-time or part-time.

Not all seminars and courses are offered every year. Students will be notified at registration of which ones are available during the current year.

Languages

Most seminars are bilingual, that is, they may be conducted in French or English. The student's research may be conducted not only on French and English, but also on a third language, subject to the conditions stipulated under "Additional Requirement".
Admission

Admission Requirements

1. An honours BA in Translation, or an equivalent.

   or

2. Applicants who do not have an honours degree in Translation may in suitable cases be recommended by the STI for admission to a qualifying program. Such applicants are usually honours graduates in another subject field.

N.B. Honours BA implies four years of university studies.

Admission Procedure

Applications for admission are reviewed by the Graduate Studies Committee of the School of Translation and Interpretation, and must also meet the general requirements of the Faculty of Graduate and Postdoctoral Studies of the University. In addition to completing our on-line application and paying the application fee to the Ontario Universities’ Application Centre, students must also assemble all relevant documentation and forward the complete application package to the director of the School of Translation and Interpretation. Applications will not be processed without the application fee and the complete file.

Entrance Examination

The STI may, at its discretion, require applicants to pass an entrance examination. The examination is compulsory for applicants to the qualifying program.

Qualifying Program

Those students whose first degree is not in Translation, and likewise, those who do not already have previous translating experience, or those whose knowledge of either English or French is inadequate, will be required to do a qualifying program of one or two sessions according to their needs, to bring them up to the level expected of graduates with an honours BA in Translation. A minimum average mark of 70 per cent (B) is required for admission to the master's program proper.

Transfer from MA to PhD

In exceptional circumstances, it is possible to transfer from the MA program at the School of Translation and Interpretation (STI) directly into the PhD program under the following conditions:

- Completion of the 3 mandatory MA courses, plus one more MA course, with a grade of A in each course;
- Completion of a 40 page research paper (TRA7998) under the supervision of a professor who is the potential PhD thesis supervisor;
- Written recommendation for transfer from the supervisor of the paper and from the Graduate Studies Committee.

The transfer must take place within sixteen months of initial registration in the master's. Students permitted to transfer will complete a total of 8 courses (24 credits), 6 courses while registered in the master's and 2 while registered in the PhD. Following transfer, the following requirements must be met: 2 courses (6 credits), the comprehensive exam, the thesis proposal and the thesis.

Program Requirements

Master's Degree Requirements

Period of Study

The topic of the thesis or applied research paper must be registered by the end of the second session of studies. All degree requirements must be completed within four years from the date of initial registration (not including any qualifying program).

1. Full-time

   Basic research and applied research options: three sessions in residence, followed by a further period for completion of the research or applied research requirements, during which residence is not required.

2. Part-time

   Basic research and applied research options: four consecutive sessions (excluding the summer sessions) for completion of the seminars, followed by a
Summary of the Program

Basic research option: MA with thesis (coursework 18 credits)

Compulsory Seminars (9 cr.)

TRA5902 THÉORIES DE LA TRADUCTION / THEORIES OF TRANSLATION (3cr.)
TRA5906 LANGUE ET TRADUCTION / LANGUAGE AND TRANSLATION (3cr.)
TRA6902 DISCOURS ET TRADUCTION / DISCOURSE AND TRANSLATION (3cr.)

Optional Seminars and Courses (9 cr.)

Three of the following:

TRA5901 HISTOIRE DE LA TRADUCTION / HISTORY OF TRANSLATION (3cr.)
TRA5903 INFORMATIQUE ET TRADUCTION / COMPUTERS AND TRANSLATION (3cr.)
TRA5905 LEXICOLOGIE, TERMINOLOGIE ET DOCUMENTATION / LEXICOLOGY, TERMINOLOGY AND DOCUMENTATION (3cr.)
TRA5909 PÉDAGOGIE DE LA TRADUCTION / DIDACTICS OF TRANSLATOR TRAINING (3cr.)
TRA5912 TRADUCTION LITTÉRAIRE / LITERARY TRANSLATION (3cr.)
TRA5913 ADAPTATION / ADAPTATION (3cr.)
TRA5916 ATELIER DE TRADUCTION I / TRANSLATION WORKSHOP I (3cr.)

A maximum of one workshop may be taken during the entire program.

TRA5917 ATELIER DE TRADUCTION II / TRANSLATION WORKSHOP II (3cr.)
TRA5918 ATELIER DE TRADUCTION III / TRANSLATION WORKSHOP III (3cr.)
TRA5919 ATELIER DE TRADUCTION IV / TRANSLATION WORKSHOP IV (3cr.)
TRA5920 ÉTUDES DIRIGÉES I / GUIDED RESEARCH I (3cr.)
TRA5921 ÉTUDES DIRIGÉES II / GUIDED RESEARCH II (3cr.)
TRA5941 ADVANCED TRANSLATION FROM SPANISH INTO ENGLISH (3cr.)
TRA5942 TRADUCTION AVANCÉE DE L'ESPAGNOL VERS LE FRANÇAIS (3cr.)
TRA6903 TRADUCTION AUTOMATIQUE / MACHINE TRANSLATION (3cr.)
TRA6905 LEXICOLOGIE, TERMINOLOGIE APPLIQUÉE / APPLIED LEXICOLOGY AND TERMINOLOGY (3cr.)
TRA6906 TRADUCTION TECHNIQUE ET SPÉCIALISÉE / TECHNICAL AND OTHER SPECIALIZED TRANSLATION (3cr.)
TRA6907 THÉORIE DE L'INTERPRÉTATION / THEORY OF INTERPRETATION (3cr.)
TRA6908 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
TRA6911 MéTHODOLOGIE DE LA RECHERCHE TRADUCTOLOGIQUE / RESEARCH METHODS IN TRANSLATION STUDIES (3cr.)
TRA6920 ÉTUDES DIRIGÉES III / GUIDED RESEARCH III (3cr.)
TRA6930 ÉTUDES DIRIGÉES IV / GUIDED RESEARCH IV (3cr.)
TRA6941 ADVANCED TRANSLATION FROM ENGLISH INTO SPANISH (3cr.)
TRA6942 TRADUCTION AVANCÉE DU FRANÇAIS VERS L'ESPAGNOL (3cr.)
TRA6980 SÉMINAIRE DE RECHERCHE I / RESEARCH SEMINAR I (3cr.)
TRA6981 SÉMINAIRE DE RECHERCHE II / RESEARCH SEMINAR II (3cr.)
TRA6982 SÉMINAIRE DE RECHERCHE III / RESEARCH SEMINAR III (3cr.)
TRA6983 SÉMINAIRE DE RECHERCHE IV / RESEARCH SEMINAR IV (3cr.)
TRA7998 TRAVAIL DE RECHERCHE / RESEARCH PAPER (6cr.)

Thesis

TRA7999 RECHERCHE ET THÈSE DE MAÎTRISE / THESIS RESEARCH (MA)

Applied research option: MA with major research paper (coursework 21 credits)

Compulsory Seminars (9 cr.)

TRA5902 THÉORIES DE LA TRADUCTION / THEORIES OF TRANSLATION (3cr.)
TRA5906 LANGUE ET TRADUCTION / LANGUAGE AND TRANSLATION (3cr.)
TRA6902 DISCOURS ET TRADUCTION / DISCOURSE AND TRANSLATION (3cr.)

Optional Seminars and Courses (12 cr.)

Four of the following:

TRA5901 HISTOIRE DE LA TRADUCTION / HISTORY OF TRANSLATION (3cr.)
TRA5903 INFORMATIQUE ET TRADUCTION / COMPUTERS AND TRANSLATION (3cr.)
TRA5905 LEXICOLOGIE, TERMINOLOGIE ET DOCUMENTATION / LEXICOLOGY, TERMINOLOGY AND DOCUMENTATION (3cr.)
TRA5909 PÉDAGOGIE DE LA TRADUCTION / DIDACTICS OF TRANSLATOR TRAINING (3cr.)
TRA5912 TRADUCTION LITTÉRAIRE / LITERARY TRANSLATION (3cr.)


General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies at Carleton University. The Institute offers graduate programs leading to masters (MASc / MEng) and doctoral (PhD) degrees in Mechanical Engineering.

Différentes approches de la théorie féministe contemporaine. Examen critique dans une perspective à la fois pluri- et interdisciplinaire.

Applications for admission to the collaborative program in women's studies at the master's level are normally submitted at the same time as the application for entrance to Carleton University. Graduate students must read 6-8 articles or chapters to be determined by the Institute of Women's Studies (IWS). Confirmation of completion of these readings is required.

DCL5731 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE

Promotion des femmes en milieu professionnel; impact des politiques sociales sur les femmes; étude des politiques en matière d'emploi: équité des sexes.

SVS5535 INTERVENTION FÉMINISTE ET SERVICE SOCIAL

Examen des modes de différenciation selon le sexe, l'ethnie et la race dans les sociétés contemporaines et leur articulation théorique.

TRA5913 ADAPTATION / ADAPTATION (3cr.)
TRA5916 ATELIER DE TRADUCTION I / TRANSLATION WORKSHOP I (3cr.)
A maximum of one workshop may be taken during the entire program.

TRA5917 ATELIER DE TRADUCTION II / TRANSLATION WORKSHOP II (3cr.)
TRA5918 ATELIER DE TRADUCTION III / TRANSLATION WORKSHOP III (3cr.)
TRA5919 ATELIER DE TRADUCTION IV / TRANSLATION WORKSHOP IV (3cr.)
TRA5920 ÉTUDES DIRIGÉES I / GUIDED RESEARCH I (3cr.)
A maximum of one guided research or extra-departmental course may be taken during the entire program.

TRA5930 ÉTUDES DIRIGÉES II / GUIDED RESEARCH II (3cr.)
TRA5941 ADVANCED TRANSLATION FROM SPANISH INTO ENGLISH (3cr.)
TRA5942 TRADUCTION AVANCÉE DE L'ESPAGNOL VERS LE FRANÇAIS (3cr.)
TRA6903 TRADUCTION AUTOMATIQUE / MACHINE TRANSLATION (3cr.)
TRA6905 LEXICOLOGIE, TERMINOLOGIE APPLIQUÉE / APPLIED LEXICOLOGY AND TERMINOLOGY (3cr.)
TRA6906 TRADUCTION TECHNIQUE ET SPÉCIALISÉE / TECHNICAL AND OTHER SPECIALIZED TRANSLATION (3cr.)
TRA6907 THÉORIE DE L'INTERPRÉTATION / THEORY OF INTERPRETATION (3cr.)
TRA6908 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
TRA6911 MÉTHODOLOGIE DE LA RECHERCHE TRADUCTOLOGIQUE / RESEARCH METHODS IN TRANSLATION STUDIES (3cr.)
TRA6920 ÉTUDES DIRIGÉES III / GUIDED RESEARCH III (3cr.)
TRA6930 ÉTUDES DIRIGÉES IV / GUIDED RESEARCH IV (3cr.)
TRA6941 ADVANCED TRANSLATION FROM ENGLISH INTO SPANISH (3cr.)
TRA6942 TRADUCTION AVANCÉE DU FRANÇAIS VERS L'ESPAGNOL (3cr.)
TRA6980 SéMINAIRE DE RECHERCHE I / RESEARCH SEMINAR I (3cr.)
TRA6981 SÉMINAIRE DE RECHERCHE II / RESEARCH SEMINAR II (3cr.)
TRA6982 SÉMINAIRE DE RECHERCHE III / RESEARCH SEMINAR III (3cr.)
TRA6983 SÉMINAIRE DE RECHERCHE IV / RESEARCH SEMINAR IV (3cr.)
TRA7998 TRAVAIL DE RECHERCHE / RESEARCH PAPER (6cr.)

Research Paper

TRA7993 TRADUCTION COMMENTÉE / COMMENTED TRANSLATION

or

TRA7994 FICHIER TERMINOLOGIQUE OU LEXICOGRAPHIQUE COMMENTÉ / COMMENTED TERMINOLOGY OR LEXICOGRAPHY FILE

Additional Requirement

Basic research or applied research requirement

Students may choose one of two options: basic research option (thesis) or applied research option (commented translation or commented terminology or lexicography file). The student's choice must be approved by the STI. To meet this requirement, students may work on the languages of their choice provided that a) at least one of the languages is French or English, and b) the STI can find within the University a co-director who knows the other language.

Basic research option (for this option, an oral defence is required)

TRA7999 RECHERCHE ET THÈSE DE MAÎTRISE / THESIS RESEARCH (MA)

For the thesis regulations, please consult the general regulations of the Faculty of Graduate and Postdoctoral Studies.

Applied research option (for this option, an oral defence is not required)

TRA7993 TRADUCTION COMMENTÉE / COMMENTED TRANSLATION

A commented translation of not less than 5000 words, the exact length to be stipulated by the STI depending on the nature and difficulty of the text. The translation must be preceded by an introduction describing the text, the motivation for translating it and the translation approach used. It must be accompanied by a commentary demonstrating that the student has acquired the relevant theoretical and methodological background knowledge.

or

TRA7994 FICHIER TERMINOLOGIQUE OU LEXICOGRAPHIQUE COMMENTÉ / COMMENTED TERMINOLOGY OR LEXICOGRAPHY FILE

Compilation of a term, lexeme or phrase file in two or more languages. The file must cover at least 15 concepts or 20 vocabulary items. It must be preceded by an introduction describing the motivation for the work, the methodology used and the subject field of the concepts or the vocabulary. It must be accompanied by a commentary demonstrating that the student has acquired the relevant theoretical and methodological background knowledge.

MA (concentration in "literary translation")

(Coursework 18 credits)

Compulsory Seminars (12 cr.)

1. TRA 5902 Theories of Translation (3cr.)
2. TRA 5906 Language and Translation (3cr.)
3. TRA 6902 Discourse and Translation (3cr.)
4. TRA 5912 Literary Translation (3cr.)

Elective seminars or courses (6 cr.)

Any other appropriate course from within the School of Translation and Interpretation’s program or from another graduate program such as English, Lettres françaises, Spanish, Philosophy. Approval of the School of Translation and Interpretation is mandatory.

MA students planning to write a thesis must register the subject of the thesis and the name of the professor who has agreed to supervise their work before they begin their third session of studies.

1. The thesis can consist of a traditional research project, according to the rules established at the STI, or it can be a literary translation.
2. If the thesis is a literary translation, it must reflect on the practice of literary translation, and consist of two parts which can take different forms; these two parts are of equal importance but need not be the same length:
   – a literary translation of a text not previously published in translation: a collection of poetry, a collection of short stories, a novel, a play; a retranslation is possible, with special permission;
   – a critical reflection on this translation, including but not limited to a discussion of translation theories, questions of aesthetics and stylistics, technical problems, questions of form and genre, etc.; this analysis must show solid theoretical understanding of translation and the specific issues raised by the text in question and include the necessary references to relevant secondary texts on literary translation, literary theory, etc.
3. The thesis must satisfy the usual criteria: originality, adequate treatment of the subject, solid methodology, etc. The length of the thesis will vary according to the difficulty of the text and the methodological and theoretical issues encountered.

Courses

Option recherche : maîtrise avec thèse (scolarité 18 crédits) / Basic research option: MA with thesis (coursework 18 credits)

Séminaires obligatoires (9 cr.) / Compulsory Seminars (9 cr.)
TRA5902 THÉORIES DE LA TRADUCTION / THEORIES OF TRANSLATION (3cr.)
TRA5906 LANGUE ET TRADUCTION / LANGUAGE AND TRANSLATION (3cr.)
TRA6902 DISCOURS ET TRADUCTION / DISCOURSE AND TRANSLATION (3cr.)

Séminaires et cours optionnels (9 cr.) / Optional Seminars and Courses (9 cr.)
Trois séminaires ou cours parmi les suivants : / Three of the following:
TRA5901 HISTOIRE DE LA TRADUCTION / HISTORY OF TRANSLATION (3cr.)
TRA5903 INFORMATIQUE ET TRADUCTION / COMPUTERS AND TRANSLATION (3cr.)
TRA5905 LEXICOLOGIE, TERMINOLOGIE ET DOCUMENTATION / LEXICOLOGY, TERMINOLOGY AND DOCUMENTATION (3cr.)
TRA5909 PÉDAGOGIE DE LA TRADUCTION / DIDACTICS OF TRANSLATOR TRAINING (3cr.)
TRA5912 TRADUCTION LITTÉRAIRE / LITERARY TRANSLATION (3cr.)
TRA5913 ADAPTATION / ADAPTATION (3cr.)
TRA5916 ATELIER DE TRADUCTION I / TRANSLATION WORKSHOP I (3cr.)
Les ateliers de traduction sont limités à un pour l'ensemble de la scolarité de maîtrise. / A maximum of one Workshop may be taken during the entire program.
TRA5917 ATELIER DE TRADUCTION II / TRANSLATION WORKSHOP II (3cr.)
TRA5918 ATELIER DE TRADUCTION III / TRANSLATION WORKSHOP III (3cr.)
TRA5919 ATELIER DE TRADUCTION IV / TRANSLATION WORKSHOP IV (3cr.)

TRA5920 ÉTUDES DIRIGÉES I / GUIDED RESEARCH I (3cr.)

Le nombre d'études dirigées ou de cours extra-départementaux est limité à un pour l'ensemble de la scolarité de maîtrise. / A maximum of one guided research or extra-departmental course may be taken during the entire program.

TRA5930 ÉTUDES DIRIGÉES II / GUIDED RESEARCH II (3cr.)

TRA5941 ADVANCED TRANSLATION FROM SPANISH INTO ENGLISH (3cr.)

TRA5942 TRADUCTION AVANCÉE DE L'ESPAGNOL VERS LE FRANÇAIS (3cr.)

TRA6903 TRADUCTION AUTOMATIQUE / MACHINE TRANSLATION (3cr.)

Préalable : TRA 5903 ou permission du professeur. / Prerequisite: TRA 5903 or permission of the professor.

TRA6905 LEXICOLOGIE, TERMINOLOGIE APPLIQUÉE / APPLIED LEXICOLOGY AND TERMINOLOGY (3cr.)

Préalable : TRA 5905 ou permission du professeur. / Prerequisite: TRA 5905 or permission of the professor.

TRA6906 TRADUCTION TECHNIQUE ET SPÉCIALISÉE / TECHNICAL AND OTHER SPECIALIZED TRANSLATION (3cr.)

TRA6907 THÉORIE DE L’INTERPRÉTATION / THEORY OF INTERPRETATION (3cr.)

TRA6908 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)

TRA6911 MÉTHODOLOGIE DE LA RECHERCHE TRADUCTOLOGIQUE / RESEARCH METHODS IN TRANSLATION STUDIES (3cr.)

TRA6920 ÉTUDES DIRIGÉES III / GUIDED RESEARCH III (3cr.)

TRA6930 ÉTUDES DIRIGÉES IV / GUIDED RESEARCH IV (3cr.)

TRA6941 ADVANCED TRANSLATION FROM ENGLISH INTO SPANISH (3cr.)

TRA6942 TRADUCTION AVANCÉE DU FRANÇAIS VERS L’ESPAGNOL (3cr.)

TRA6980 SÉMINAIRE DE RECHERCHE I / RESEARCH SEMINAR I (3cr.)

TRA6981 SÉMINAIRE DE RECHERCHE II / RESEARCH SEMINAR II (3cr.)

TRA6982 SÉMINAIRE DE RECHERCHE III / RESEARCH SEMINAR III (3cr.)

TRA6983 SÉMINAIRE DE RECHERCHE IV / RESEARCH SEMINAR IV (3cr.)

TRA7998 TRAVAIL DE RECHERCHE / RESEARCH PAPER (6cr.)

**Thesis**

TRA7999 THÈSE / THESIS

Option recherche appliquée : maîtrise avec mémoire (scolarité 21 crédits) / Applied research option: MA with major research paper (coursework 21 credits)

**Séminaires et cours optionnels (12 cr.) / Compulsory Seminars (9 cr.)**

TRA5902 THÉORIE DES COMPOSÉS DE LA TRADUCTION / THEORIES OF TRANSLATION (3cr.)

TRA5906 LANGUE ET TRADUCTION / LANGUAGE AND TRANSLATION (3cr.)

TRA6902 DISCOURS ET TRADUCTION / DISCOURSE AND TRANSLATION (3cr.)
Séminaires ou cours optionnels (12 cr.) / Optional Seminars and Courses (12 cr.)
Quatre séminaires ou cours parmi les suivants / Four from among the following:

TRA5901 HISTOIRE DE LA TRADUCTION / HISTORY OF TRANSLATION (3cr.)
TRA5903 INFORMATIQUE ET TRADUCTION / COMPUTERS AND TRANSLATION (3cr.)
TRA5905 LEXICOLOGIE, TERMINOLOGIE ET DOCUMENTATION / LEXICOLOGY, TERMINOLOGY AND DOCUMENTATION (3cr.)
TRA5909 PÉDAGOGIE DE LA TRADUCTION / DIDACTICS OF TRANSLATOR TRAINING (3cr.)
TRA5912 TRADUCTION LITTÉRAIRE / LITERARY TRANSLATION (3cr.)
TRA5913 ADAPTATION / ADAPTATION (3cr.)
TRA5916 ATELIER DE TRADUCTION I / TRANSLATION WORKSHOP I (3cr.)
Les ateliers de traduction sont limités à deux pour l'ensemble de la scolarité de maîtrise. / A maximum of two Workshops may be taken during the entire program.

TRA5917 ATELIER DE TRADUCTION II / TRANSLATION WORKSHOP II (3cr.)
TRA5918 ATELIER DE TRADUCTION III / TRANSLATION WORKSHOP III (3cr.)
TRA5919 ATELIER DE TRADUCTION IV / TRANSLATION WORKSHOP IV (3cr.)
TRA5920 ÉTUDES DIRIGÉES I / GUIDED RESEARCH I (3cr.)
Le nombre d'études dirigées ou de cours extra-départmentaux est limité à un pour l'ensemble de la scolarité de maîtrise. / A maximum of one guided research or extra-departmental course may be taken during the entire program.

TRA5930 ÉTUDES DIRIGÉES II / GUIDED RESEARCH II (3cr.)
TRA5941 ADVANCED TRANSLATION FROM SPANISH INTO ENGLISH (3cr.)
TRA5942 TRADUCTION AVANCÉE DE L'ESPAGNOL VERS LE FRANÇAIS (3cr.)

TRA6903 TRADUCTION AVANCÉE / MACHINE TRANSLATION (3cr.)
Préalable : TRA 5903 ou permission du professeur. / Prerequisite: TRA 5903 or permission of the professor.

TRA6905 LEXICOLOGIE, TERMINOLOGIE APPLIQUÉE / APPLIED LEXICOLOGY AND TERMINOLOGY (3cr.)
Préalable : TRA 5905 ou permission du professeur. / Prerequisite: TRA 5905 or permission of the professor.

TRA6906 TRADUCTION TECHNIQUE ET SPÉCIALISÉE / TECHNICAL AND OTHER SPECIALIZED TRANSLATION (3cr.)
TRA6907 THÉORIE DE L'INTERPRÉTATION / THEORY OF INTERPRETATION (3cr.)

TRA6908 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
TRA6911 MÉTHODOLOGIE DE LA RECHERCHE TRADUCTOLOGIQUE / RESEARCH METHODS IN TRANSLATION STUDIES (3cr.)

TRA6920 ÉTUDES DIRIGÉES III / GUIDED RESEARCH III (3cr.)
TRA6930 ÉTUDES DIRIGÉES IV / GUIDED RESEARCH IV (3cr.)

TRA6941 ADVANCED TRANSLATION FROM ENGLISH INTO SPANISH (3cr.)
TRA6942 TRADUCTION AVANCÉE DU FRANÇAIS VERS L'ESPAGNOL (3cr.)

TRA6980 SÉMINAIRE DE RECHERCHE I / RESEARCH SEMINAR I (3cr.)
TRA6981 SÉMINAIRE DE RECHERCHE II / RESEARCH SEMINAR II (3cr.)
**TRA6982 SÉMINAIRE DE RECHERCHE III / RESEARCH SEMINAR III** (3cr.)

**TRA6983 SÉMINAIRE DE RECHERCHE IV / RESEARCH SEMINAR IV** (3cr.)

**TRA7998 TRAVAIL DE RECHERCHE / RESEARCH PAPER** (6cr.)

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**Mémoire / Research Paper**

**TRA7993 TRADUCTION COMMENTÉE / COMMENTED TRANSLATION**

ou / or

**TRA7994 FICHIER TERMINOLOGIQUE OU LEXICOGRAPHIQUE COMMENTÉ / COMMENTED TERMINOLOGY OR LEXICOGRAPHY FILE**

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**Visual Arts (MFA)**

The University of Ottawa’s Department of Visual Arts offers a graduate program leading to the degree of Master of Fine Arts (MFA).

The program is bilingual and covers a variety of artistic practices, from photography and media arts to sculpture, painting and drawing, video and installation art. Students take an in-depth look at theories informing contemporary art and image culture, and can choose to pursue either an interdisciplinary studio approach or to specialize in a single medium. In accordance with University of Ottawa policy, students may choose to complete written assignments, examinations, and studio critiques in either English or French.

The program is two years in length and is offered on a full-time basis only.

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**Admission**

Applicants to the program are required to have a bachelor’s degree in Visual Arts (either a B.F.A., or a B.A. with major or specialization in Visual Arts), with a minimum B+ (75%) average in the last two years of study and an overall B (70%) average. Candidates with an honours bachelor’s degree in another discipline may be accepted if they submit a portfolio of exceptional quality.

To be eligible, the candidate should have:

1. a portfolio that demonstrates significant artistic accomplishment and potential;
2. a solid background in the history and theory of art, with a particular emphasis on contemporary art and art discourse, as demonstrated by the student’s having completed at least 12 credits of art history and theory courses at the undergraduate level, with at least nine of those credits in contemporary art.*
3. at least a basic technical grounding in the visual and multi-media disciplines in which they will be working during their time in the program, as shown by the admission portfolio and/or undergraduate studies;
4. proficiency in one of the two official languages (English or French) and at least a passive knowledge of the other official language, that is, the ability to read and understand it;
5. proof, as demonstrated by their portfolio and exhibition records, that they have been capable of sustaining an artistic practice for at least two years since completing undergraduate studies. This regulation may be waived for older students with outstanding records of artistic accomplishment.

* The Admissions Committee may, when recommending admission, add up to two undergraduate art history and theory courses to the normal requirements of the master’s.

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**Program Requirements**

**Master’s Degree Requirements**

The program extends over six sessions (two years) of full-time study. The student’s time in the program culminates in the preparation of a professional-level Thesis Presentation.
A total of 42 credits is required:

1. Studio Courses (18 credits)
2. Theory Courses (12 credits)
3. Preparation for Thesis Presentation (12 credits)

The minimum passing grade in all courses is C+. A student who receives two failing grades (equivalent to six credits), or who fails the same course twice, is required to withdraw.

A detailed description of the program, and of the guidelines for studio courses and the thesis preparation, can be found on the website of the Department of Visual Arts.

The program operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link:

www.etudesup.uottawa.ca/generalregulations

Courses

S= cours d'atelier / S= Studio Courses
T= cours théorique / T= Theory Courses

1ère année (session d'automne) / 1st year (Fall Session)

ART5961 ATELIER INTÉGRÉ I / INTEGRATED STUDIO I (S) (3cr.)
Pratique en atelier sous la direction d'un professeur. Participation régulière à des critiques, à des discussions de groupe à partir de lecture et de présentations d'artistes et de théoriciens invités, de visites d'expositions, et ce, afin d'acquérir une compréhension élargie des pratiques artistiques contemporaines et des questions soulevées par le travail personnel des étudiants. / Studio practice under the guidance of a professor. Participation in regular critiques, group discussions based on readings and presentations by visiting lecturers and visits to exhibitions, in order to develop a wide-ranging understanding of contemporary artistic practice and of issues arising within individual student work.

ART5971 ART ET THÉORIES CULTURELLES / ART AND CULTURAL THEORY (T) (3cr.)
Étude des principaux courants de la pensée contemporaine et de leur impact sur les productions et les théories artistiques : le structuralisme, le poststructuralisme, les théories postmodernes, postcolonialistes, féministes, etc. / Study of the principal modes of contemporary thought including structuralism, poststructuralism, postmodernism, postcolonialism, feminism etc., and examination of their impact on artistic production and theory.

Session d'hiver / Winter Session

ART5962 ATELIER INTÉGRÉ II / INTEGRATED STUDIO II (S) (3cr.)
Pratique en atelier sous la direction d'un professeur. Participation à des critiques, à des discussions de groupe à partir de lecture et de présentations d'artistes et de théoriciens invités et à des visites d'expositions, afin d'acquérir une compréhension élargie des pratiques artistiques contemporaines et des questions soulevées par le travail personnel des étudiants. / Studio practice under the guidance of a professor. Participation in critiques, group discussions based on readings and presentations by visiting lecturers and visits to exhibitions, in order to develop a wide-ranging understanding of contemporary artistic practice and of issues arising within individual work.

ART5900 STAGE PROFESSIONNEL / PROFESSIONAL INTERNSHIP (T) (3cr.)
Stage dans un musée, une galerie, un conseil de recherche, un établissement d'archives ou autre site approuvé. Évalué par un professeur basé sur le rapport écrit final de l’étudiant situant son expérience de stage professionnel dans un contexte théorique. Noté S/NS. Durée : 150 heures. Préalable : une solide connaissance théorique en art contemporain et en pratique d’exposition et approbation écrite du programme. / Internship at a museum, gallery, research council, archives site or other approved location. Evaluated by a professor based on the student’s final written report, situating their professional internship experience within a theoretical framework. Graded S/NS. Duration: 150 hours. Prerequisite: A strong theoretical foundation in contemporary art and exhibition practice and written approval from the program.

Session du printemps / Spring Session

ART5963 ATELIER INDÉPENDANT / INDEPENDENT STUDIO (S) (3cr.)
Pratique en atelier avec un projet d’initiative personnelle, sous la direction du professeur. Les étudiants doivent faire approuver leur proposition de projet au début de la session. À la fin de la session, ils présentent leur projet complété devant un jury de professeurs réguliers. / Self-directed studio practice under the guidance of a professor. Students must have their project proposal approved at the beginning of the session and, at the end of the session, they must present their completed project to a jury of regular professors.

2e année (session d’automne) / 2nd year (Fall Session)
ART6964 PRATIQUE AVANCÉE EN ATELIER I / ADVANCED STUDIO I (S) (3cr.)
Pratique en atelier avec présentations individuelles et critiques, lectures et recherches personnelles. Approfondissement de l’expérience artistique de l’étudiant et de sa connaissance du contexte contemporain dans lequel se situe sa propre production artistique. / Studio practice with individual presentations and critiques, independent readings and research. Development of student artistic practice as well as of knowledge of the contemporary context within which the student’s own artistic work is situated.

ART6972 L’ŒUVRE ET SA MÉDIATION / ART AND ITS MEDIATION (T) (3cr.)
Étude des différents modes de diffusion des œuvres d’art et l’analyse de leur impact sur l’interprétation : la mise en exposition, la documentation, la diffusion dans les médias écrits, visuels et électroniques. / The mechanisms and processes for the distribution of works of art and their impact on viewer reception and interpretation: exhibitions, archives, documentation; the diffusion of art through print, visual and electronic media.

Session d’hiver / Winter Session
ART6965 PRATIQUE AVANCÉE EN ATELIER II / ADVANCED STUDIO II (S) (3cr.)
Pratique en atelier avec présentations individuelles et critiques, lectures et recherches personnelles. Les étudiants approfondissent leur expérience artistique et leur connaissance du contexte contemporain dans lequel se situent leurs propres œuvres artistiques. / Studio practice with individual presentations and critiques, independent readings and research. Development of student artistic practice as well as of knowledge of the contemporary context within which the student’s own artistic work is situated.

ART6973 L’ŒUVRE MISE EN CONTEXTE THÉORIQUE / THE WORK OF ART IN CONTEXT (T) (3cr.)
Mise en contexte des productions artistiques des étudiants en regard des pratiques artistiques contemporaines ; analyse de leurs enjeux théoriques. Chaque étudiant travaillera le texte qui devra accompagner sa présentation de thèse. / Examination of students’ artistic production within the context of contemporary artistic practice and theory. Each student will work on the Support Paper to accompany their Thesis Presentation.

Session du printemps / Spring Session
ART7999 PRÉSENTATION DE THÈSE / THESIS PRESENTATION (S) (12cr.)
Guidé par leur directeur de thèse, les étudiants préparent leur présentation de thèse et mettent au point la soutenance orale de la présentation. La présentation de thèse doit se tenir avant la fin de la dernière session d’inscription à ART 7999. Des renseignements détaillés sur la présentation de thèse sont disponibles sur le site web du programme. / Under the direction of their Thesis Supervisor, students will complete their Thesis Presentation, and finalize preparations for its oral defense. The Thesis Presentation must take place by the end of the final session of registration in ART 7999. Details on the thesis presentation are provided on the program website.

Women's Studies (MA)

General Information
The Institute of Women's Studies offers three graduate programs:

- MA (with or without thesis) in women's studies;
- Collaborative program (specialization) in women's studies at the master's level;
- PhD in women's studies.

Students are admitted directly into the MA and PhD programs whereas admission into the collaborative program is through one of the participating graduate programs. All three programs are offered in English and in French. The first two may be taken either full- or part-time. The PhD program is offered on a full-time basis only. The MA/PhD program is offered in two fields: gender, power and representations; women’s rights and citizenship in a globalized world. In accordance with University of Ottawa regulations, examinations, assignments, and the research
paper or thesis may be written either in English or in French.

The programs operate under the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) which can be accessed at www.grad.uottawa.ca.

MA PROGRAM

The objective of the MA program in women’s studies is to encourage the acquisition of in-depth, plural, diversified, and heuristic knowledge of the different currents of feminist thought, including their respective theoretical and strategic proposals. The program aims to develop an aptitude for research in the university or the community, while enriching the student’s personal work through the supervised writing of a research paper or thesis.

Admission

Students holding an honours bachelor’s degree with a specialization or major or equivalent from an accredited university in social sciences, nursing, arts, education or law, with a minimum average of 70% (B), calculated in accordance with FGPS guidelines, and who have had an adequate background in women’s studies, are eligible for admission to the MA program.

Applicants who do not meet all of the above criteria but have a minimum average of 75% (B+) in their previous studies, may be admitted to a qualifying program.

Applicants must submit a curriculum vitae and a letter of intent outlining their interest in the program, their proposed area of research, as well as their relevant academic and practical experience.

Students must understand, speak, and write either English or French fluently at the time of admission. Proof of proficiency may be required.

Program Requirements

Degree Requirements

MA with thesis

The requirements are as follows:

a) Two compulsory courses (6 credits):
   FEM5103 FEMINIST METHODOLOGIES (3cr.)
   FEM5300 FEMINIST THEORIES (3cr.)

b) Two other courses (at least one FEM course and one course from the list of approved elective courses)

d) A thesis (FEM7999).

After consultation with the thesis supervisor and during the first session of registration, students must present a thesis topic to the Women’s Studies Graduate Committee for approval.

The master’s thesis should be between 125 and 150 pages in length.

For information regarding the thesis, consult the guide "Preparing a Thesis or a Research Paper", accessible on the FGPS website (www.grad.uottawa.ca).

MA with research paper

The requirements are as follows:

a) Two compulsory core courses (6 credits):
   FEM5103 FEMINIST METHODOLOGIES (3cr.)
   FEM5300 FEMINIST THEORIES (3cr.)

b) Four electives from the list of elective courses in women’s studies or related disciplines (12 cr.).

c) Research Paper (FEM6999)

The research paper topic must be approved by the supervisor, who is appointed by the graduate program director or a delegate. The research paper is evaluated on a Satisfactory/Not satisfactory (S/NS) basis by the supervisor and one other professor appointed by the graduate program director or a delegate.

The research paper should be between 50 and 60 pages in length.
For information regarding the research paper, consult the guide Preparing a Thesis or a Research Paper, accessible through the FGPS Website (www.grad.uottawa.ca).

**Electives**
The choice of electives must be appropriate for the student’s chosen field and must be approved by the program coordinator or a delegate.

**Residence**
The residency requirement for students admitted on a full-time basis is three sessions.

**Duration of the program**
Students are expected to fulfill all requirements within two years. The maximum time permitted is four years from the date of initial registration in the program.

**Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>FEM5103</td>
<td>FEMINIST METHODOLOGIES</td>
<td>3 cr.</td>
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<tr>
<td></td>
<td>Methodologies developed in Women’s Studies. Critical examination from both multidisciplinary and interdisciplinary perspectives. <strong>Prerequisite:</strong> Two undergraduate courses in Women’s Studies or the permission of the supervisor of graduate studies in Women’s Studies.</td>
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<tr>
<td>FEM5300</td>
<td>FEMINIST THEORIES</td>
<td>3 cr.</td>
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<tr>
<td></td>
<td>Approaches to contemporary feminist theory. Critical examination from both multidisciplinary and interdisciplinary perspectives. <strong>Prerequisite:</strong> Two undergraduate courses in Women’s Studies or the permission of the supervisor of graduate studies in Women’s Studies.</td>
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<tr>
<td>FEM5503</td>
<td>MÉTHODOLOGIES FÉMINISTES</td>
<td>3 cr.</td>
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<td>Méthodologies élaborées en études des femmes. Examen critique dans une perspective à la fois pluridisciplinaire et interdisciplinaire. <strong>Préalable :</strong> Deux cours de premier cycle en études des femmes ou la permission de la personne responsable des études supérieures en études des femmes.</td>
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<tr>
<td>FEM5700</td>
<td>THÉORIES FÉMINISTES</td>
<td>3 cr.</td>
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<td></td>
<td>Différentes approches de la théorie féministe contemporaine. Examen critique dans une perspective à la fois pluridisciplinaire et interdisciplinaire. <strong>Préalable :</strong> Deux cours de premier cycle en études des femmes ou la permission de la personne responsable des études supérieures en études des femmes.</td>
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<tr>
<td>FEM6100</td>
<td>SPECIAL TOPICS IN WOMEN’S STUDIES</td>
<td>3 cr.</td>
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<tr>
<td>FEM6101</td>
<td>GENDER, POWER AND REPRESENTATIONS</td>
<td>3 cr.</td>
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<td>This course analyses the diverse body of feminist scholarship theorizing conceptions of gender, power and representation. Examining the construction and representation of gender/sex differences, the course explores the power relations inherent in these representations, while also examining how gender roles and expectations are linked to representations of class, race, sexuality, age, nationality and ability. <strong>Prerequisites:</strong> FEM 5103 and FEM 5300</td>
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<tr>
<td>FEM6102</td>
<td>WOMEN, RIGHTS AND CITIZENSHIP IN A GLOBALIZED WORLD</td>
<td>3 cr.</td>
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<td>This course examines women’s rights and citizenship; gender and development; and gender, migration and health in the context of globalization. Topics include the following: mainstreaming gender and health development; initiatives bringing feminist Southern voices across the world; health consequences of the massive incorporation of Third World women into a transnational labour force; women’s agency and resistance; social capital and pluralism in health services and health care. <strong>Prerequisites:</strong> FEM 5103 and FEM 5300</td>
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</tr>
<tr>
<td>FEM6103</td>
<td>DIRECTED READINGS</td>
<td>3 cr.</td>
</tr>
<tr>
<td>FEM6500</td>
<td>THÈMES SPÉCIAUX EN ÉTUDES DES FEMMES</td>
<td>3 cr.</td>
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<tr>
<td>FEM6501</td>
<td>RAPPORTS SOCIAUX DE SEXE, POUVOIR ET PRÉSENTATIONS</td>
<td>3 cr.</td>
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<td>Ce cours analyse les diverses théories féministes qui visent à formaliser les concepts de genre, de pouvoir et de représentation. Les représentations des différences entre les genres/les sexes y sont abordées sous l’angle de leur construction sociale, ainsi que des rapports de pouvoir qui leur sont intrinsèquement liés. Le cours examinera également la façon dont les rôles et les attentes quant au genre sont aussi façonnées par des représentations concernant la classe, la “race” et l’ethnicité, la sexualité, l’âge, la nationalité et la présence/l’absence de handicap. <strong>Préalables :</strong> FEM 5503 et FEM 5700</td>
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<tr>
<td>FEM6502</td>
<td>FEMMES, DROITS ET CITOYENNÉTÉ DANS UN MONDE GLOBALISÉ</td>
<td>3 cr.</td>
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<td></td>
<td>Ce cours englobe les domaines d’études connexes touchant aux droits des femmes et à la citoyenneté : genre et développement international; genre, migrations et santé dans un contexte mondialisé. Des sujets variés y sont abordés, qu’il s’agisse de l’intégration des rapports sociaux de sexe dans le développement de la santé, des initiatives novatrices permettant de faire entendre les voix féministes du sud ou encore des conséquences sur la santé de l’enrôlement massif des femmes du Tiers monde dans un marché du travail multinational et mondialisé. On s’intéressera aussi à l’agentivité et aux résistances de ces femmes, à leur capital social et au pluralisme en matière de services et de soins de santé. <strong>Préalables :</strong> FEM 5503 et FEM 5700</td>
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FEM6503 LECTURES DIRIGÉES (3cr.)

FEM6900 THÈMES SPÉCIAUX EN ÉTUDES DES FEMMES / SPECIAL TOPICS IN WOMEN’S STUDIES (3cr.)

FEM6997 PROJET DE THÈSE DE MAÎTRISE / MASTER’S THESIS PROPOSAL
Préalables : FEM 5503, FEM 5700 et 3 cr. de la banque de cours au choix. / Prerequisites: FEM 5103, FEM 5300 and 3 cr. from the list of electives.

FEM6999 MÉMOIRE / RESEARCH PAPER (6cr.)
Préalables : FEM 5503, FEM 5700 et 12 cr. de la banque de cours au choix. / Prerequisites: FEM 5103, FEM 5300 and 12 cr. from the list of electives.

FEM7999 THÈSE DE MAÎTRISE / MASTER’S THESIS (12cr.)
Préalable / Prerequisite: FEM 6997.

FEM8101 SEMINAR IN WOMEN’S STUDIES (3cr.)
This seminar deals with professional development (the preparation of grant applications, conference papers and articles), and reviews the central issues and debates of the discipline. Prerequisites: FEM 5103 and FEM 5300. Reserved for students registered in the PhD program in Women’s Studies.

FEM8501 SÉMINAIRE EN ÉTUDES DES FEMMES (3cr.)
Ce séminaire porte sur le développement professionnel (préparation de demandes de subvention, conférences, articles) et sur les enjeux principaux de la discipline. Préalables : FEM 5503 et FEM 5700. Réservé aux étudiantes et étudiants inscrits au doctorat en étude des femmes.

FEM9997 PROJET DE THÈSE DE DOCTORAT / DOCTORAL THESIS PROPOSAL
Préalable / Prerequisite: FEM 9998.

FEM9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION
Préalables : FEM 5303, FEM 5700, FEM 6501 ou FEM 6502, et FEM 8501. / Prerequisites: FEM 5103, FEM 5300, FEM 6101 or FEM 6102, and FEM 8101.

FEM9999 THÈSE DE DOCTORAT / PhD THESIS
Préalable / Prerequisite: FEM 9997.

Cours au choix / Electives


Les étudiantes et étudiants doivent s’assurer d’avoir les préalables aux cours qu’ils désirent suivre ou obtenir la permission de l’unité scolaire, le cas échéant.

The following list of electives is not exhaustive, and is provided as a guideline for students and their advisors. Each year a list of elective courses approved and offered for students in the program will be posted on the program’s website. Graduate courses other than those posted on the program website may be selected with the approval of the Women’s Studies Graduate Committee.

It is the students’ responsibility to verify that they have the prerequisites for the elective courses they wish to take and to obtain the permission of the academic unit if required.

CRM6367 WOMEN AND CRIMINAL JUSTICE (3cr.)
Women as criminals and victims; the impact of the operation of the criminal justice system on women.

CRM6767 LA FEMME ET LA JUSTICE PÉNALE (3cr.)
La femme comme justiciable et victime; l’impact du fonctionnement de la justice pénale sur les femmes.

DCL5305 FEMINIST ANALYSIS OF LAW (3cr.)
Exploration of feminist perspectives, theories and themes and the application of these to particular problems or issues. Development of techniques for analyzing social meaning of law.
DCL505 ANALYSE FÉMINISTE DU DROIT (3cr.)
Statut juridique, droits et obligations des femmes dans les domaines de la santé, de la famille, du travail, de la criminalité, de la fiscalité, du commerce, etc. Analyse critique du droit à partir d’une perspective féministe. Étude des différentes théories féministes du droit.

DCL5721 PERSPECTIVES FÉMINISTES DU DROIT (3cr.)

DCL7006 LEGAL PERSPECTIVES ON CYBERFEMINISM (3cr.)
This course analyses issues relating to application of feminist principles to the legal regulation of communication technologies. Topics covered include the gendered dynamics of networked capitalist society; women’s relationships with communication technologies; technology’s potential impact on equality for women; and questions surrounding whether and how to legally regulate communication technologies.

FRA502 LECTURES FÉMINISTES (3cr.)

HIS7331 SEMINAR ON THE HISTORY OF WOMEN AND GENDER (3cr.)

HIS7731 SÉMINAIRE EN HISTOIRE DES FEMMES ET DU GENRE (3cr.)

SOC7156 GENDER RELATIONS AND INTERETHNIC RELATIONS (3cr.)
Examination of modes of differentiation according to gender, ethnicity, and race in contemporary societies and of the theoretical linkages among them.

SOC7166 DEVELOPMENT AND GENDER RELATIONS (3cr.)
Deconstruction of the concepts of gender and development. International power relations and gender. Women in the global South and their theorizing of gender relations.

SOC7176 GENDER DIFFERENCES IN POLITICAL SOCIOLOGY (3cr.)
Examination of the notion of gender difference, in relation, for example, to citizenship, the private/public divide, political representation, women’s rights, kinship, and power.

SOC7256 RAPPORTEURS SOCIAUX DE SEXES ET MINORISATION (3cr.)
Examen des modes de différenciation selon le sexe, l’ethnie et la race dans les sociétés contemporaines et leur articulation théorique.

SOC7266 DÉVELOPPEMENT: RAPPORTEURS SOCIAUX DE SEXES (3cr.)
Déconstruction des concepts de genre et de développement. Réflexion sur les rapports internationaux de domination. Étude des modalités d’organisation des femmes dans les sociétés du Sud et analyse de leur théorisation des rapports sociaux de sexes.

SOC7276 DIFFÉRENCE DES SEXES EN SOCIOLOGIE POLITIQUE (3cr.)
Examen de la notion de la différence des sexes appliquée, par exemple, à la citoyenneté, le privé/public, la représentation politique, les droits des femmes, la filiation et le pouvoir.

SRS5106 GODDESSES AND WOMEN IN MYTH AND SYMBOL (3cr.)

SRS5912 LA FEMME ET LA TRADITION CHRÉTIENNE / WOMEN AND THE CHRISTIAN TRADITION (3cr.)

SRS7001 LA RELIGION DANS LA PENSEE FÉMINISTE CONTEMPORAINE / RELIGION AND CONTEMPORARY FEMINIST THOUGHT (6cr.)

SVS5535 INTERVENTION FÉMINISTE ET SERVICE SOCIAL (3cr.)
Analyse des approches d’intervention auprès des femmes et applications en service social.

SVS6705 PROBLÉMATIQUE DE LA VIOLENCE ET INTERVENTION SOCIALE (3cr.)
Examen des problèmes reliés à la violence au sein de la famille, compte tenu des personnes en cause. Stratégies d’intervention et évaluation de celles-ci.

SVS6706 FEMMES, SERVICE SOCIAL ET POLITIQUES SOCIALES (3cr.)
Promotion des femmes en milieu professionnel; impact des politiques sociales sur les femmes; étude des politiques en matière d’emploi : équité salariale, discrimination et harcèlement sexuel.
Les cours suivants peuvent être considérés s’ils comportent une dimension « femmes », rapports sociaux de sexe, ou une perspective féministe. L’approbation de la personne responsable des études supérieures en études des femmes est requise.

The following courses may be taken if there is a women, gender or feminist dimention to the course content. The approval of the supervisor of graduate studies in Women’s Studies is required prior to registering to the course.

DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)
DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)
DCL5303 STUDIES IN LEGAL THEORY I (3cr.)
Survey of current theories of law. May be organized around a particular problem of writer or perspective. May include interdisciplinary materials.

DCL5731 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE I (3cr.)

EDU6651 ÉDUCATION À LA CITOYENNETÉ DANS UNE PERSPECTIVE PLANÉTAIRE (3cr.)

HIS7330 SEMINAR ON COMPARATIVE HISTORY (3cr.)

HIS7330 SÉMINAIRE EN HISTOIRE COMPARÉE (3cr.)

MUS6770 THÈMES EN MUSICOLOGIE (3cr.)

MUS6930 SÉMINAIRE DE THÉORIE ET D'ANALYSE / SEMINAR IN THEORY AND ANALYSIS (3cr.)

**Women's Studies (Master's) (Collaborative)**

The collaborative program in women's studies at the master's level is designed for students from selected disciplines in arts, education, health sciences, law, social sciences, and counselling and spirituality (Saint Paul University), who have an interest in women's studies. These students are permitted to combine advanced studies in their primary discipline with analyses from a women's studies perspective. The program thus adopts at the graduate level the interdisciplinary structures and approach which have proven effective in undergraduate studies. The degree awarded is a master's degree in the primary discipline with "specialization in Women's Studies".

**Participating Units**

The following units participate in the collaborative program in women's studies at the master's level: counselling and spirituality (Saint Paul University), criminology, education, English, globalization and international development, history, human kinetics, law, Lettres françaises, music, nursing, philosophy, political science, public administration, religious studies, and sociology. Please refer to the website of the Faculty of Graduate and Postdoctoral Studies for further information on the graduate programs of each of these disciplines.

**Admission**

To be accepted in the collaborative program in women's studies at the master's level, applicants must first be admitted to the master's program in a participating discipline. Successful applicants will normally hold an honours degree or the equivalent and have a minimum average of 70 per cent (B). They must also have a background in women's studies that is adequate for graduate study, as assessed by the women's studies graduate committee. Applications submitted to the committee should include a brief statement on this applicant’s background and on the proposed area of research. The committee’s assessment may take into account an applicant’s relevant employment experience.

Applicants with little or no background in women's studies (fewer than two undergraduate courses, one graduate course related to women's studies or the equivalent) are required to read 6-8 articles or chapters to be determined by the Institute of Women's Studies (IWS). Confirmation of acceptance into the collaborative program is conditional upon the student successfully completing a 5-page critical paper based on the articles or chapters. The paper must show ability to understand and critically assess the core concepts of the readings. The paper must normally be handed in by mid-August.

Applications for admission to the collaborative program in women's studies at the master's level are normally submitted at the same time as the application for admission to the master's program of the relevant discipline. In exceptional cases, students could commence their specialization in women's studies in their second session.
Language Policy

The courses offered directly by the collaborative program in women’s studies at the master’s level are given every year in English and in French. Each participating unit will apply its own language requirements. Except in the case of students in English, and in Lettres françaises, all students have the right to submit their written work, including their research paper and thesis, and to answer examination questions in English or in French.

Program Requirements

Master’s Degree Requirements

Students admitted to the collaborative program in women’s studies at the master’s level must meet the requirements for a master's degree in their primary program as well as the requirements of the women's studies program. Normally, the women's studies courses are recognized as partial fulfilment of the requirements of the student's primary program, in which case the passing grade in the relevant FEM course or courses is the same as that specified for the primary program.

The women's studies requirements are:

1. Two compulsory courses:
   - FEM5300 FEMINIST THEORIES (3cr.)
   - or
   - FEM5700 THÉORIES FÉMINISTES (3cr.)
   - FEM5103 FEMINIST METHODOLOGIES (3cr.)
   - or
   - FEM5503 MÉTHODOLOGIES FÉMINISTES (3cr.)

   Students must complete the two compulsory courses before their first registration for the major research paper or thesis.

2. A thesis or major research paper on a topic related to women’s studies. The proposed topic must be approved by the Women’s Studies Graduate Committee (WSGC) as well as by the student’s primary program. A thesis or major research paper in women’s studies must demonstrate a knowledge of feminist scholarship in the field or fields appropriate to the topic, and of feminist methodologies where applicable. Joint supervision by a professor from the participating unit and a professor chosen by the WSGC may be appropriate in some cases. At least one of the examiners of the thesis or major research paper must be a professor chosen by the WSGC.

Courses

FEM5103 FEMINIST METHODOLOGIES (3cr.)
Methodologies developed in Women's Studies. Critical examination from both multidisciplinary and interdisciplinary perspectives. Prerequisite: Two undergraduate courses in Women’s Studies or the permission of the supervisor of graduate studies in Women’s Studies.

FEM5300 FEMINIST THEORIES (3cr.)
Approaches to contemporary feminist theory. Critical examination from both multidisciplinary and interdisciplinary perspectives. Prerequisite: Two undergraduate courses in Women's Studies or the permission of the supervisor of graduate studies in Women's Studies.

FEM5503 MÉTHODOLOGIES FÉMINISTES (3cr.)
Méthodologies élaborées en études des femmes. Examen critique dans une perspective à la fois pluridisciplinaire et interdisciplinaire. Préalable : Deux cours de premier cycle en études des femmes ou la permission de la personne responsable des études supérieures en études des femmes.

FEM5700 THÉORIES FÉMINISTES (3cr.)
Différentes approches de la théorie féministe contemporaine. Examen critique dans une perspective à la fois pluridisciplinaire et interdisciplinaire. Préalable : Deux cours de premier cycle en études des femmes ou la permission de la personne responsable des études supérieures en études des femmes.
Advanced Materials and Manufacturing (PhD)

Ottawa-Carleton Joint Program

General Information

Established in 1983, the Ottawa-Carleton Institute for Mechanical and Aerospace Engineering (OCIMAE) combines the research strengths of the Department of Mechanical Engineering at the University of Ottawa and the Department of Mechanical and Aerospace Engineering at Carleton University. The Institute offers graduate programs leading to masters (MAsc / MEng) and doctoral (PhD) degrees in Mechanical Engineering and in Advanced Materials and Manufacturing.

Members of the Institute are engaged in six main research fields: thermal and fluid engineering; solid mechanics and design; materials and manufacturing; controls and robotics; biomedical engineering; and, aeronautical and space engineering. Additional information is posted in the departmental website.

Most of the requirements of these programs must be fulfilled in English. A very good knowledge of this language is therefore required.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)” and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate program in advanced materials and manufacturing is governed by the General Regulations of the Ottawa-Carleton Institute for Mechanical and Aerospace Engineering (OCIMAE) and by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a master’s degree in mechanical or aerospace engineering (or the equivalent);
2. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
3. Identify at least one professor who is willing and available to act as a thesis supervisor.

Note: Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

PhD Requirements

PhD Degree Requirements

The following requirements must be met:

1. 9 credits of graduate courses at the 5000 level or above approved by the Department;
2. Participation in the Mechanical and Aerospace Engineering seminar series;
3. Successful completion of a comprehensive examination (MCG9998);
4. Presentation and defense of a thesis (MCG9999) based on original research carried out under the direct supervision of a faculty member of the Department.

The passing grade in all courses is B. Students who fail 6 credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Students who have been permitted to transfer into the PhD program from a master’s program will require 27 course credits for the PhD.

Note: The examining board for doctoral theses will include professors from both departments and an external examiner who is a member of neither university.
Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cours des deux départements sont identifiés par les prefixes suivants :

MCG 5XXX Département de génie mécanique, Université d'Ottawa

MAAJ XXXX Département de génie mécanique et aérospatial, Carleton University

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Courses of each department are indicated by the prefix of the first number given as follows:

MCG 5XXX Department of Mechanical Engineering, University of Ottawa

MAAJ XXXX Department of Mechanical and Aerospace Engineering, Carleton University

MCG5101 (MAAJ 5001) THEORY OF ELASTICITY (3cr.)

MCG5102 (MAAJ 5002) ADVANCED STRESS ANALYSIS (3cr.)
Solutions to special beam problems including beams on elastic foundations, curved beams, multispans beams, etc., as well as some axisymmetric problems. The significance of assumptions is discussed and solution techniques including series solutions and energy methods are utilized.

MCG5103 (MAAJ 5003) THEORY OF PERFECTLY PLASTIC SOLIDS (3cr.)

MCG5104 (MAAJ 5004) THEORY OF PLATES AND SHELLS (3cr.)
A general coverage of various approaches to plate problems and the application of these methods to practical cases. A study of the theory of shells including deformation of shells without bending, stresses under various loading conditions, general theory of shells, shells forming surfaces of revolution.

MCG5105 (MAAJ 5505) CONTINUUM MECHANICS (3cr.)

MCG5106 (MAAJ 5006) ADVANCED TOPICS IN ELASTICITY (3cr.)

MCG5107 (MAAJ 5507) ADVANCED DYNAMICS WITH APPLICATIONS (3cr.)

MCG5108 (MAAJ 5008) FINITE ELEMENT ANALYSIS (3cr.)
Finite element program development, commercial programs, pre and post processors. Isoparametric concept, modelling issues. Steady-state field problems, axisymmetric analysis. Applications in mechanical engineering.

**MCG5109 (MAAJ 5009) ADVANCED TOPICS IN FINITE ELEMENT ANALYSIS (3cr.)**

**MCG5110 (MAAJ 5100) MICROMECHANICS OF SOLIDS (3cr.)**

**MCG5114 (MAAJ 5104) ANALYSIS AND DESIGN OF PRESSURE VESSELS (3cr.)**

**MCG5117 (MAAJ 5107) INTRODUCTION TO COMPOSITE MATERIALS (3cr.)**
Review of strengthening mechanism in metals and polymers. Fiber-reinforced composite materials: strengthening mechanism, prediction of strengths and moduli, specific properties, fracture mechanisms, toughness, fatigue, creep, effect of environment; fabrication methods and engineering applications. Laminates; mechanical properties and engineering applications.

**MCG5118 (MAAJ 5108) INTRODUCTION TO PLASTICITY (3cr.)**

**MCG5119 (MAAJ 5109) FRACTURE MECHANICS (3cr.)**

**MCG5126 (MAAJ 5206) DEFORMATION OF MATERIALS (3cr.)**
The deformation and fracture properties of metals, ceramics and polymers. Introduction to dislocation theory. Rheological models. Analysis and interpretation of constant strain rate, constant stress and stress relaxation tests in terms of the material structure.

**MCG5129 (MAAJ 5209) HOT WORKING OF METALS (3cr.)**
High temperature mechanical properties in metals. Types of recovery, recrystallization and precipitation in metals and their effects on hot strength and structure. Hot rolling of metals. Selection of rolling schedules. Influence of as-rolled structures on room temperature tensile and fracture stresses, impact strength.

**MCG5137 (MAAJ 5307) SPECIAL STUDIES IN SOLID MECHANICS AND MATERIALS (3cr.)**

**MCG5138 (MAAJ 5308) ADVANCED TOPICS IN MECHANICAL ENGINEERING (3cr.)**

**MCG5180 (MAAJ 5800) FIBRE COMPOSITE MATERIALS (3cr.)**
Computer-automated manufacturing techniques. Advanced topics in composite design: lamination theory. Interlaminar stresses and free edge effects, lamina and laminate failure theories. Principles of non-destructive testing. Individual projects involving the design, manufacturing and testing of a fibre composite component or material. Limited enrolment. Prerequisite: MCG 5117 (MAAJ 5107) or permission of the Institute.

**MCG5181 (MAAJ 5801) ADVANCED VIBRATIONS (3cr.)**
Kinematics of vibrations, the single degree of freedom system, without and with damping, two degrees of freedom, several degrees of freedom, vibration of shafts, critical speeds, complex presentation, influence coefficients, matrix method, stability of solution, approximate methods.

**MCG5182 (MAAJ 5802) THEORY OF ELASTIC INSTABILITY (3cr.)**

**MCG7355 SPECIAL TOPICS IN ADVANCED MATERIALS (3cr.)**
Topics that may be covered include the following: nanocrystalline and amorphous materials; metals and ceramic-metal composites; functional materials; fibre-based engineering materials.

**MCG5111 (MAAJ 5101) GAS DYNAMICS (3cr.)**
MCG5131 (MAAJ 5301) HEAT TRANSFER BY CONDUCTION (3cr.)

MCG5132 (MAAJ 5302) HEAT TRANSFER BY CONVECTION (3cr.)

MCG5133 (MAAJ 5303) HEAT TRANSFER BY RADIATION (3cr.)

MCG5134 (MAAJ 5304) HEAT TRANSFER WITH PHASE CHANGE (3cr.)

MCG5136 (MAAJ 5306) SPECIAL STUDIES IN FLUID MECHANICS AND HEAT TRANSFER (3cr.)

MCG5141 (MAAJ 5401) STATISTICAL THERMODYNAMICS (3cr.)

MCG5151 (MAAJ 5501) LAMINAR FLOW THEORY (3cr.)
Derivation and exact solutions of the Navier-Stokes equations. Low Reynolds number flows, Stokes flow. Oseen flow, lubrication theory. Laminar boundary layers. Introduction to hydrodynamic stability.

MCG5152 (MAAJ 5502) THEORY OF TURBULENCE (3cr.)

MCG5155 (MAAJ 5505) INVISCID FLOW THEORY (3cr.)

MCG5156 (MAAJ 5506) MEASUREMENT IN FLUID MECHANICS (3cr.)

MCG5157 (MAAJ 5507) NUMERICAL COMPUTATION OF FLUID DYNAMICS AND HEAT TRANSFER (3cr.)

MCG5158 (MAAJ 5508) INDUSTRIAL FLUID MECHANICS (3cr.)
Application of simple flows to analysis of more complex systems. Pipe and duct systems, flow separation and control, aerosols, separation of particulates from flow, cavitation, unsteady flow.

MCG5161 (MAAJ 5601) ENVIRONMENTAL ENGINEERING (3cr.)

MCG5191 (MAAJ 5901) COMBUSTION IN PREMIXED SYSTEMS (3cr.)
Stoichiometry, thermo-chemistry, ignition, flame propagation, flame stabilization, diffusion flames, turbulent combustion, modelling.

MCG5192 (MAAJ 5902) COMBUSTION IN DIFFUSION SYSTEMS (3cr.)
Gaseous jet flames, combustion of liquid droplets, atomization, spray flames, coal combustion, fluidized bed combustion.

MCG5551 (MAAJ 5408) THÉORIE D’ÉCOULEMENT VISQUEUX (3cr.)

MCG5552 (MAAJ 5409) THÉORIE DE TURBULENCE (3cr.)
Révision des théories fondamentales et des résultats expérimentaux des écoulements turbulents. Théorie universelle de l'équilibre, théorie isotropique locale. Turbulence isotropique, contrainte homogène des écoulements, écoulements turbulents dans les tuyaux et les canaux, jets, sillages, couches limites. Diffusion
turbulente. Modèles de turbulence.

MCG5557 (MAAJ 5500) MÉTHODES NUMÉRIQUES EN MÉCANIQUE DES FLUIDES (3cr.)

MCG5115 (MAAJ 5105) NON-LINEAR OPTIMIZATION (3cr.)

MCG5159 (MAAJ 5509) ADVANCED PRODUCTION PLANNING AND CONTROL (3cr.)

MCG5168 (MAAJ 5608) INDUSTRIAL ORGANIZATION (3cr.)

MCG5169 (MAAJ 5609) ADVANCED TOPICS IN RELIABILITY ENGINEERING (3cr.)

MCG5170 (MAAJ 5700) CAD/CAM (3cr.)
The design process. Structure of computer aided drafting software. Analysis and optimization software. Software integration. Parametric design. Major group design project which integrates concepts from all major areas of mechanical engineering. Exclusion: May not be taken for credit with MCG4322.

MCG5171 (MAAJ 5701) APPLIED RELIABILITY THEORY (3cr.)

MCG5172 (MAAJ 5702) INTRODUCTION TO MANAGEMENT OF AUTOMATION (ROBOTICS AND NUMERICAL CONTROLS) (3cr.)

MCG5173 (MAAJ 5703) SYSTEMS ENGINEERING AND INTEGRATION (3cr.)
Introduction to modelling methods employed for the planning and design of sub-systems and complex systems. Discrete and continuous time, lumped and distributed parameters models. State estimation. Parameters identification. Discretization and stochastic effects. Technological systems modelling and simulation examples.

MCG5176 (MAAJ 5706) INDUSTRIAL CONTROL SYSTEMS (3cr.)
Concept, analysis and design of classical and modern industrial control systems. Computer based control systems for robotics, automation, manufacturing and instrumentation applications. Design project of industrial control and automation systems. Not accessible to students who have taken MCG4108.

MCG5177 (MAAJ 5707) ROBOT MECHANICS (3cr.)
Robotics overview. Transformations. Basics of robot kinematics, statics and dynamics. Introduction to practical robots, control and programming. Project in analysis, design or application of manipulators. Not accessible to students who have taken MCG4132.

MCG5178 (MAAJ 5708) ADVANCED TOPICS IN CAD/CAM (3cr.)
Overview of totally integrated CAD/CAM systems. Details of design and manufacturing software tools. Methods of linking design and manufacturing tools to form an integrated CAD/CAM system. Students will undertake projects which will provide them with a "hands on" experience.

MCG5179 (MAAJ 5709) MANUFACTURING SYSTEM ANALYSIS (3cr.)

MCG5184 MECHATRONICS (3cr.)
Models for passive and active components for electro-mechanical systems. Network representation of signals and energy transmission and conversion. Selection of sensors and actuators for the control of mechanical systems. Modelling and simulation for the design of mixed dynamic systems. Precludes additional credit for MCG4136.

MCG5185 (MAAJ 5805) MULTIVARIABLE DIGITAL CONTROL (3cr.)

MCG5186 (MAAJ 5806) NON-LINEAR DISCONTINUOUS DYNAMICS AND CONTROL (3cr.)

MCG5300 (MECH 5000) FUNDAMENTALS OF FLUID DYNAMICS (3cr.)
Differential equations of motion. Viscous and inviscid regions. Potential flow: superposition; thin airfoils; finite wings; compressibility corrections. Viscous flow: thin shear layer approximation; laminar layers; transition; turbulence modelling. Convective heat transfer: free versus forced convection; energy and energy integral equations; turbulent diffusion. Also offered at the undergraduate level, with different requirements, as AERO 4302, for which additional credit is precluded.

MCG5301 (MECH 5001) THEORY OF VISCOUS FLOWS (3cr.)
Navier-Stokes and boundary layer equations; mean flow equations for turbulent kinetic energy; integral formulations. Stability, transition, turbulence, Reynolds stresses; separation. Calculation methods, closure schemes. Compressibility, heat transfer, and three-dimensional effects.

MCG5303 (MECH 5003) INCOMPRESSIBLE NON-VISCOUS FLOW (3cr.)
The fundamental equations and theorems for non-viscous fluid flow; solution of two-dimensional and axisymmetric potential flows; low-speed airfoil and cascade theory; wing lifting-line theory; panel methods.

MCG5304 (MECH 5004) COMPRESSIBLE NON-VISCOUS FLOW (3cr.)
Steady isentropic, frictional, and diabatic flow; shock waves; rotational compressible flow, small perturbation theory and similarity rules; second-order theory and unsteady, one-dimensional flow.

MCG5308 (MECH 5008) EXPERIMENTAL METHODS IN FLUID MECHANICS (3cr.)
Fundamentals of techniques of simulation of fluid dynamic phenomena. Theoretical basis, principles of design, performance and instrumentation of ground test facilities. Applications to aerodynamic testing.

MCG5309 (MECH 5009) ENVIRONMENTAL FLUID MECHANICS RELATING TO ENERGY UTILIZATION (3cr.)
Characteristics of energy sources and emissions into the environment. The atmosphere; stratification and stability, equations of motion, simple winds, mean flow, turbulence structure and dispersion near the ground. Flow and dispersion in groundwater, rivers, lakes and oceans. Physical and analytical modelling of environmental flows.

MCG5310 (MECH 5100) PERFORMANCE AND ECONOMICS OF AIRCRAFT (3cr.)
Aircraft performance analysis with emphasis on factors affecting take-off, landing and economic performance; high lift schemes; operating economics.

MCG5311 (MECH 5101) DYNAMICS AND AERODYNAMICS OF FLIGHT (3cr.)
Static stability theory. Euler's equations for rigid body motion; the linearized equations of motion; stability derivatives and their estimation. Longitudinal and lateral dynamic response of an aircraft to control and disturbance. Also offered at the undergraduate level, with different requirements, as AERO 4308, for which additional credit is precluded.

MCG5314 (MECH 5104) GROUND TRANSPORTATION SYSTEMS AND VEHICLES (3cr.)
Performance characteristics, handling and directional stability, ride comfort and safety of various types of ground vehicle systems including road vehicles, terrain-vehicle systems, guided transport systems, and advanced ground transport technology.

MCG5315 (MECH 5105) ORBITAL MECHANICS AND SPACE CONTROL (3cr.)
Orbital dynamics and perturbations due to the Earth's figure, the sun, and the moon with emphasis on mission planning and analysis. Rigid body dynamics applied to transfer orbit and on-orbit momentum management and control of spacecraft. Effects of flexible structures on a spacecraft control system.

MCG5121 (MECH 5106) SPACE MISSION ANALYSIS AND DESIGN (3cr.)
Review of solar system and space exploration. Space mission design and geometry. Analysis of orbit design, transfers, interplanetary trajectories. Effect of environment on spacecraft design. Space propulsion and launch vehicle design. Launch sequence, windows, cost. Reusable launch systems. Also offered at the undergraduate level, with different requirements, as AERO 4802.

MCG5317 (MECH 5107) EXPERIMENTAL STRESS ANALYSIS (3cr.)

MCG5321 (MECH 5106/MECH 5201) METHODS OF ENERGY CONVERSION (3cr.)
Technical, economic and environmental aspects of present and proposed large-scale systems of energy conversion.

MCG5212 (MECH 5202) SMART STRUCTURES (3cr.)
Structural dynamics principles: modal analysis and wave propagation. Linear time invariant systems: feedback, feedforward, SISO, MIMO, digital and adaptive

**MCG5330 (MECH 5300) ENGINEERING ACOUSTICS** (3cr.)
Review of acoustic waves in compressible fluids; acoustic pressure, intensity and impedance; physical interpretation and measurement; transmission through media; layers, in-homogeneous media, solids; acoustic systems; rooms, ducts, resonators, mufflers, properties of transducers; microphones, loudspeakers, computational acoustics.

**MCG5331 (MECH 5301) AEROACOUSTICS** (3cr.)
The convected wave equation; theory of subsonic and supersonic jet noise; propeller and helicopter noise; fan and compressor noise; boundary layer noise, interior noise; propagation in the atmosphere; sonic boom; impact on environment.

**MCG5332 (MECH 5302) INSTRUMENTATION TECHNIQUES** (3cr.)
An introduction for the non-specialists to the concepts of digital and analog electronics with emphasis on data acquisition, processing and analysis. Topics covered include operational amplifiers, signal processing, digital logic systems, computer interfacing, noise in electronic systems. Hands-on sessions illustrate theory and practice.

**MCG5334 (MECH 5304) COMPUTATIONAL FLUID DYNAMICS OF COMPRESSIBLE FLOWS** (3cr.)
Solution techniques for parabolic, elliptic and hyperbolic equations developed for problems of interest to fluid dynamics with appropriate stability considerations. A staged approach to solution of full Euler and Navier-Stokes equations is used. Grid generation techniques appropriate for compressible flows are introduced.

**MCG5344 (MECH 5400) GAS TURBINE COMBUSTION** (3cr.)
This course covers two major topics: combustion fundamentals and gas turbine combustor design. Combustion fundamentals include fuel evaporation, chemistry of combustion, chemical kinetics and emission formation and introduction to computational combustion modeling. Combustor design addresses the interrelationship between operational requirements and combustion fundamentals. Precludes additional credit for MECH 5800 (MCG 5480) when MECH 5800 was offered with this topic.

**MCG5341 (MECH 5401) TURBOMACHINERY** (3cr.)
Types of machines. Similarity; performance parameters; characteristics; cavitation. Velocity triangles. Euler equation: impulse and reaction. Radial pumps and compressors: analysis, design and operation. Axial pumps and compressors: cascade and blade-element methods; staging; off-design performance; stall and surge. Axial turbines. Current design practice. Also offered at the undergraduate level, with different requirements, as MECH 4305, for which additional credit is precluded.

**MCG5342 (MECH 5402) GAS TURBINES** (3cr.)

**MCG5343 (MECH 5403) ADVANCED THERMODYNAMICS** (3cr.)
The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics. The third topic includes an introduction to statistical thermodynamics.

**MCG5347 (MECH 5407) CONDUCTIVE AND RADIATIVE HEAT TRANSFER** (3cr.)
Analytical, numerical and analog solutions to steady-state and transient conduction heat transfer in multi-dimensional systems. Radiative heat exchange between black, grey, non-grey diffuse and specular surfaces, including effects of athermanous media.

**MCG5348 (MECH 5408) CONVECTIVE HEAT AND MASS TRANSFER** (3cr.)
Analogies between heat, mass and momentum transfer. Forced and free convection relations for laminar and turbulent flows analytically developed where possible and otherwise deduced from experimental results, for simple shapes and in heat exchangers. Mass transfer theory and applications.

**MCG5350 (MECH 5500) ADVANCED VIBRATION ANALYSIS** (3cr.)
General theory of discrete multi-degree-of-freedom vibrating systems. Emphasis on numerical techniques of solving complex vibrating systems, with selected applications from aeronautical, civil, and mechanical engineering.

**MCG5125 (MECH 5501) ADVANCED DYNAMICS** (3cr.)
Developing and applying the governing equations of motion for discrete and continuous mechanical systems. Includes Newton-Euler and Lagrangian formulations; classical and finite element approaches for continuous systems; and linear stability, frequency response, and propagation solution methods. Precludes additional credit for MECH 5500.

**MCG5352 (MECH 5502) OPTIMAL CONTROL SYSTEMS** (3cr.)

**MCG5353 (MECH 5503) ROBOTICS** (3cr.)
The history of and introduction to robotics methodology. Robots and manipulators; homogeneous transformation, kinematic equations, solving kinematic equations, differential relationships, motion trajectories, dynamics. Control; feedback control, compliance, servomotors, actuators, external and internal sensors, grippers and vision systems. Microprocessors and their application to robot control. Programming.

MCG5354 (MECH 5504) GUIDANCE, NAVIGATION AND CONTROL (3cr.)

MCG5355 (MECH 5505) STABILITY THEORY AND APPLICATIONS (3cr.)
Fundamental concepts and characteristics of modern stability definitions. Sensitivity and variational equations; linear variational equations; phase space analysis; Lyapunov's direct method. Autonomous and nonautonomous systems; stability in first approximation; the effect of force type on stability; frequency method.

MCG5356 (MECH 5506) NEURO AND FUZZY CONTROL (3cr.)

MCG5124 (MECH 5507) ADVANCED KINEMATICS (3cr.)
Algebraic-geometry applications: kinematic calibration of serial and in-parallel robots; kinematic synthesis of planar, spherical, spatial mechanisms. Various DH-parametrisations, Jacobian formulations. Topics in: projective geometry; Cayley-Klein geometries; Plücker line coordinates; Gröbner bases; Grassmannians; kinematic mapping; Burmester theory. Emphasis on practical applications.

MCG5361 (MECH 5601) CREATIVE PROBLEM SOLVING AND DESIGN (3cr.)
Problem-solving processes and how they can be applied in engineering design. Emphasis on learning methodologies rather than accumulating information. Techniques can be successfully applied in any engineering speciality. (Also offered as IDES 5301)

MCG5362 (MECH 5602) FAILURE PREVENTION (FRACURE MECHANICS AND FATIGUE) (3cr.)
Design of engineering structures to ensure against failure due to fatigue or brittle fracture. Nature of fatigue and brittle fracture; selection of suitable material, geometry, and inspection procedures for the load and environmental conditions.

MCG5381 (MECH 5603) LIGHTWEIGHT STRUCTURES (3cr.)

MCG5364 (MECH 5604) COMPUTATIONAL METALLURGY (3cr.)

MCG5365 (MECH 5605) FINITE ELEMENT ANALYSIS I (3cr.)
An introduction to the finite element methodology, with emphasis on applications to heat transfer, fluid flow and stress analysis. The basic concepts of Galerkin's method, interpolation, numerical integration, and isoparametric elements are taught using simple examples.

MCG5366 (MECH 5606) FINITE ELEMENT ANALYSIS II (3cr.)
Time marching heat flow problems with linear and nonlinear analysis. Static plasticity. Time-dependent deformation problems; viscoplasticity, viscoelasticity, and dynamic analysis. Isoparametric elements and numerical integration are used throughout.

MCG5367 (MECH 5607) THE BOUNDARY ELEMENT (BEM) METHOD (3cr.)
Integral equations. The BEM for potential theory and for elastostatics in two-dimensions. Boundary elements and numerical integration schemes. Practical applications.

MCG5368 ADVANCED ENGINEERING MATERIALS (3cr.)
The physical metallurgy of important engineering metals and alloys: analytical techniques, crystallography and structure of alloys, dislocation interactions and dissociation, metallurgical thermodynamics and transformations and strengthening mechanisms. Highlights the physical phenomena controlling the properties. Prerequisite: MECH 2700 or the equivalent.

MCG5123 (MECH 5609) MICROSTRUCTURE AND PROPERTIES OF MATERIALS (3cr.)
Essential microstructural features of metals and alloys: crystal structure, dislocations, grain boundaries, The importance of these features in controlling mechanical properties is emphasized. Analytical techniques observing microstructure in metals and other materials: TEM, SEM, electron diffraction, spectrometry. Precludes additional credit for MECH 5804.

MCG5345 (MECH 5700) SURFACES AND COATINGS (3cr.)
Surface characteristics of solid materials and surface degradation/failure mechanisms including wear, fretting, oxidation, corrosion, and erosion are introduced. Coating methods including PVD, CVD, laser, thermal spray and electrochemical deposition are discussed in the context of failure prevention measures.

**MCG5374 (MECH 5704) INTEGRATED MANUFACTURING CIMS (3cr.)**
Topics essential to CIMS including computer graphics, geometric modelling, numerically controlled machining, and flexible manufacturing. The fundamental data structures and procedures for computerization of engineering design, analysis and production. Also offered at the undergraduate level, with different requirements, as MECH 4704, for which additional credit is precluded.

**MCG5375 (MECH 5705) CAD/CAM (3cr.)**

**MCG5480 (MECH 5800) SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING (3cr.)**

**MCG5489 (MECH 5801) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)**
Topics will vary from year to year.

**MCG5483 (MECH 5802) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)**

**MCG5488 (MECH 5803) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)**

**MCG5482 (MECH 5805) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)**

**MCG5486 (MECH 5806) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)**

**MCG5487 (MECH 5807) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)**

**MCG5398 (MECH 5908) INDEPENDENT ENGINEERING STUDY (3cr.)**
Students pursuing a master's degree by course work carry out an independent study, analysis, and solution of an engineering problem or design project. The results are given in the form of a written report and presented at a departmental seminar. Carried out under the general direction of a faculty member.

**MCG6000 RAPPORT EN GÉNIE MÉCANIQUE / MECHANICAL ENGINEERING REPORT (9cr.)**

**MCG7999 THÈSE DE MAÎTRISE / MASe THESIS**

**MCG9997 PRÉPARATION DU PROJET DE THÈSE DE DOCTORAT / PREPARATION FOR PhD THESIS PROPOSAL**
À la suite de la réussite à l'examen de synthèse, inscription requise de tous les candidats au doctorat jusqu'à ce que le projet de thèse soit accepté par le Comité consultatif. Following completion of the comprehensive examination, registration required for all PhD candidates until the thesis proposal is accepted by the Advisory Committee.

**MCG9998 PRÉPARATION À L'EXAMEN GÉNÉRAL DE DOCTORAT / PREPARATION FOR PhD COMPREHENSIVE EXAMINATION**
Inscription requise de tous les candidats au doctorat jusqu'à la réussite à l'examen de synthèse. / Registration required for all PhD candidates until the comprehensive examination is passed.

**MCG9999 THÈSE DE DOCTORAT / PhD THESIS**

**Behavioural Neuroscience (PhD) (Collaborative)**

**Ottawa-Carleton Joint Program**

**General Information**

The specialization in Behavioural Neuroscience is offered jointly as a collaborative program by the School of Psychology at the University of Ottawa and the Institute of Neuroscience (Departments of Psychology and Biology) at Carleton University.

Behavioural Neuroscience is the study of the relation between behaviour and the nervous system. This specialty cuts across many disciplines and incorporates such areas as anatomy, neurobiology, pharmacology, physiology, psychiatry and psychology. While individual researchers usually specialize in a particular area, behavioural neuroscientists must also be able to appreciate significant research in the other relevant fields and therefore require an understanding of the basics of other relevant disciplines.
Training in behavioural neuroscience extends beyond the boundaries of traditional departments. In order to augment the scope of training provided, faculty members from the Department of Psychiatry (Institute of Mental Health Research (IMHR), Royal Ottawa Hospital), working in the area of neuroscience, participate in teaching, research training and student supervision. Furthermore, members from various other departments at the University of Ottawa (e.g. Department of Cellular and Molecular Medicine and Department of Biology) may also participate in teaching and research supervision.

The program operates within the general framework of the “Regulations and Procedures for Joint Graduate Programs” (www.ocjip.ca) and the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Participating Units**

The primary participating units are:

1. The Institute of Neuroscience (Departments of Psychology and Biology) at Carleton University;
2. The School of Psychology at the University of Ottawa.

**Admission**

Admission to the collaborative program in behavioural neuroscience is governed by the «General Regulations» of the Ottawa–Carleton Institute and by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Candidates must indicate in their admission form that they wish to be accepted in the collaborative program.

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be admitted in one of the programs participating in the collaborative program of the Institute;
2. Provide at least one letter of recommendation from a professor who is willing and available to act as thesis supervisor;
3. Be sponsored into the collaborative program by a faculty member, normally the thesis supervisor, who must be appointed, cross-appointed or stand as an adjunct at one or more of the participating units. Prior admission to the Ph.D. program of a participating academic unit.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

**Program Requirements**

**PhD Degree Requirements**

The student is responsible for fulfilling both the participating unit requirements for the primary program and the requirements for the collaborative program.

The requirements specific to the collaborative program are as follows:

- 12 credits of graduate must be in neuroscience and must include PSY6201 and PSY6202 (or equivalents);
- Presentation and defence of a research thesis on a topic in behavioural neuroscience based on original research carried out under the supervision of a faculty member participating in the behavioural neuroscience collaborative program.

1. Students who completed PSY 6201 at the master's level must complete six additional credits in neuroscience for the PhD.

**Courses**
Outre les cours indiqués ci-dessous, un certain nombre d'autres cours dans le domaine des sciences neurologiques sont offerts par les unités scolaires participantes sur des sujets telles la neuroscience sensorielle, la psychopharmacologie, la neuroscience cognitive, la médecine du comportement et la scintigraphie du cerveau. Il est également possible de suivre des cours pertinents à la neuroscience offerts par la Faculté de médecine de l'Université d'Ottawa.

Les cours offerts peuvent varier d'une année à l'autre. Une liste à jour peut être obtenue auprès des coordonnateurs de la spécialisation. Les cours marqués CU sont offerts à Carleton University et ceux marqués UO le sont à l'Université d'Ottawa. Les cours équivalents sont indiqués entre crochets.

In addition to the courses listed below, a variety of neuroscience related courses are available through the participating academic units on topics including: sensory neuroscience, psychopharmacology, cognitive neuroscience, behavioural medicine and brain imaging. Students may also take relevant courses offered by the Faculty of Medicine, at the University of Ottawa. Course offerings vary slightly from year to year; a complete listing can be obtained from the specialization coordinators.

Carleton University course codes are marked (CU) and University of Ottawa courses (UO). Course equivalencies are indicated in square brackets.

**PSY6201 BASICS OF NEUROSCIENCE** (6cr.)
Comprehensive neuroscience course from the membrane and the cellular levels through the behavioural aspects of invertebrates and vertebrates. Lectures and tutorials on aspects of neuroscience such as neuroanatomy, neurophysiology, behavioural neuroscience and neuropharmacology.

**PSY6601 FONDEMENTS DE LA NEUROSCIENCE** (6cr.)
Cours de synthèse portant sur l'ensemble de la neuroscience, du niveau membranaire au niveau cellulaire incluant l'étude du comportement des invertébrés et des vertébrés. Cours magistraux et travaux dirigés sur divers aspects de la neuroscience et la neuropharmacologie du comportement.

**PSY6202 ADVANCED SEMINAR IN BEHAVIOURAL NEUROSCIENCE** (6cr.)
Advanced seminar course integrating behavioural analyses with aspects of neural circuits mediating and regulating these behaviours. *Prerequisite: Adequacy in background knowledge as assessed by one of the coordinators prior to commencement of course.*

**NEUROSCIENCE TECHNIQUES (3CR.)**
Completion of a research project using new research techniques, under the supervision of participating faculty member(s). [PSYC6204, BIOL6204 (CU)]

1. Completion of a research project using new research techniques, under the supervision of participating faculty member(s). [PSYC6204, BIOL6204 (CU)]

**Biochemistry (PhD)**

The Department of biochemistry, microbiology and immunology located in the Faculty of Medicine offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Biochemistry.

The objective of the program is to prepare candidates for a career in university teaching and research. Graduate students are actively involved in laboratory research, course work, and presentation of research seminars. Thus, they acquire autonomy in conducting research and in preparing publications. The program creates a stimulating and challenging environment which will allow students to achieve excellence in research. Graduates of the program must demonstrate research skills and credibility as professionals in their area of research.

Members of the Department are involved in three main research fields: general biochemistry, molecular biology, and, nutrition and metabolism. Further information is posted on the departmental website.

The Department is a participating unit in the following collaborative programs: the bioinformatics program (at the master’s level) and the human and molecular genetics program (at the master's and doctoral levels).

Most of the requirements of these programs must be fulfilled in English. A very good knowledge of this language is therefore required.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**
Admission to the graduate program in Biochemistry is governed by the General Regulations of the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a master's degree in science (or equivalent) with a minimum average of 75% (B+);
2. Demonstrate aptitude for research either through completion of a master's degree, or the writing of research reports, or abstracts or other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with their work;
4. Provide a statement of purpose indicating their academic interests, career goals and other factors relevant to their choice of research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The Department may require students to take additional courses depending on their backgrounds.

**Transfer from Master's to PhD Program**

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master's thesis provided they meet the following conditions:

1. Maintain an A- average during their graduate studies and in the last two years of undergraduate studies;
2. Complete all the core courses required for the M.Sc.;
3. Demonstrate a satisfactory progress in the research program;
4. Provide a written recommendation by the thesis supervisor;
5. Provide a written recommendation by the Departmental Graduate Studies Committee;
6. Successfully complete the Ph.D. comprehensive examination (BCH 9998).

The transfer must take place within sixteen months of initial registration in the master’s. Following transfer, all of the requirements of the doctoral program must be met: the doctoral seminar courses (BCH 8212S to BCH 8215S), six credits of course work (BCH 8101 to BCH 8109), the comprehensive exam (BCH9998), a research seminar (BCH 9997) and the thesis (BCH9999).

**Program Requirements**

**PhD Degree Requirements**

The following requirements must be met:

1. Six credits from the courses BCH8101 to BCH8109 or from other approved graduate courses in related disciplines approved by the Department;
2. Enrollment in the seminar courses (BCH8212S to BCH8215S), which involve the presentation of a seminar and the regular attendance at the departmental seminars;
3. Successful completion of a comprehensive examination (BCH9998);
4. Successful completion of a comprehensive examination (BCH9998);
5. Presentation and defense of a thesis (BCH9999) based on original research carried out under the direct supervision of a faculty member of the Department.

Note: The Department may require students to take additional courses depending on their backgrounds.

**Residence**

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

**Duration of the program**

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.
Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

BCH5101 ANALYSIS OF –OMICS DATA (3cr.)
Theoretical and practical aspects of various methods currently used to analyze the plethora of omics data. Methods: sequence alignment and database searches; sequence analysis and bioinformatics of gene regulation; DNA microarray and sequencing technologies to identify transcription factor binding sites; analysis of proteomics data; statistical analysis of preprocessed gene expression and protein/metabolite abundance data; epidemiology applications. Critical reading of the literature and strategies for making informed choices of methods for the analysis of students’ own data. Prerequisites: BCH2333, BCH3170.

BCH5366 MSc SEMINAR (3cr.)
Attendance and participation in the annual BMI Student Symposium and BMI Poster Day, attendance at BMI seminars relevant to Biochemistry. Students must present at least one poster and one oral presentation during the course of their program. Graded S/NS

BCH5501 ANALYSE DES DONNÉES –OMIQUES (3cr.)

BCH7999 RECHERCHE POUR LA THÈSE DE MAÎTRISE / MSC THESIS RESEARCH
À l’intention des étudiants faisant de la recherche en vue de l’obtention de la maîtrise. Les étudiants doivent soumettre au Département un plan détaillé de la recherche qu’ils se proposent de faire. Chaque année une rencontre avec un comité consultatif doit avoir lieu et un rapport de progrès doit être soumis au Département. For students doing research leading to the MSc degree. Students are responsible for ensuring that a detailed outline of the proposed research is on file with the Department and that they have an annual meeting with an advisory committee. Yearly progress reports must also be submitted to the Department.

BCH8101 PHYSICAL AND CHEMICAL METHODS IN BIOCHEMISTRY (3cr.)
Current applications of physical and chemical methods to the study of macromolecule structure-function relationships.

BCH8102 SELECTED TOPICS IN PROTEIN STRUCTURE AND FUNCTION (3cr.)
An advanced study of recent literature dealing with structure-function relationships in selected proteins.

BCH8103 / MIC 8228 ADVANCED TOPICS IN GENE EXPRESSION AND PROTEIN SYNTHESIS (3cr.)
An advanced study of the recent literature dealing with the chemistry, metabolism and function of nucleic acids, the biosynthesis of proteins, biochemical and genetic control mechanisms, genetic engineering and the control of gene expression. Offered every second year in alternation with MIC 8227/BCH 8105. Prerequisite: BPS 4101 or equivalent with the permission of the instructor.

BCH8104 ADVANCED TOPICS IN CELL REGULATION (3cr.)
An advanced study of recent literature dealing with signal transduction processes and the regulation of metabolism, cell proliferation and differentiation.

BCH8105 / MIC 8227 ADVANCED TOPICS IN MOLECULAR BIOLOGY OF HUMAN DISEASES (3cr.)
Topics will be selected and representative of current developments in the field. The course consists of a repeated series of a 3 hour lecture by an expert in the field one week, followed by student presentations, discussions and critique of assigned papers on that topic the following week. Topics on selected diseases will focus on various aspects of cancer, apoptosis, disease gene identification and gene therapy. In the past these topics have included the molecular aspects of various cancers, spinal muscular atrophy, tissue regeneration, the discovery of disease genes, infectious disease (HIV) and gene therapy. Students will write a grant proposal and participate in mock grant review panels. Depending on enrolment, the course may be limited to HMG students only. Prerequisite: Permission of the HMG program director.

BCH8106 ADVANCED TOPICS IN NUTRITION AND REGULATION OF METABOLISM (3cr.)
An advanced study of the recent literature dealing with metabolism, nutrition and metabolic control theory, with emphasis on both whole body and cell metabolism in metabolic and nutritional disorders such as obesity and non-insulin-dependent diabetes mellitus (NIDDM).

BCH8107 ADVANCED TOPICS IN STRUCTURE AND FUNCTION OF PLASMA LIPOPROTEINS (3cr.)
Recent advances in our knowledge of the plasma lipoproteins with a special emphasis on their role in the etiology of atherosclerosis. The subject will be introduced by an overview of the general structural properties of lipoproteins which will be followed by detailed discussion of the structure, metabolism and genetics of the apolipoproteins, the proteins and enzymes that modify lipoproteins and cell surface lipoprotein receptors. Other topics will include cholesterol
homeostasis, plasma cholesterol transport and disorders of lipoprotein metabolism.

**BCH8108 ADVANCED METHODS OF MACROMOLECULAR STRUCTURE DETERMINATION (3cr.)**
A detailed examination of modern methods used to determine the structures of proteins, nucleic acids, and carbohydrates. May include X-ray crystallography, electron diffraction, nuclear magnetic resonance, and other spectroscopic methods.

**BCH8109 / MIC 8124 ADVANCED TOPICS IN CELL DEATH (3cr.)**
Molecular mechanisms of cell death. Particular attention to be paid to role of aberrant cell death in human disease. Offered in the Fall of odd numbered years.

**BCH8110 ADVANCED TOPICS IN SYSTEMS BIOLOGY (3cr.)**
Recent advances in genomics, proteomics, bioinformatics, and neuroinformatics including functional and chemical genomics, RNA analyses, microarrays, mass spectrometry, and neural imaging. Course requirements include student presentations and writing a mock research proposal based on Canadian Institutes of Health Research (CIHR) guidelines. Limited enrollment. Offered in alternate years with BCH 8101 Physical and Chemical Methods in Biochemistry. Prerequisite: Permission of the program director.

**BCH8111 CHROMOSOME AND CHROMATIN BIOLOGY (3cr.)**
Higher order chromosome structure and chromatin remodeling and their impact on regulation of gene expression, DNA replication, repair and recombination, and chromosome segregation. Histone modifications and nucleosome positioning and their influence on higher order chromosome structure. Importance of chromosome and chromatin in the context of the cell cycle, development, and disease. Critical reading of the literature on chromosome and chromatin biology.

**BCH8114 ADVANCED TOPICS IN THE CELL CYCLE (3cr.)**
Mechanisms of cell cycle regulation. Model systems critical to deciphering the cell cycle in eukaryotes: budding and fission yeast, Xenopus laevis egg extracts, Aspergillus nidulans, Drosophila melanogaster, sea urchin and mouse oocytes and cultured vertebrate cells. Overview of the prokaryotic cell cycle.

**BCH8116 MODEL ORGANISMS AND SYSTEMS BIOLOGY (3cr.)**
Utilization of model organisms in the development and advancement of the systems biology field. Particular attention will be paid to the use of organisms such as Saccharomyces cerevisiae as a model platform for cell cycle progression/cancer. Other models may also be included. The basics of the technology will be discussed along with the application of technology to complex biological questions, in particular relating to the cell cycle. Course offered in alternate years.

**BCH8117 ADVANCED TOPICS RELATING TO THE CELL CYTOSKELETON AND MEMBRANES (3cr.)**
Advanced study of recent literature dealing with the mammalian cellular cytoskeleton and membrane with an emphasis on the regulation of cell motility, adhesion and cell division.

**BCH8165 SPECIAL TOPICS IN BIOCHEMISTRY I (2cr.)**
A survey of recent advances in selected areas of biochemistry.

**BCH8166 SPECIAL TOPICS IN BIOCHEMISTRY II (2cr.)**
A survey of recent advances in selected areas of biochemistry.

**BCH8310 CURRENT TOPICS IN RNA MOLECULAR BIOLOGY (3cr.)**
Properties, mechanisms associated with regulation and the functions of RNAs and Ribonucleoprotein (RNP)s as well as RNA organisms. Current knowledge on RNA expression (synthesis, processing, transport and localization), the structure-function relationship and molecular mechanisms associated with RNAs and RNA genomes, RNA in evolution and in the origin of life, and RNA as therapeutic agents. Prerequisites: BCH/BIO 3570-3170 or equivalent with the permission of the program director. Exclusion: CMM 6310.

**BCH8366 PhD SEMINAR (3cr.)**
Attendance and participation in the annual BMI Student Symposium and BMI Poster Day, attendance at BMI seminars relevant to Biochemistry. Students will present a poster in their first and every alternate year, and an oral presentation the second and every alternate year until they have permission to write their thesis. Graded S/NS

**BCH8511 BIOLOGIE DES CHROMOSOMES ET DE LA CHROMATINE (3cr.)**
Organisation de la structure des chromosomes et le remodelage de la chromatine ainsi que l’impact de ceux-ci sur la régulation de l’expression génique, la réplication, la réparation et la recombinaison de l’ADN ainsi que sur la ségrégation des chromosomes. Les modifications histoniques et le positionnement des nucléosomes ainsi que leur influence sur la structure organisée des chromosomes. Importance des chromosomes et de la chromatine dans le contexte du cycle cellulaire, du développement et des maladies. Lecture critique de la littérature portant sur la biologie des chromosomes et de la chromatine.

**BCH9997 SÉMINAIRE DE RECHERCHE / RESEARCH SEMINAR**
À l’intention des étudiants faisant de la recherche en vue de l'obtention du Ph.D. Un séminaire, fondé sur les résultats originaux de leur recherche, doit être présenté par les étudiants avant qu’ils ne commencent à rédiger leur thèse de Ph.D. / For students doing research leading to the doctorate. A seminar, based on the student's original results, to be presented just prior to the writing of the PhD thesis.

**BCH9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAMINATION (PhD)**
À l’intention des étudiants inscrits au programme de Ph.D. L’inscription à ce cours est limitée à trois sessions consécutives. / For students enrolled in the doctoral program. Enrollment in this course is limited to three consecutive academic sessions.
BCH9999 RECHERCHE POUR LA THÈSE DE DOCTORAT / DOCTORAL THESIS RESEARCH
A l'intention des étudiants faisant de la recherche en vue de l'obtention du Ph.D. Les étudiants doivent soumettre au Département un plan détaillé de la recherche qu'ils se proposent de faire. Chaque année, une rencontre avec un comité consultatif doit avoir lieu et un rapport de progrès doit être soumis au Département. / For students doing research leading to the doctoral degree. Students are responsible for ensuring that a detailed outline of the proposed research is on file with the Department and that they have an annual meeting with an advisory committee. Yearly progress reports must also be submitted to the Department.

CMM5315 CELLULAR AND MOLECULAR BASIS OF CARDIOVASCULAR FUNCTION/DYSFUNCTION (3cr.)
Mechanism of failing heart and cardiovascular system, its associated functions and associated conditions. Therapies for restoring function. Topics include: regulation of heart development, cell signaling, cellular and molecular mechanisms of atherosclerosis and heart disease, hormonal regulation, hypertension, bioenergetics, cardiovascular genomics and genetics, cell therapy, and regenerative medicine.

Biology (PhD)

Ottawa-Carleton Joint Program
Established in 1984, the Ottawa-Carleton Institute of Biology (OCIB) combines the research strengths of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Biology.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in three main research fields: cell and molecular biology; ecology, behaviour and systematics; and, physiology and biochemistry. Additional information is posted in the departmental website.

The Institute is a participating unit in the following collaborative programs: the Bioinformatics program (at the master’s level) and the Chemical and Environmental Toxicology program (at the master’s and doctoral levels).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “Regulations and Procedures for Joint Graduate Programs” (www.ojrip.ca) and the general regulations of the graduate faculty at the two universities. The "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate program in Biology is governed by the General Regulations of the Ottawa-Carleton Institute of Biology (OCIB) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a master's degree in Biology (or equivalent) with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Transfer from master's to PhD program

Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master's thesis provided they meet the following conditions:

1. Completion of two graduate courses (6 credits) with a grade of A- or better in each;
2. Satisfactory progress in the research program;
3. Written recommendation by the supervisor and the advisory committee;
4. Approval by the graduate studies committee;
5. Successful completion of the comprehensive examination (BIO9998).

The transfer must take place within sixteen months of initial registration in the master’s. Following the transfer, all of the requirements of the doctoral program must be met: a total number of 12 credits of graduate coursework (MSc+PhD); participation in the departmental seminar series; and a thesis.

Collaborative programs

The Department of Biology is a participating unit in the collaborative programs in Bioinformatics and in Chemical and Environmental Toxicology. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, see the description of the program posted on the FGPS website.

Program Requirements

The following requirements must be met:

1. Six credits of graduate courses at the 5000 level or above in biology or in related disciplines approved by the Department of Biology;
2. Successful completion of a comprehensive examination (BIO9998) within twelve months of the initial admission into the program;
3. Enrollment in the seminar course BIO8900, which involves the presentation of seminars and the regular attendance at the seminars presented by the Department;
4. Presentation and defense of a thesis (BIO9999) based on original research carried out under the direct supervision of a faculty member of the Department.

The Department may require students to take additional courses depending on their backgrounds.

Residence
All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

Minimum Standards
The passing grade in all courses is 70% (B). Students who fail two courses (equivalent to 6 credits), or the thesis proposal, or the comprehensive exam, or whose progress is deemed unsatisfactory must withdraw from the program.

Duration of the program
The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Thesis Advisory Committee (TAC)
During the first session of the program, a thesis advisory committee (TAC) is formed for the candidate. The Committee’s membership will be determined by the specific interests of the candidate. It will consist of a minimum of three members: the thesis supervisor, and two full time faculty members, adjunct, or cross-appointed professors in the OCIB.
One of the members of the committee, in addition to the thesis supervisor, must have expertise in the field of the student's thesis research. To provide outside perspective, one of the members should be from a different research group. The members of the committee should be chosen by the supervisor in consultation with the student and approved by the director of the Graduate Studies Program.
The TAC is responsible for guiding the student throughout the program, including course selection, the comprehensive examination, thesis proposal, and thesis defense.
Meetings between the student and thesis committee members will take place regularly until the thesis is completed. The thesis examining board may include members who are not part of the TAC.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d’Ottawa correspond à un cours de 0,5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.
Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

**BIO5101 (BIOL 5001) TOPICS IN BIOTECHNOLOGY** (3cr.)
A course concerned with the utilization of biological substances and activities of cells, genes and enzymes in manufacturing, agricultural and service industries. A different topic will be selected each year. Prerequisite: A course in cell physiology or biochemistry, or permission of instructor.

**BIO5102 (BIOL 5605) FIELD COURSE** (3cr.)
Credit for this half-course is based on a total of three weeks of field-course modules, involving one or two weeks of intensive and continuous field work with attendant assignments.

**BIO5103 (BIOL 5003) COMPARATIVE BIOCHEMISTRY** (3cr.)
Advanced topics emphasizing biochemical structures, functions and methodologies in the context of animal (invertebrates and vertebrates) adaptations to environmental stress.

**BIO5105 (BIOL 5801) ADVANCED ANIMAL BEHAVIOUR** (3cr.)
A course in animal behaviour from an ecological and evolutionary point of view with additional independent assignments. Prerequisites: BIOL 3305 and BIOL 3601 or equivalents and registration in a graduate program, or written permission of the department.

**BIO5106 (BIOL 5506) BIOINFORMATICS** (3cr.)
Major concepts and methods of bioinformatics. Topics may include, but are not limited to genetics, statistics and probability theory, alignments, phylogenetics, genomics, data mining, protein structure, cell simulation and computing.

**BIO5207 (BIOL 5500) SELECTED TOPICS** (6cr.)
Courses in selected aspects of specialized biological subjects, not covered by other graduate courses; course details will be available at registration.

**BIO5213 (BIOL 5506) ADVANCED INSECT / ANIMAL SYSTEMATICS** (6cr.)
A lecture and seminar course concerning methods, roles and advances in systematics of insects and other animals. One research project required. Prerequisite: A 400-level course in identification or classification of insects or other animals.

**BIO5301 (BIOL 5100) PLANT DEVELOPMENT** (3cr.)
An advanced course dealing with selected topics in the experimental study of plant development.

**BIO5302 (BIOL 5105) METHODS IN MOLECULAR GENETICS** (3cr.)
Review of the fundamental theory and techniques in genetic manipulation of prokaryotes and eukaryotes and examination of some of the innovative new strategies which are being applied to a variety of problems in molecular biology. Prerequisites: Graduate standing and permission of the department.

**BIO5305 (BIOL 5407) QUANTITATIVE ECOLOGY** (3cr.)
A course on analysis of the distribution and abundance of plants and animals, and of related environmental phenomena. Computer assignments and a major data analysis project will be required. Prerequisites: Graduate standing, courses in elementary ecology and statistics and permission of the department.

**BIO5306 (BIOL 5409) MATHEMATICAL MODELLING FOR BIOLOGISTS** (3cr.)
This course is designed to develop mathematical tools for the modelling of biological processes. The student is taught the necessary mathematics, a computer language, and guidance is given in the choice of simulation of a biological process.

**BIO5308 (BIOL 5106) LABORATORY TECHNIQUES IN MOLECULAR GENETICS** (3cr.)
Laboratory course complementary to BIO 5202 (61.717 F1), designed to give students practical experience in many of the important techniques in molecular genetics. Six hours of laboratory work per week. Prerequisites: Graduate standing and permission of the department.

**BIO5900 SÉMINAIRE DE MAÎTRISE / MSc SEMINAR** (1cr.)
Obligatoire à la maîtrise. L'obtention de crédit est fondée sur la présentation d'un séminaire jugé satisfaisant par le personnel et sur la participation à l'ensemble du cours. / Compulsory for all MSc students. For credit, each student must present one seminar judged to be satisfactory by the staff and must participate in the course as a whole.

**BIO5901 (BIOL 5503) DÉVELOPPEMENTS RÉCENTS EN BIOLOGIE / RECENT ADVANCES IN BIOLOGY** (3cr.)
Ce cours a pour but de présenter les dernières réalisations dans les principales disciplines de la biologie. Il consiste en une série de présentations par des professeurs et des biologistes invités, ainsi qu'en lectures dirigées. / A course intended for all first year graduate students to bring them up to date in the various major areas of biology. The course will consist of selected readings, lectures and invited speakers.

**BIO8100 (BIOL 5501) SELECTED TOPICS IN BIOLOGY I** (3cr.)
Lectures and/or seminars dealing with current advances in a selected area or branch of biology, not covered by other graduate courses.
BIO8102 (Biol. 5502) SELECTED TOPICS IN BIOLOGY II (3cr.)
Lectures and/or seminars dealing with current advances in a selected area or branch of biology, not covered by other graduate courses.

BIO8104 SELECTED TOPICS IN BIOLOGY III (3cr.)
Lectures and/or seminars dealing with current advances in a selected area or branch of biology, not covered by other graduate courses.

BIO8108 (Biol. 6505) ADVANCED TOPICS IN DEVELOPMENT (3cr.)
Recent advances in developmental biology. Topics may include embryonic induction, regulation of morphogenesis and differentiation, mechanisms of regional specification and pattern formation, and developmental genetics. (Offered in alternate years).

BIO8109 (Biol. 6001) ADVANCED MOLECULAR BIOLOGY I (3cr.)
Recent advances in molecular biology. Topics for discussion may include the following: DNA structure and function, the organization of the genome; DNA, RNA and protein synthesis; the regulation of gene expression in eukaryotes and prokaryotes. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 8116/BIO 6002 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

BIO8110 (Biol. 6002) ADVANCED MOLECULAR BIOLOGY II (3cr.)
Recent advances in molecular biology. Topics for discussion may include the following: mutagenesis and DNA repair mechanisms; molecular aspects of gene transfer recombination and gene rearrangement; gene transfer mechanisms, the molecular biology of yeasts and fungi, especially with regard to industrial applications; the modern techniques of genetic engineering as applied to industrial and medical problems. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 6001 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

BIO8116 (Biol. 6201) ADVANCED CELL BIOLOGY I (3cr.)
Recent advances in cell biology. Topics for discussion may include the following: the composition, biosynthesis and three-dimensional organization of the cytoskeleton, factors regulating its deployment and the role of cytoskeletal elements in mitosis, cell-substrate attachment, cell motility, transport of organelles and axoplasmic transport, cell surface and extracellular matrix. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of University of Ottawa and Carleton University. BIO 8118/BIO 6202 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

BIO8117 (Biol. 6202) ADVANCED CELL BIOLOGY II (3cr.)
Topics for discussion may include the following: the structure, composition and three-dimensional organization of the nucleus, mechanisms and regulation of genome replication, structural organization of transcription. Role of the nucleus in virus replication and hormone response, structural and functional reorganization of nuclear components during gamete development, fertilization and the mitotic cell cycle. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 8117/BIO 6201 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

BIO8122 (Biol. 5307) ADVANCED INSECT PHYSIOLOGY (3cr.)
A lecture and seminar course concerning physiological characteristics of insects. In addition to the course material, students will write two term papers (alternate years.)

BIO8123 (Biol. 5601) ADVANCED TOPICS IN INSECT EVOLUTION (3cr.)
Major concepts and questions in insect evolution in the areas of systematics, morphology, the fossil record, biology and behaviour. Two hours of lectures or discussions per week as well as laboratory work.

BIO8124 (Biol. 5009) ONTARIO VEGETATION: PATTERNS, PROCESSES AND PROTECTION (3cr.)
Patterns of vegetation and plant species distributions in Ontario will be investigated with respect to their origin and maintaining processes. Review of current methods of protection of significant and representative vegetation using zonal concepts.

BIO8162 (Biol. 5402) TOPICS IN COMPARATIVE ENDOCRINOLOGY (3cr.)
A lecture and reading course concerned with classical as well as current topics in the field of comparative endocrinology. Special emphasis will be placed on the vertebrates. Prerequisite: An undergraduate Endocrinology course (BIO 4127 or equivalent).

BIO8204 ECOLOGY SEMINAR (3cr.)

BIO8301 (Biol. 5201) EVOLUTIONARY GENETICS AND COMPUTER ANALYSES (3cr.)
Students will learn the basic concepts in molecular evolution and gain hands-on experience with the computer analysis of DNA sequences. Topics covered will include molecular sequence databases, multiple alignments, amino acid and codon usage, molecular clocks, and phylogenetic trees. Prerequisites: Graduate standing plus basic courses in genetics and evolution; permission of the department.

BIO8302 (Biol. 5202) TOPICS IN EVOLUTIONARY GENETICS (3cr.)
A lecture/seminar course on genetic mechanisms and forces responsible for variation and evolutionary change in natural populations. Topics to include protein and genome evolution, molecular phylogenies, DNA sequences in population biology, and the evolution of multigene families. Prerequisites: Graduate standing plus basic courses in genetics and evolution; permission of the department (alternate years).
BIO8303 (BIOL 5203) TECHNIQUES OF LIGHT MICROSCOPY (3cr.)
An advanced laboratory and lecture course on the principles and techniques of light microscopy. Prerequisite: Open to 4th year and graduate students with consent of the instructor.

BIO8304 (BIOL 5204) TECHNIQUES OF ELECTRON MICROSCOPY (3cr.)
An advanced laboratory and lecture course on the principles and techniques of electron microscopy. Prerequisite: Open to 4th year and graduate students with consent of the instructor.

BIO8306 (BIOL 5508) ADVANCED TOPICS IN ECOLOGY I (3cr.)
Lectures, seminars and discussions on current literature on experimental approaches, concepts and findings in population and community ecology, ecosystem and landscape ecology and biostatistics. Course content to complement that of BIO 8307 / BIOL 5509; not necessary to take the two in a particular order.

BIO8307 (BIOL 5509) ADVANCED TOPICS IN ECOLOGY II (3cr.)
Lectures, seminars and discussions on current literature on experimental approaches, concepts and findings in population and community ecology, ecosystem and landscape ecology and biostatistics. Course content to complement that of BIO 8306/BIOL 5508; not necessary to take the two in a particular order.

BIO8319 (BIOL 6205) ADVANCED PLANT PHYSIOLOGY (3cr.)
A lecture and seminar course dealing with selected topics in advanced plant physiology, available only to graduate students. Prerequisite: BIOL 4209 or equivalent or permission of the department.

BIO8320 (BIOL 6300) ADVANCED PLANT BIOCHEMISTRY (3cr.)
A lecture and seminar course, available only to graduate students, and dealing with selected topics in advanced plant biochemistry. Prerequisites: BIOL 4205 and BIOL 4206/4207, or permission of the department.

BIO8361 (BIOL 6304) ADVANCED TOPICS IN ANIMAL PHYSIOLOGY (3cr.)
In-depth study of selected areas in animal physiology of current research interest.

BIO8365 (BIOL 5802) ADVANCED BEHAVIOURAL ECOLOGY (3cr.)
Recent ideas and research on advanced topics dealing with the evolution of foraging, temporal, spatial, and reproductive strategies will be discussed and critically examined. Offered in alternate years.

BIO8900 SÉMINAIRE DE DOCTORAT / PhD SEMINAR (2cr.)
Obligatoire au doctorat. L'obtention de crédit est fondée sur la présentation de deux séminaires jugés satisfaisants par le personnel et sur la participation à l'ensemble du cours. / Compulsory for all PhD students. For credit, each student must present two seminars judged to be satisfactory by the staff and must participate in the course as a whole.

BIO8935 (BIOL 6401) DÉVELOPPEMENTS RÉCENTS EN BIOLOGIE VÉGÉTALE / RECENT ADVANCES IN PLANT BIOLOGY (3cr.)
Sujets d'étude et de recherche de pointe. / Special topics of current interest.

BIO8938 (BIOL 6404) INTERACTIONS ENTRE PLANTES ET ANIMAUX / PLANT ANIMAL INTERACTIONS (3cr.)
Les substances métaboliques secondaires des plantes et leur rôle en tant que phagorépresseurs ou phagostimulants pour les animaux et en tant qu'agents antifongiques ou allélopathiques. On discutera de la coévolution des plantes et des organismes phytophages (insectes et mammifères) et des dimensions physiologique et écologique de cette relation / Secondary metabolites of plants and their role as attractants or antifeedants to animals and as allelopathic or antifungal agents. Emphasis will be placed on co-evolution of plants and phytophagous organisms such as insects and mammals, and the ecological and physiological dimensions of this relationship (alternate years.)

BIO9104 (BIOL 6403) ECOTOXICOLOGY (3cr.)
Selected topics and advances in ecotoxicology with emphasis on the biological effects of contaminants. The potential of biotic perturbance resulting from chronic and acute exposure of ecosystems to selected toxicants will be covered along with the methods of pesticide, herbicide and pollutant residue analysis and the concept of bound residues.

BIO9105 (BIOL 6405) SEMINAR IN TOXICOLOGY (3cr.)
A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topic. Student, faculty and invited seminar speakers.

BIO9202 (BIOL 5405) PROJECT IN APPLIED ECOLOGY (Reading and applied field work, limited enrolment) (6cr.)
A course, in the of a special research project, in which the student identifies an environmental problem and the corporate or governmental body that has the power to rectify the problem. Work includes: 1) a literature review, with a report on this review; 2) a second report, in the form of an article in a newspaper or magazine, to convey the relevant results to non-scientists; 3) an approach to the relevant private or governmental agency, with an attempt to have the solution implemented, and a detailed report on this experience.

BIO9301 (BIOL 5306) PHOTOBIOLOGY
The interaction of light and living organisms. Topics include an introduction to photochemistry and the detailed study of such topics as photosynthesis, vision,
photosensitivity and photoperiodism.

**BIO9701 PHOTOBIOLOGIE** (3cr.)
Interaction de la lumière et des organismes vivants. Étude des sujets suivants: introduction à la photochimie et étude détaillée de la photosynthèse, de la vision, de la photosensibilité et du photopériodisme.

**BIO7999 (BIOL 5909) THÈSE DE MAÎTRISE / MSc THESIS**

**BIO9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAMINATION (PhD)**

**BIO9999 (BIOL 6909) THÈSE DE DOCTORAT / PhD THESIS**

**Canadian Studies (PhD) (Collaborative)**

Because of its strength in relevant areas, its bilingual character and its location in the national capital, the University of Ottawa is uniquely positioned to offer a collaborative program leading to a specialization in Canadian Studies at the doctoral level. The program is especially designed for doctoral students in selected programs in the humanities and the social sciences who wish to enrich their training in a particular discipline by including an interdisciplinary component.

**Participating Academic Units**

Fifteen academic units collaborate in this program: Economics, Education, English, Geography, History, Human Kinetics, Lettres françaises, Linguistics, Philosophy, Political Science, Psychology, Religious Studies, Sociology, Spanish and Translation and Interpretation. Please refer to the Website of the Faculty of Graduate and Postdoctoral Studies for more information on the graduate programs of these units.

**Admission**

Admission to the collaborative program in Canadian Studies at the doctoral level is determined by the coordination committee and will normally take place before the end of the first year of registration in the doctoral program. Students must meet the following conditions to be accepted:

1. Registration in the doctoral program of one of the participating units.
2. Registration in, or successful completion of, at least one course with Canadian content in the participating unit where the student is registered.
3. Selection of the thesis topic with Canadian content. The coordination committee will determine, in consultation with the thesis director, if the Canadian content of the thesis meets the requirements of the collaborative program.

The title of the degree will in each case specify the discipline of the participating unit with specialization in Canadian Studies.

**Language Requirements**

Students should be able to understand and read both official languages of Canada in order to participate in the bilingual interdisciplinary seminar CDN 6910.

**Program Requirements**

**Degree Requirements**

The proposed topic must be approved by both the participating unit and the Canadian Studies Graduate Committee. At least one of the examiners of the thesis must be a person chosen in consultation with the executive committee of the Institute of Canadian Studies.

Students enrolled in the collaborative program will be asked to meet both the requirements of their primary academic program and those of the collaborative program. The requirements of the collaborative program will serve as partial fulfillment of the requirements of the academic program.

The specific requirements of the collaborative program include the following:

- CDN6910 SÉMINAIRE EN ÉTUDES CANADIENNES / SEMINAR IN CANADIAN STUDIES (3cr.)

or
• CDN6520 SÉMINAIRE SUR LA FRANCOPHONIE CANADIENNE (3cr.)

• Submission and successful defence of a thesis on a Canadian topic in the participating unit.

Before registering in CDN 6520, students must check to see whether this course can replace a three credit course in their primary program. CDN 6520 is offered only in French.

Courses

CDN6910 SÉMINAIRE EN ÉTUDES CANADIENNES / SEMINAR IN CANADIAN STUDIES (3cr.)
Séminaire interdisciplinaire bilingue sur des sujets se rapportant au Canada. Les thèmes seront choisis en consultation avec les unités participantes, en tenant compte du nombre d’étudiants, de l’orientation de leur recherches et celles des unités participantes. / Bilingual interdisciplinary seminar on issues related to the study of Canada. Topics to be selected in consultation with participating units, taking into consideration the number of students, their research interests and those of the participating units.

CDN6520 SÉMINAIRE SUR LA FRANCOPHONIE CANADIENNE (3cr.)
Séminaire sur des thèmes se rapportant à la francophonie canadienne, particulièrement les francophones vivant en situation minoritaire.

Canon Law (PhD)

The Faculty of Canon Law of Saint Paul University offers graduate programs leading to the master in canon law (MCL), a master of arts in canon law (MA (CL)) and a doctor of philosophy in canon law (PhD(CL)). These are civil degrees, conferred jointly by the Senates of the University of Ottawa and Saint Paul University.

In addition to the general requirements of the Faculty of Graduate and Postdoctoral Studies, the Faculty of Canon Law outlines a certain number of requirements in its calendar.

Admission

A candidate for the PhD degree in canon law must hold a master's degree in canon law or its equivalent with a minimum average of 80 per cent(A-).

Only students judged to have outstanding potential to succeed in graduate studies and to contribute personally to the legal field will be accepted as candidates for the doctorate.

Comprehensive Examination

Before completing the course requirements, or at least before submitting the thesis, the candidate must pass an examination on ten questions approved by the Faculty Council; the list of topics will have been prepared by the candidate in consultation with the dissertation director.

A candidate who fails this examination may be permitted to repeat it once.

Thesis

In addition to having completed course requirements, the doctoral candidate must write, submit, and successfully defend a dissertation of at least 200 pages in length.

Using the form supplied by the Secretariat, candidates must submit their thesis topic in writing. It will be examined by a special committee. The final approval of the thesis topic and the appointment of the director are the responsibility of the Dean of the Faculty of Canon Law.

The thesis topic must be presented during the year following the student's registration in the doctoral program. The candidate must submit the thesis within six years after the first registration in the program.

For additional information on research and theses, please consult the General Regulations of the Faculty of Graduate and Postdoctoral Studies.

Program Requirements
PhD Degree Requirements
The doctoral program consists of six credits of graduate courses according to a choice approved by the Dean. They must normally be chosen among those numbered 8000 in the course list found hereafter. However, any other course of the same level accepted by the Senate and approved by the Dean may be substituted.

Candidates must obtain at least C+ in all courses. Students who fail in a course at the graduate level have no right to a supplemental examination. They may repeat the course or take one specified by the Dean. Students who have failed in two subjects of their doctoral program must withdraw.

Residence
A candidate for the doctorate must spend four sessions in residence as a full-time student at the University. (The word “session” means an academic period of approximately four months duration.)

The final mark of the degree is calculated according to the following ratio:
- Dissertation 60%
- Defence 10%
- Comprehensive examination 20%
- Yearly examinations 10%

Courses

DCA5102 GENERAL NORMS I (3cr.)
Canonical concepts and terminology; laws, customs, physical and juridical persons, juridical acts, power of governance.

DCA5103 UNIVERSAL AND SUPRA DIOCESAN CHURCH STRUCTURES (3cr.)
Supreme authority of the Church: Roman Pontiff, College of Bishops and Ecumenical Council. Synod of Bishops, College of Cardinals, Roman Curia, legates. Groupings of particular Churches: ecclesiastical provinces and regions, metropolitans, particular councils (plenary and provincial), conferences of bishops.

DCA5112 FOUNDATIONS OF CANON LAW (3cr.)
Canonical methodology, philosophy of law, theology of canon law.

DCA5121 HISTORY OF CANON LAW (3cr.)
History of canonical sources: biblical sources; councils and synods, patristic canons, papal decretals; chronological and systematic collections; Gratian’s Decree; collections of Decretals; the Corpus Iuris Canonici; 20th century codification of the Latin law; Eastern law codification. History of canonical institutions: diachronic analysis of some institutions of the Catholic Church and its law: e.g., episcopacy, the office of the Roman Pontiff, marriage, judicial and administrative procedures…

DCA5123 THE INTERNAL ORDERING OF PARTICULAR CHURCHES I: FOUNDATIONAL QUESTIONS (3cr.)
Particular Churches. Bishops: bishops in general, diocesan bishops, coadjutor and auxiliary bishops. Impeded or vacant see. Personal prelates.

DCA5124 THE INTERNAL ORDERING OF PARTICULAR CHURCHES II: ADMINISTRATIVE ISSUES (3cr.)
Diocesan synod, diocesan curia: vicars general, episcopal vicars, chancellor, finance committee, financial administrator; presbyteral council; college of consultants; chapter of canons; pastoral council; parishes, parish priests, assistant priests; vicars forane; rectors of churches, chaplains. Associations of Christ's faithful (public, private, and lay).

DCA5125 MATRIMONIAL LAW I: MATRIMONIAL CONSENT (3cr.)
Marriage: General Introduction; Matrimonial Consent.

DCA5126 MATRIMONIAL LAW II: SPECIAL ISSUES AND CASES (3cr.)
Preparation for marriage; matrimonial impediments; separations of spouses; validation special procedures: cases of separation of spouses, of dispensation from a ratified and non-consummated marriage, of presumed death of a spouse.

DCA5133 JUDICIAL PROCEDURES (3cr.)
Theoretical part: competent forum, different grades and kinds of tribunals, rules of practice, parties in the case, actions and exceptions.

DCA5203 INSTITUTES OF CONSECRATED LIFE AND SOCIETIES OF APOSTOLIC LIFE (3cr.)
Norms common to all institutes of consecrated life and societies of apostolic life. Religious institutes: religious houses, governance of institutes, admission of candidates and formation of members, obligations and rights of the institutes and of their members, apostolate of institutes, separation of members from the institute, religious who are bishops, conferences of major superiors. Secular institutes. Societies of apostolic life.
DCA5204 SACRAMENTAL AND LITURGICAL LAW (6cr.)
Sacraments: baptism; confirmation; Eucharist; penance; anointing of the sick; order. Other acts of divine worship: sacramentals; liturgy of the hours; Church funerals; cult of saints, of sacred images, and of relics; vows and oaths. Sacred places and times: churches, oratories, private chapels, shrines, altars, cemeteries; feast days and days of penance.

DCA5207 SPECIAL SECTORS OF LAW (6cr.)
Elements of Roman Law, Civil Law and Common Law in reference to Canon Law. Introduction to the law of the Eastern Catholic Churches.

DCA5208 THE FAITHFUL, THE MAGISTERIUM, THE CHURCH AND CIVIL SOCIETY (6cr.)

DCA5301 WORKSHOP ON CANONICAL DRAFTING
Practical workshops on the drafting of legislative and administrative documents in the context of the administration of dioceses and of institutes of consecrated life; drafting of briefs by advocates, defenders of the bond, promotors of justice, and of judgments by ecclesiastical judges.

DCA5302 CANON LAW AND THE ECCLESIOLOGY OF VATICAN II (3cr.)
How is canon law related to the ecclesiology of Vatican II and how does it apply that ecclesiology? The hypothesis of "the two ecclesiologies" of Vatican II in relation to canon law. Study of the Vatican II documents in relation to canon law. Ecumenism and canon law.

DCA5303 THE PROCESS OF REVISION OF CANON LAW IN THE 20TH CENTURY (3cr.)
The process of revision which gave rise to the 1917 and 1983 Codes of Canon Law and to the 1990 Code of Canons of the Eastern Churches.

DCA5304 COMPARATIVE PARTICULAR LAW (3cr.)
Comparative study of the development of particular canon law at the level of conferences of bishops.

DCA5306 GENERAL NORMS II (3cr.)
General decrees and instructions; singular administrative acts; statutes and ordinances; ecclesiastical offices; prescription; computation of time in canon law.

DCA5396 DIRECTED STUDIES I (3cr.)

DCA5397 DIRECTED STUDIES II (3cr.)

DCA5398 DIRECTED STUDIES III (3cr.)

DCA5502 NORMES GÉNÉRALES I (3cr.)
Concepts and terminology of the droit canonique; lois et coutumes; personnes physiques et juridiques; acts juridiques; pouvoir de gouvernance.

DCA5503 STRUCTURES DE L'ÉGLISE UNIVERSELLE ET SUPRADIOCÉSAINE (3cr.)

DCA5512 FONDATIONS DU DROIT CANONIQUE (3cr.)
Méthodologie canonique, philosophie du droit, théologie du droit canonique.

DCA5521 HISTOIRE DU DROIT CANONIQUE (3cr.)
Histoire des sources canoniques: sources bibliques, conciles et synodes, canons patristiques, décrétales des papes; collections chronologiques et systématiques; le Décret de Gratien et les collections de Décrétales; le Corpus iuris canonici; codification du droit latin au XXe siècle; codification du droit oriental. Histoire des institutions canoniques: analyse diachronique de quelques institutions de l'Église catholique et de son droit, par ex.: l’épiscopat, le ministère du pontife romain, le mariage, procédures judiciaires et administratives…

DCA5523 ORGANISATION INTERNE DES ÉGLISES PARTICULIÈRES I: QUESTIONS FONDAMENTALES (3cr.)

DCA5524 ORGANISATION INTERNE DES ÉGLISES PARTICULIÈRES II: QUESTIONS ADMINISTRATIVES (3cr.)
Synode diocésain; curie diocésaine : vicaire généraux et épiscopaux, chancelier, conseil pour affaires économiques, économie; conseil presbytéral; collège des consulteurs; chapitre des chanoines; conseil pastoral; paroisses, curés, vicaires paroissiaux; vicaires forains; recteurs d'églises, chapelains. Associations de fidèles (publiques, privées, de laïcs).

DCA5525 DROIT MATRIMONIAL I: CONSENTEMENT (3cr.)
Mariage : Introduction générale: le consentement matrimonial.

DCA5526 DROIT MATRIMONIAL II: QUESTIONS ET CAUSES SPÉCIALES (3cr.)
Mariage, séparation des époux, convalidation. Procédures spéciales : causes de séparation des époux, de dispense d'un mariage conclu et non consommé, de présomption de la mort d'un conjoint.

DCA5533 Procédures judiciaires (3cr.)
Les règlements en général: for compétent, divers degrés et genres de tribunaux, règles de pratique, parties dans la cause, actions et exceptions.

DCA5603 INSTITUTS DE VIE CONSACRÉE ET SOCIÉTÉS DE VIE APOTOLIQUE (3cr.)

DCA5604 DROIT SACRAMENTEL ET LITURGIQUE (6cr.)
Sacrements: baptême; confirmation; Eucharistie; pénitence; onction des malades; ordre. Autres actes du culte divin: sacramentaux; liturgie des heures; funérailles ecclésiastiques; culte des saints, des saintes images et des reliques; v u et serment. Lieux et temps sacrés: églises, oratoires, chapelles privées, sanctuaires, autels, cimetières; jours de fête et de pénitence.

DCA5607 SECTEURS SPÉCIAUX DU DROIT (6cr.)
Eléments de droit séculier en référence au droit canonique : droit romain, droit civil, common law. Initiation au droit canonique des Églises orientales catholiques.

DCA5608 FIDÈLES, MAGISTÈRE, ÉGLISE ET SOCIÉTÉ CIVILE (6cr.)

DCA5701 ATELIER DE RÉDACTION CANONIQUE
Ateliers pratiques de rédaction de documents législatifs et administratifs dans le contexte des administrations des diocèses et des instituts de vie consacrée; rédaction de plaidoyers d'avocats, de remarques de défenseurs du lien et de promoteurs de la justice ainsi que de jugements de juges ecclésiastiques.

DCA5702 LE DROIT CANONIQUE ET L'ECCLÉSIOLOGIE DE VATICAN II (3cr.)

DCA5703 LE PROCESSUS DE RÉVISION DU DROIT CANONIQUE AU XXE SIÈCLE (3cr.)
Le processus de révision qui a donné naissance aux Codes de droit canonique de 1917 et de 1983 ainsi qu'au Code des canons des Églises orientales de 1990.

DCA5704 LE DROIT PARTICULIER COMPARÉ (3cr.)
Étude comparative de l'élaboration du droit canonique particulier au niveau des conférences des évêques.

DCA5706 NORMES GÉNÉRALES II (3cr.)
Décrets généraux et instructions; actes administratifs particuliers; statuts et règlements; offices ecclésiastiques; prescription; le calcul du temps en droit canonique.

DCA5796 ÉTUDES DIRIGÉES I (3cr.)
DCA5797 ÉTUDES DIRIGÉES II (3cr.)
DCA5798 ÉTUDES DIRIGÉES III (3cr.)

DCA6112 SELECTED ISSUES IN CHURCH ADMINISTRATION (3cr.)
Loss of clerical state, laicization; archives; civil court cases; statutes of diocesan bodies; merging and suppression of parishes; arbitration, mediation, settlement.

DCA6113 SELECTED ISSUES IN CHURCH ADMINISTRATION II (3cr.)
Acquisition of goods; their administration; contracts and in particular, alienation; pious dispositions and pious foundations. Temporal goods in religious institutes. Recourse against administrative decrees: norms and jurisprudence. The removal and transfer of parish priests.

DCA6114 TRIBUNAL PROCEDURES (3cr.)
Practical part: progress of the ordinary contentious trial and of the oral contentious process; cases concerning the declaration of nullity of marriage; processes for the declaration of nullity of ordination.Ways of avoiding trials. Jurisprudence in cases of declaration of nullity of marriage as well as of recourse against administrative decrees.

DCA6115 PENAL LAW (3cr.)
Offenses and punishments: penal law and penal precept; penalties and other punishments; application and cessation of penalties. Penalties for particular offences: offences against religion and the unity of the Church, against Church authorities and the freedom of the Church; usurpation of ecclesiastical offices and offences committed in their exercise; the false accusation; offences against special obligations, against human life and liberty. Penal processes. Recent laws and regulations of the Holy See in disciplinary and penal matters; special norms.

DCA6301 SPECIAL PROBLEMS IN CANON LAW I (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA6302 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA6315 LITURGICAL LAW OUTSIDE THE CODE (3cr.)
Selected Praenotanda of liturgical books and post-Codification legislation on the Liturgy.

DCA6316 THE LAITY AND THE CHURCH'S OFFICE OF GOVERNANCE (3cr.)
Collaboration of the lay faithful in the exercise of the power of governance: law, theory, and practice.

DCA6321 SEMINAR ON TRIBUNAL PRACTICE (3cr.)
Preparation of advocate's and defender's observations; judicial decrees and sentences. Prerequisites: Courses on Marriage consent and judicial procedures, or equivalent knowledge and experience as determined by the Executive Committee of the Faculty.

DCA6322 SEMINAR ON CHANCERY PRACTICE (3cr.)
The format and drafting of singular and general decrees, precepts, and rescripts for routine and exceptional matters. Prerequisite: DCA 5306.

DCA6363 SPECIAL PROBLEMS IN CANON LAW III (1.5cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law. Each academic year the details of the course will be made available in advance to the students.

DCA6364 SPECIAL PROBLEMS IN CANON LAW IV (1.5cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law. Each academic year the details of the course will be made available in advance to the students.

DCA6395 MASTER'S SEMINAR (3cr.)
Study of a particular subject which is concluded by a presentation to the seminar group and director, followed by the submission of a text.

DCA6396 SELECTED TOPICS IN CANON LAW I (3cr.)

DCA6397 SELECTED TOPICS IN CANON LAW II (3cr.)

DCA6398 SELECTED TOPICS IN CANON LAW III (3cr.)

DCA6512 QUESTIONS D'ADMINISTRATION ECCLESIASTIQUE (3cr.)
Perte de l'état clérical, laïcisation; archives; procès dans les cours civiles; statuts des organismes diocésains; union et suppression des paroisses; transactions, compromis, arbitrage, médiation.

DCA6513 QUESTIONS D'ADMINISTRATION ECCLESIASTIQUE II (3cr.)
Acquisition et administration des biens temporels; contrats et aliénations; pieuses volontés et fondations pieuses. Biens temporels et leur administration dans les instituts religieux. Recours contre les décrets administratifs : normes et jurisprudence. Révocation et transfert des curés.

DCA6514 PROCÉDURES DES TRIBUNAUX ECCLESIASTIQUES (3cr.)
Déroulement du procès contentieux ordinaire et du procès contentieux oral; causes en déclaration de nullité de mariage; causes en déclaration de nullité de l'ordination. Moyens d'éviter les procès. Jurisprudence dans les causes en déclaration de nullité de mariage ainsi que dans les recours administratifs.

DCA6515 DROIT PÉNAL (3cr.)
Les délits et les peines en général; loi pénale et précepte pénal; les peines et les autres punitions; l'application et la cessation des peines. Les peines pour des délits particuliers : délits contre la religion et l'unité de l’église, contre les autorités ecclésiastiques et la liberté de l’église; usurpation des charges ecclésiastiques et délits dans l’exercice de ces charges; le crime de faux; délits contre les obligations spéciales, contre la vie et la liberté humaines. Le procès pénal. Législation et réglementation récentes du Saint-Siège en matière disciplinaire et pénale; normes particulières.

DCA6701 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE I (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA6702 PROBLÈMES SPÉCIAUX DU DROIT CANONIQUE II (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA6715 DROIT LITURGIQUE EN DEHORS DU CODE (3cr.)
Règles préliminaires des livres liturgiques; autres textes législatifs et réglementaires sur la liturgie, postérieurs au code de droit canonique.

DCA6716 LAÏCAT ET POUVOIR DE GOUVERNEMENT DANS L’ÉGLISE (3cr.)
Participation des fidèles laïcs à l’exercice du pouvoir de gouvernement : droit, théorie et pratique.

DCA6721 SÉMINAIRE DE PRATIQUE DES TRIBUNAUX (3cr.)
Préparation des mémoires d'avocat, des observations du défenseur du lien etc., des décrets et sentences. Préalables : cours sur le consentement matrimonial et les procédures judiciaires, ou connaissances et expérience équivalentes par décision du Comité exécutif de la Faculté.

DCA6722 SÉMINAIRE DE PRATIQUE DES CHANCELERIES (3cr.)

DCA6763 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE III (1.5cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique. Le programme précis sera communiqué à l’avance aux étudiants pour chaque année académique.

DCA6764 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE IV (1.5cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique. Le programme précis sera communiqué à l’avance aux étudiants pour chaque année académique.

DCA6795 SÉMINAIRE DE MAÎTRISE (3cr.)
Étude d'un sujet particulier qui s'achève par sa présentation devant les pairs et le directeur du séminaire, suivie de la remise d'un texte.

DCA6796 THÈMES CHOISIS EN DROIT CANONIQUE I (3cr.)

DCA6797 THÈMES CHOISIS EN DROIT CANONIQUE II (3cr.)

DCA6798 THÈMES CHOISIS EN DROIT CANONIQUE III (3cr.)

DCA6921 LATIN CANONIQUE / CANONICAL LATIN (3cr.)
Compréhension du Codex Juris Canonici, du Codex Canonum Ecclesiarium Orientalium et d'autres documents canoniques rédigés en latin. Préalables : DCA 3109 ou connaissances équivalentes déterminées par un examen. / Understanding the Codex Juris Canonici, the Codex Canonum Ecclesiarium Orientalium, and other canonical documents in Latin. Prerequisite: DCA 3109 or equivalent knowledge as determined by examination.

DCA6922 STAGE EN MILIEU DE TRAVAIL / FIELD PRACTICUM (3cr.)
Stage supervisé de pratique canonique : six semaines (minimum 18 h/semaine) dans un milieu de travail approuvé. Noté selon les résultats du rapport écrit et l'évaluation du superviseur de stage. / A six-week (minimum 18 hours per week) of supervised internship in canonical practice at an approved site. Assessment based on a written report as well as the evaluation of the internship supervisor.

DCA6961 VOYAGE DE FORMATION À LA CURIE ROMAINE / STUDY VISIT TO THE ROMAN CURIA (1.5cr.)
Séminaire sur la Curie romaine comprenant des échanges sur les lieux avec le personnel de plusieurs organismes : congrégations, tribunaux, conseils pontificaux. Préalables : DCA 5502 ou DCA 5503 ou connaissances équivalentes au jugement du doyen. / Seminar on the Roman Curia involving on-site interchange with personnel from a variety of Roman congregations, tribunals, and pontifical councils. Prerequisite: DCA 5102 or DCA 5103 or equivalent knowledge as determined by the Dean.

DCA6962 QUESTIONS SPÉCIALES RELATIVES À LA VIE CONSACRÉE / SPECIAL ISSUES IN CONSECRATED LIFE (1.5cr.)
Séminaire sur des questions légales et canoniques concernant la vie consacrée, surtout dans le contexte du Canada. Préalables : DCA 5603, ou connaissances équivalentes au jugement du doyen. / Seminar on legal and canonical issues concerning consecrated life, especially in the context of Canada. Prerequisite: DCA 5203 or equivalent knowledge as determined by the Dean.

DCA6999 THÈSE DE M.A. / MA THESIS

DCA7998 EXAMEN DE SYNTHÈSE DE MAÎTRISE / MASTER'S COMPREHENSIVE EXAMINATION

DCA8101 SPECIAL PROBLEMS IN CANON LAW I (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA8102 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.
DCA8175 POWER OF GOVERNANCE (3cr.)
Certain particular or specialized questions related to the concept or to the exercise of power of governance in the Church.

DCA8176 JURISPRUDENCE (3cr.)
Matrimonial or administrative jurisprudence in specialized areas of interest.

DCA88501 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE I (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA88502 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE II (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA88575 LE POUVOIR DE GOUVERNEMENT (3cr.)
Certaines questions particulières ou spécialisées reliées au concept ou à l'exercice du pouvoir de gouvernement dans l'Église.

DCA88576 JURISPRUDENCE (3cr.)
Jurisprudence matrimoniale ou administrative dans des domaines d'intérêt spécialisés.

DCA88981 LECTURE DE SOURCES CANONIQUES (LATINITAS CANONICAL) / READINGS IN CANONICAL SOURCES (LATINITAS CANONICAL) (3cr.)
Interprétation de sources canoniques dans leur texte original latin. Préalables: DCA 6921 ou connaissances équivalentes déterminées au moyen d'un examen / Interpreting canonical sources in the original Latin. Prerequisite: DCA 6921 or equivalent knowledge as determined by examination

DCA9997 PROJET DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL

DCA9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION

DCA9999 THÈSE DE DOCTORAT / PhD THESIS

DCL5302 PHILOSOPHY OF LAW (3cr.)
Examination of topics, theories, writers in philosophy of law. May include comparative or critical materials.

DCL5502 PHILOSOPHIE DU DROIT (3cr.)
Définition du droit et de la philosophie du droit; les buts du droit; les concepts juridiques; le raisonnement du droit; le language du droit; les philosophies et les théories du droit.

HAH6212 HEALTH CARE ETHICS (1.5cr.)
Definition, resolution and handling of ethical problems of administrators, physicians and other health care professionals. Codes of ethics. Principles of biomedical ethics. Relationships among biomedical ethics, law, health policy and resource allocation. Ethical analytical techniques. Prerequisite: HAH 6260.

HAH6260 HEALTH CARE SYSTEM ORGANIZATION AND POLICY (1.5cr.)

IPA5149 PROFESSIONAL ISSUES AND ETHICS IN SPIRITUAL CARE (3cr.)

IPA5549 QUESTIONS PROFESSIONNELLES ET QUESTIONS D'ÉTHIQUE EN SOINS SPIRITUELS (3cr.)

IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)

IPA6552 THÉOLOGIE ET SOINS SPIRITUELS (3cr.)

THO6342 ETHICS AND HEALTH SCIENCES (3cr.)
Examination of a problem in bioethics (e.g., human experimentation, medical genetics, allocation of limited resources). The study of a question in clinical ethics (e.g., informed consent, cessation of treatment, professional responsibility). Methodological and theological problems posed by this kind of applied ethics.

THO6742 ÉTHIQUE ET SCIENCES DE LA SANTÉ (3cr.)
Examen d'un problème de bioéthique (e.g., expérimentation humaine, génétique médicale, allocation des ressources). Étude d'une question d'éthique clinique (e.g. consentement éclairé, arrêt de traitement, responsabilité professionnelle). Problèmes théologiques et méthodologiques que pose ce type d'éthique sectorielle.
Cellular and Molecular Medicine (PhD)

The Department of Molecular and Cellular Medicine is located in the Faculty of Medicine and offers graduate programs leading to the degrees of Master of science (MSc) and Doctor of philosophy (PhD) in cellular and molecular medicine.

The objective of the program is to prepare candidates for a career in university teaching and research. During training, the student will develop a critical approach to published work and to his own work. Graduates acquire an excellent knowledge of their chosen field and a general understanding of the areas related to their own particular research project. They must demonstrate research skills and credibility as professionals in their area of research.

Most research groups of the Department are part of a research centre. In fact, much of the research is now focused within recently established research centres including the Centre for Neuromuscular Disease, the Kidney Research Centre, and the Centre for Research in Biopharmaceuticals. Members of the Department are involved in three main research fields: growth and development, pharmacology, and physiology. Further information is posted on the departmental website.

The Department is a participating unit in the following collaborative programs: the bioinformatics program (at the master’s level) and the human and molecular genetics program (at the master’s and doctoral levels).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate program in cellular and molecular medicine is governed by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applications are evaluated based on the following criteria:

1. Be the holder of a master’s degree in science (with a background in biology, biochemistry, human kinetics, pharmacology, physiology or biopharmaceutical sciences) with a minimum average of B+ (75%) calculated in accordance with the FGPS guidelines;
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
   - Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
3. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
4. Identify at least one professor who is willing and available to act as thesis supervisor.

Transfer from the Master’s to the Doctoral Program

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Successful completion of the seminar and all the core courses required for the master’s program;
2. Satisfactory progress in the research program;
3. Written recommendation by the supervisor and the advisory committee;
4. Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master’s. Following transfer, all of the requirements of the doctoral program must be met: the doctoral seminar (CMM 8325), six credits of course work, the comprehensive exam (CMM9998) and the thesis (CMM9999).

Program Requirements

PhD Degree Requirements

The following requirements must be met:

1. Six credits of graduate courses including at least 3 credits selected from CMM courses, approved by the Department;
2. Enrollment in the seminar course (CMM 8325), which involves the presentation of a seminar and regular attendance at the departmental seminars;
3. Successful completion of a comprehensive examination (CMM9998) in the form of either a defended MRC-style grant application or an oral examination on selected topics within the field;
4. Presentation of the thesis research (CMM9999) in the departmental seminar series;
5. Presentation and defense of a thesis (CMM9999) based on original research carried out under the direct supervision of a research faculty member in the Department.

Note: The Department may require students to take additional courses, depending on their backgrounds.

**Residence**

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

**Duration of the program**

The requirements of the program are usually completed within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master's to the doctorate.

**Courses**

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

**CMM5001 THE PATHOLOGICAL BASIS OF DISEASE (3cr.)**
Introductory Course for Non-Medical Graduate Students in the Life Sciences. This course will consist of a brief introduction to pathology describing the manifestation of disease at the macroscopic and microscopic level. This will be followed by (i) A description of various types of microscopy and methodology. (ii) Concepts in flow cytometry, tissue/cell fractionation. (iii) Histo-/cytochemistry and immunohisto-/cytochemistry. (iv) Normal cells and tissues. (v) Organs. (vi) The general pathology of cells and tissues including hypertrophy, aplasia, atrophy, hyperplasia, metaplasia, dysplasia, neoplasia, storage diseases, extracellular space pathologies, necrosis and apoptosis. Blood vessel and cardiac pathologies will be covered as well as concepts in neuropathology, organ/system specific pathologies and genetic diseases.

**CMM5105 INTRODUCTION TO CANCER BIOLOGY (3cr.)**
An introduction to the biology of cancer. Major topics in cancer biology include the following: tumor suppression/oncogenes; apoptosis in cancer; cell immortalization and senescence; genomic instability; multistep tumorigenesis/inflammation in cancer; biology of angiogenesis; rational therapies.

**CMM5111 COMPUTATIONAL CELL BIOLOGY (3cr.)**
Emphasis is on providing students with the background knowledge and the tools needed to develop and analyze models of cellular processes. Topics include modelling enzyme kinetics, signal transduction pathways, and gene regulatory networks, using differential equations, nonlinear dynamics, and stochastic processes. Prerequisite: permission of program director and course coordinator.

**CMM5302 COMPREHENSIVE PHARMACOLOGY I (3cr.)**
Extensive coverage of pharmacodynamics, pharmacokinetics, and the pharmacology of the autonomic and central nervous system. Students cannot obtain credit for both CMM 5301 and CMM 5302.

**CMM5303 COMPREHENSIVE PHARMACOLOGY II (3cr.)**
Extensive coverage of the pharmacology of antibiotic and anti-inflammatory drugs, of chemotherapeutic agents, and of the cardiovascular and gastro-intestinal systems. Students cannot obtain credit for both CMM 5301 and CMM 5303.

**CMM5304 INTRODUCTION TO DEVELOPMENTAL BIOLOGY (3cr.)**
Concepts in development and signalling pathways during development including formation of the germ layers; establishment of the body axis and principles of segmentation; patterning and homeobox genes; neurogenesis; axonal and neuronal guidance; stem cell concepts; germ cells; animal models in developmental biology.

**CMM5311 PHYSIOLOGY AND PATHOPHYSIOLOGY OF ENERGY METABOLISM AND MUSCLE FUNCTIONS (3cr.)**
Advanced comprehensive training in mammalian and human physiology with emphasis on pathophysiology. Topics include: neural and endocrine control of the hypothalamus-hypophysis axis; role of pancreas, adipose tissue and skeletal muscle in carbohydrate and lipid metabolism; cellular and molecular aspects of muscle contraction and fatigue in cardiac and skeletal muscle.
CMM5313 PHYSIOLOGY AND PATHOPHYSIOLOGY OF THE REPRODUCTIVE, RENAL AND GASTROINTESTINAL SYSTEMS (3cr.)
Advanced comprehensive training in mammalian and human physiology with emphasis on pathophysiology. Topics covered include reproductive physiology, molecular and bulk transport processes in the renal system, enteric control of the gastrointestinal tract.

CMM5315 CELLULAR AND MOLECULAR BASIS OF CARDIOVASCULAR FUNCTION/DYSFUNCTION (3cr.)
Mechanism of failing heart and cardiovascular system, its associated functions and associated conditions. Therapies for restoring function. Topics include: regulation of heart development, cell signaling, cellular and molecular mechanisms of atherosclerosis and heart disease, hormonal regulation, hypertension, bioenergetics, cardiovascular genomics and genetics, cell therapy, and regenerative medicine.

CMM5326 EXPERIMENTAL PREPARATIONS AND ANIMAL MODELS (3cr.)
Applied and theoretical course intended to give the potential researcher basic surgical skills. Lectures followed by demonstrations and/or practical exercises.

CMM7301 DIRECTED STUDIES (3cr.)
A program of study designed for a given student according to the student's educational requirements.

CMM7999 THÈSE DE MAÎTRISE / MSc THESIS

CMM8103 EPITHELIAL CELL POLARITY (3cr.)
Cell polarity with emphasis on tight junctions and Claudins (tight junction molecules). Topics include: the molecular basis of cell polarity and permeability barrier during development, organogenesis and disease including inflammatory disease and cancer.

CMM8105 ADVANCED TOPICS IN CANCER BIOLOGY (3cr.)
Advanced study of recent developments in the field of cancer biology with emphasis on cellular and molecular aspects. Specific topics to be covered include: angiogenesis, apoptosis, cancer genetics, cell signaling, genetic instability, oncogenes and tumour suppressors.

CMM8300 SPECIAL TOPICS IN REPRODUCTIVE AND DEVELOPMENTAL BIOLOGY (3cr.)
In-depth study of current topics in reproductive and developmental biology, with emphasis on state-of-the art molecular and cell biology techniques as well as their applications to reproductive diseases. Topics may include assisted reproductive technologies, embryonic stem cells, contraception, endocrine disruptors, reproductive toxicology, and transgenics.

CMM8310 CURRENT TOPICS IN RNA MOLECULAR BIOLOGY (3cr.)
Properties, mechanisms associated with regulation and the function of RNAs and Ribonucleoprotein (RNP) as well as RNA organisms. Current knowledge on RNA expression (synthesis, processing, transport and localization), the structure-function relationship and molecular mechanisms associated with RNAs and RNA genomes, RNA in evolution and in the origin of life, and RNA as therapeutic agents. Prerequisites: BCH/BIO 3570-3170 or equivalent with the permission of the program director. Exclusion: BCH 8310.

CMM8324 SEMINARS I
Compulsory for one year for all students enrolled in the master’s program. Presentation of two seminars or one seminar and one poster required during the year as well as regular attendance at the departmental seminar series.

CMM8325 SEMINARS II
Compulsory for all students enrolled in the doctorate program. Presentation of two seminars or one seminar and one poster required during the year as well as regular attendance at the departmental seminar series.

CMM8340 NEUROMUSCULAR FUNCTION AND DYSFUNCTION (3cr.)
Topics to be covered include factors controlling muscle - and synapse-specific gene expression, regulation of myogenesis and muscle cell growth, formation of the neuromuscular junction, motor neuron - muscle interactions, the role of the cytoskeleton in organization of post-synaptic domains, functional role of ion channels in muscle, molecular genetics of neuromuscular disease.

CMM8345 SPECIAL TOPICS IN GASTROENTEROLOGY (3cr.)
Lectures, tutorials and seminar-discussion sessions, designed to provide advanced training in gastrointestinal function. Emphasis on pathophysiological mechanisms.

CMM8350 ION CHANNELS: CELLULAR AND MOLECULAR ASPECTS OF MEMBRANE FUNCTIONS (3cr.)
A study of the diversity, molecular structure, structure-function relationship, electrophysiological characteristics and physiological roles of different ion channels in excitable and non-excitable cells. The channels that are studied include the sodium, potassium, calcium and chloride channels.

CMM8355 RENAL PHYSIOLOGY (3cr.)
Lecture and seminar course with emphasis on electrolyte transport. Topics to include: detailed structure and function of nephron segments. Localization of primary and secondary active transport carriers, theories of autoregulation, hormone action in the kidney, drug action in the kidney, and regulation of renal vascular resistance.

CMM9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAM (PhD)
Chemical and Environmental Toxicology (PhD) (Collaborative)

The Institute

The Ottawa-Carleton Institute combines the research strength of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in several fields (biology, chemistry, earth science, etc.). Toxicology are as follows:

General Information

Toxicology is the study of effects of toxic substances on living systems. These toxic substances can either be organic or inorganic, synthetic or natural materials. Environmental toxicology further extends to aspects of chemical transport, fate, persistence and biological accumulation of toxic substances and their effects at the population and community levels. While individual researchers usually specialize in a particular area, toxicologists today must be able to appreciate significant research in other fields and therefore require an understanding of the basic principles of other disciplines. To meet this challenge the University of Ottawa and Carleton University offer a joint collaborative program leading to a master of science or a PhD degree with specialization in chemical and environmental toxicology.

This Ottawa-Carleton collaborative program in Chemical and Environmental Toxicology is intended to augment the research and training available to students through the individual supporting institutes.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the general regulations of the graduate faculty at the two universities. The "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Participating Units

The primary participating units are:

1. The Ottawa-Carleton Institute of Biology (OCIB), the joint graduate program of the departments of Biology at the University of Ottawa and Carleton University.
2. The Ottawa-Carleton Institute of Chemistry (OCIC), the joint graduate program of the departments of Chemistry at the University of Ottawa and Carleton University.
3. The Ottawa-Carleton Geoscience Centre (OCGC), the joint graduate program of the departments of Earth Sciences at the University of Ottawa and Carleton University.

Admission

Admission to the collaborative program in chemical and environmental toxicology is governed by the «General Regulations» of the Ottawa-Carleton Institute and by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Candidates must indicate in their admission form that they wish to be accepted in the collaborative program.

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the "Admission" section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be admitted in one of the programs participating in the collaborative program of the Institute;
2. Complete a relevant introductory course in toxicology, either:
   (i) prior to admission to the collaborative program in chemical and environmental toxicology; Or
   (ii) While registered in the program by taking one of the two introductory courses (CHM8156 or BIO9104);
3. Provide a confidential letter of recommendation from a professor who is willing and available to act as thesis supervisor;
4. Be sponsored into the collaborative program by a faculty member, normally the thesis supervisor, who must be appointed, cross-appointed or stand as an adjunct at one or more of the participating units.
Program Requirements

PhD Degree Requirements

The following requirements must be met:

1. 3 compulsory credits of an introductory course in chemical and environmental toxicology (CHM8156 ou BIO9104);

2. Enrollment in the seminar course in toxicology (BIO9105), which involves the presentation of a seminar, and the regular attendance to the seminars presented by the Department;

3. Presentation and defense of a thesis in toxicology based on an original research carried out under the supervision of a faculty member participating in the chemical and environmental toxicology collaborative program.

The Department may require students to take additional courses depending on their backgrounds.

NOTE: The student must fulfill both the requirements for the master’s degree, and the requirements of the collaborative program. If the seminar course was completed for the master’s specialization, the requirement #2 does not apply.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d’Ottawa correspond à un cours de 0,5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

TOX8156 PRINCIPLES OF TOXICOLOGY (3cr.)
The basic theorems of toxicology with examples of current research problems. The concepts of exposure, hazard and risk assessment will be defined and illustrated with experimental material from some of the more dynamic areas of modern research.

TOX8157 CHEMICAL TOXICOLOGY (3cr.)
Advanced course in chemical toxicology dealing with both chemical hazards and exposure. Overview of empirical data relating to the toxicity of various classes of chemicals for test organisms, followed by study of toxicity at the cellular level, including studies of interactions between toxic substances and enzymatic systems. Data applicable to the interpretation and monitoring of WHMIS health regulations. Initial events in enzyme induction and mutagenesis. Study of predictive capabilities in the areas of structure-activity relationships and mechanisms of enzyme induction, followed by assessment of mechanisms of exposure to toxic chemicals.

TOX9104 ECOTOXICOLOGY (3cr.)
Selected topics and advances in ecotoxicology with emphasis on the biological effects of contaminants. The potential for biotic perturbation resulting from chronic and acute exposure of ecosystems to selected toxicants will be covered along with the methods pesticide, herbicide and pollutant residue analysis and the concept of bound residues.

TOX9105 SEMINAR IN TOXICOLOGY (3cr.)
A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topic. Student, faculty and invited seminar speakers.

CHM8156 (CHEM 5708) PRINCIPLES OF TOXICOLOGY (3cr.)
The basic theorems of toxicology with examples of current research problems. The concepts of exposure, hazard and risk assessment will be defined and illustrated with experimental material from some of the more dynamic areas of modern research.
BIO9105 (BIOL 6405) SEMINAR IN TOXICOLOGY (3cr.)
A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topic. Student, faculty and invited seminar speakers.

BIO9104 (BIOL 6403) ECOTOXICOLOGY (3cr.)
Selected topics and advances in ecotoxicology with emphasis on the biological effects of contaminants. The potential of biotic perturbation resulting from chronic and acute exposure of ecosystems to selected toxicants will be covered along with the methods of pesticide, herbicide and pollutant residue analysis and the concept of bound residues.

CHM8157 (CHEM 5709) CHEMICAL TOXICOLOGY (3cr.)
Advanced course in chemical toxicology dealing with both chemical hazard and exposure. Overview of the empirical data relating to the toxicity of various classes of chemicals to test organisms, followed by the study of toxicity at the cellular level, including studies of interactions between toxic substances and enzymatic systems. Data applicable to the interpretation and monitoring of the new WHMIS health regulations. Initial events in enzyme induction and mutagenesis. Study of predictive capabilities in the areas of structure-activity relationships and mechanisms of enzyme induction are considered, followed by an assessment of mechanisms of exposure to toxic chemicals.

BIOS5103 (BIOL 5003) COMPARATIVE BIOCHEMISTRY (3cr.)
Advanced topics emphasizing biochemical structures, functions and methodologies in the context of animal (invertebrates and vertebrates) adaptations to environmental stress.

BIOS505 (BIOL 5407) QUANTITATIVE ECOLOGY (3cr.)
A course on analysis of the distribution and abundance of plants and animals, and of related environmental phenomena. Computer assignments and a major data analysis project will be required. Prerequisites: Graduate standing, courses in elementary ecology and statistics and permission of the department.

BIOS506 (BIOL 5409) MATHEMATICAL MODELLING FOR BIOLOGISTS (3cr.)
This course is designed to develop mathematical tools for the modelling of biological processes. The student is taught the necessary mathematics, a computer language, and guidance is given in the choice of simulation of a biological process.

BIOS8109 (BIOL 6001) ADVANCED MOLECULAR BIOLOGY I (3cr.)
Recent advances in molecular biology. Topics for discussion may include the following: DNA structure and function, the organization of the genome; DNA, RNA and protein synthesis; the regulation of gene expression in eukaryotes and prokaryotes. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 8116/BIO 6002 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

BIOS8116 (BIOL 6002) ADVANCED MOLECULAR BIOLOGY II (3cr.)
Recent advances in molecular biology. Topics for discussion may include the following: mutagenesis and DNA repair mechanisms; molecular aspects of gene transfer recombination and gene rearrangement; gene transfer mechanisms, the molecular biology of yeasts and fungi, especially with regard to industrial applications; the modern techniques of genetic engineering as applied to industrial and medical problems. Topics will reflect the interests of the teaching staff. Offered jointly by the staff of the University of Ottawa and Carleton University. BIO 6001 and this course normally will be offered together in the same year but only in alternate years. Not all topics will be covered each year.

BIOS8162 (BIOL 5402) TOPICS IN COMPARATIVE ENDOCRINOLOGY (3cr.)
A lecture and reading course concerned with classical as well as current topics in the field of comparative endocrinology. Special emphasis will be placed on the vertebrates. Prerequisite: An undergraduate Endocrinology course (BIO 4127 or equivalent).

BIOS8306 (BIOL 5508) ADVANCED TOPICS IN ECOLOGY I (3cr.)
Lectures, seminars and discussions on current literature on experimental approaches, concepts and findings in population and community ecology, ecosystem and landscape ecology and biostatistics. Course content to complement that of BIO 8307 / BIOL 5509; not necessary to take the two in a particular order.

BIOS8307 (BIOL 5509) ADVANCED TOPICS IN ECOLOGY II (3cr.)
Lectures, seminars and discussions on current literature on experimental approaches, concepts and findings in population and community ecology, ecosystem and landscape ecology and biostatistics. Course content to complement that of BIO 8306/BIO 5508; not necessary to take the two in a particular order.

BIOS8365 (BIOL 5802) ADVANCED BEHAVIOURAL ECOLOGY (3cr.)
Recent ideas and research on advanced topics dealing with the evolution of foraging, temporal, spatial, and reproductive strategies will be discussed and critically examined. Offered in alternate years.

CHM8126 (CHEM 5303) BIOORGANIC CHEMISTRY (3cr.)
Overview of recent developments in the mechanistic understanding of selected enzyme-catalyzed reactions. Topics include Cytochrome P450, methane monoxygenase, biotin and lipoic acid biosynthesis, methyl transfer, Vitamin B12, lipoxigenase, prostaglandin synthase; etc. Emphasis will be placed on biotransformations which are relatively poorly understood from a mechanistic point of view.

CHM8322 (CHEM 5203) TOPICS IN COORDINATION CHEMISTRY (1.5cr.)
Brief introduction to basic concepts in coordination chemistry. Topics to include the following: carbon dioxide fixation, dinitrogen fixation, activation, olefin metathesis, nature of the M-M bond.

CHM8327 (CHEM 5005) PHYSICAL ORGANIC CHEMISTRY (1.5cr.)
Hammet functions, transition state energetics, stereochemistry of organic compounds, and mechanisms of organic reactions and their determination.

CHM8329 (CHEM 5402) MEDICINAL CHEMISTRY (1.5cr.)
Preparation of drugs, their mode of action, their use in treating of disease. Evolution of medicine due to chemistry. Discussion of metabolic pathways and their modification to control and/or circumvent disease.

CHM8331 (CHEM 5300) PHYSICAL CHEMISTRY OF BIOLOGICAL MACROMOLECULES (1.5cr.)
Focus on how the application of physical techniques normally applied to small molecules, can be used to study macromolecular structure and function of DNA and proteins. Examples of applications to include: kinetics, electrochemistry, equilibria phenomena (therodynamics).

CHM8332 (CHEM 5301) ELECTROCHEMICAL PHENOMENA IN BIOLOGICAL SYSTEMS (1.5cr.)
Description of theory accounting for the generation of membrane potentials. Application to the generation of nerve impulses.

CHM8333 (CHEM 5302) SURFACE PHENOMENA IN BIOLOGICAL SYSTEMS (1.5cr.)
Description of theory of surface tension phenomena in aqueous systems. Discussion of effects of cell and macromolecular structures in biological systems.

CHM8348 (CHEM 5500) ANALYTICAL INSTRUMENTATION (1.5cr.)
Principles of modern electronics, devices and instruments. Measurement of photonic and electrochemical signals. Conditioning of signals for feedback control and microcomputer interfacing. Computational data analysis techniques such as simplex optimization. Applications in chemical analysis include amperometric detector for capillary electrophoresis, and surface plasmon resonance immnosensor.

CHM8349 (CHEM 5304) FREE RADICALS IN CHEMISTRY AND BIOLOGY (1.5cr.)
Oxidative stress induced by free radicals plays a significant role in most fatal and chronic diseases. The chemistry of bio-radicals will be described and related to pathobiological processes such as lipid peroxidation and atherosclerosis, protein nitration and cross linking, and DNA scission.

CHM8352 (CHEM 5501) ANALYTICAL APPROACH TO CHEMICAL PROBLEMS (1.5cr.)
Case study of analytical approach to various chemical problems in agricultural, biochemical, environmental, food processing, industrial, pharmaceutical and material sciences. Analytical methods include capillary electrophoresis, chemiluminescence, Fourier transform infrared spectroscopy, inductively coupled plasma emission spectroscopy, mass spectrometry, biochemical sensors, and fiber optics for remote sensing.

CHM8353 (CHEM 5502) TRACE AND ULTRATRACE ANALYTICAL CHEMISTRY (3cr.)
Criteria for evaluation and selection of analytical techniques and methods. Electroanalytical techniques. Simultaneous and sequential multielement determination. Atomic absorption, atomic emission and atomic fluorescence spectrometry, using optical spectrometric and mass- spectrometric determination. Applications of these techniques at trace and ultratrace levels in complex matrices.

CHM8354 (CHEM 5503) CHEMICAL SPECIATION IN THE NATURAL ENVIRONMENT (3cr.)
Evaluation of analytical techniques and their capability for quantitative determination of chemical species (as opposed to total element-determination) in the natural environment. Electro-chemical techniques for determination of chemical speciation of nutrient and toxicant elements present in the natural environment.

GEO5136 (ERTH 5306) PALEOBIOLOGY (3cr.)
Selected topics in paleobiology of micro- and macro-invertebrates and vertebrates. Topics include extinctions, micro- and macro-evolutionary processes, long-term trends and cycles in the Phanerozoic, and functional morphology, as well as application of invertebrates to biostratigraphy, paleoceanography and paleolimnology.

GEO5141 (GEOL 5401) PERMAFROST HYDROLOGY AND INVESTIGATIVE METHODS
An examination of groundwater flow in permafrost regions. The importance of groundwater in the formation of various types of ground ice, and the effect of groundwater flow on permafrost distribution.

GEO5142 (GEOL 5402) ENVIRONMENTAL GEOSCIENCE (3cr.)
A study-seminar course in which students will examine, in depth, certain environmental problems, including geological hazards, mineral and energy consumption and environmental degradation. The relation between development and the environment will be considered. Students will prepare a report and present a seminar on a subject of their choice, and will participate in a research project centered in the Ottawa area.

GEO5143 (GEOL 5403) ENVIRONMENTAL ISOTOPES AND GROUNDWATER GEOCHEMISTRY (3cr.)
Stable environmental isotopes (18O, 2H, 13C, 34S, 15N) in studies of groundwater origin and flow, and geothermal studies. Groundwater dating techniques involving tritium and radiocarbon, and exotic radioisotopes (e.g. 36Cl, 39Ar, 85Kr). Low temperature aqueous geochemistry and mineral solubility with emphasis on the carbonate system. Some applications to paleoclimatology will be discussed. Prerequisite: Fourth-year Hydrogeology (67.420 or GEO 4342) or equivalent.

GEO5147 (ERTH 5407) GEOCHEMISTRY OF NATURAL WATERS (3cr.)
Aqueous speciation, solubility of metals, minerals and gas, reaction kinetics and equilibria. Chemistry and dynamics of groundwaters and hydrothermal fluids.

**GEO5153 (ERTH 5503) COMPUTER TECHNIQUES IN THE EARTH SCIENCES** (3cr.)
A practical course in the application of computer techniques in the acquisition and interpretation of geoscientific data. Topics will be selected from the following: remote sensing and geographic information systems; geostatistical analysis techniques; analysis and modelling of geoscientific data. Prerequisite: Permission of the Institute.

**GEO5163 (ERTH 5603) STABLE ISOTOPE GEOCHEMISTRY** (3cr.)

## Chemical Engineering (PhD)

The Department of chemical engineering located in the Faculty of Engineering offers graduate programs leading to the degrees of Master of Applied Science (MASc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Chemical Engineering.

The main objective of the master’s programs is to refine the skills and research expertise of the students by expanding their specialized knowledge of chemical engineering primarily achieved through course work, research seminars, and technical training.

The PhD program prepares candidates for a career in teaching, research and/or development. Graduates are expected to have acquired autonomy in conducting research, preparing scholarly publications, and promoting chemical engineering.

Members of the Department are involved in four main research fields: materials development; process engineering; clean technologies and renewable energy; and, biomedical engineering. Further information is posted on the departmental website.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

## Admission

Admission to the graduate program in Chemical Engineering is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a master’s degree in chemical engineering (with thesis or equivalent in terms of scholarly publications) with a minimum average of 75% (B+);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The Department may require students to take additional courses depending on their backgrounds.

### Transfer from master’s to PhD program

Students enrolled in the MASc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Completion of four graduate courses with a grade of A- (80%) or higher in each;
2. Satisfactory progress in the research program;
3. Written recommendation by the supervisor and by the graduate studies committee.
The transfer must take place within sixteen months of initial registration in the master's. Following the transfer, all of the requirements of the doctoral program must be met: a minimum number of 30 credits of graduate coursework (MSc+PhD); a comprehensive exam completed within twelve months of transfer; and a thesis.

## Program Requirements

### PhD Degree Requirements

The requirements of this program are as follows:

1. Successful completion of a minimum of 9 credits in chemical engineering including the compulsory course CHG8116 if not already taken at the master’s level*;
2. Successful completion of the seminar course CHG8102S, which involves the presentation of seminars and the regular attendance at the seminars presented by the Department;
3. Successful completion of comprehensive examination (CHG9998) completed within eighteen months of initial registration in the master’s;
4. Presentation and defense of a thesis (CHG9999) based on original research carried out under the direct supervision of a research faculty member in the Department.

*All courses must be in chemical engineering, except with permission of the Department.

### Residence

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

### Minimum Standards

The passing grade in all courses is 65% (C+). Students who fail 6 credits, the thesis proposal, the comprehensive exam, the thesis, or whose progress is deemed unsatisfactory must withdraw from the program.

### Duration of the program

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master's to the doctorate.

## Courses

Tous les cours décrits ci-après ne sont pas nécessairement offerts chaque année. La présence aux cours est obligatoire.

Not all of the following courses are necessarily given each year. Attendance at courses is compulsory.

**CHG6000 RAPPORT EN GÉNIE CHIMIQUE / CHEMICAL ENGINEERING REPORT (6cr.)**

**CHG7999 THÈSE DE M.Sc.A. / MASc. THESIS**

**CHG8101S SEMINAR I (1cr.)**
Oral presentation of selected topics and research papers. Attendance at all seminars is compulsory for MASc students.

**CHG8102S SEMINAR II (1cr.)**
Oral presentation of selected topics and research papers. Attendance at all seminars is compulsory for PhD students.

**CHG8110 FLUID MECHANICS (3cr.)**
Stream function, circulation and vorticity, form drag and drag coefficients, equations of motion, boundary layer theory, modern theory of turbulent motion, flow in porous media, non-Newtonian flow.

**CHG8115 HEAT TRANSFER I (3cr.)**
The general law of heat conduction. Steady and unsteady heat conduction in solids with or without internal heat sources. Radiant heat transmission.

**CHG8116 ADVANCED TRANSPORT PHENOMENA (3cr.)**
Advanced study of momentum, heat and mass transfer relevant to chemical engineering and also to areas such as environmental engineering, medicine and other scientific disciplines. Review of the analogy between mass, momentum and thermal transport and, in particular, of the physical principles and mathematical foundations required for the analysis of fluid flow, heat transfer and mass transfer, and of the advanced methods for the analysis of transport problems. Main emphasis on formulation of a given physical problem in terms of appropriate conservation equations, and obtaining an understanding of the associated physical phenomena. Use of many chemical engineering applications to illustrate the various principles.

CHG8120 RHEOLOGY AND POLYMER PROCESSING (3cr.)

CHG8123 CHEMICAL ENGINEERING THERMODYNAMICS I (3cr.)

CHG8132 (ENVE 5105) ADSORPTION SEPARATION PROCESSES (3cr.)

CHG8141 SPECIAL DIRECTED STUDIES I (3cr.)

CHG8143 SPECIAL DIRECTED STUDIES II (3cr.)

CHG8145 SPECIAL DIRECTED STUDIES III (3cr.)

CHG8153 (ENVJ500) STATISTICAL MODELLING AND CONTROL OF DYNAMIC PROCESSES (3cr.)

CHG8157 STRATEGIES FOR ENGINEERING PROCESS ANALYSIS (3cr.)
Statistical experimental design and analysis techniques for industrial and laboratory investigations are presented. Topics include: the nature and analysis of process variation, comparisons of two or more processes, empirical modelling of processes, applications of factorial and fractional factorial designs, mixture designs, response surface methodologies and empirical optimization techniques. Prerequisite: MAT 2377 or equivalent, or permission of the instructor.

CHG8158 (ENVJ5304) POROUS MEDIA (3cr.)

CHG8161 CHEMICAL REACTION ENGINEERING (3cr.)
Kinetics of chemical reactions and its application to chemical engineering problems. Rate expressions and heterogeneous kinetics. Preparation and evaluation of catalyst activity. Promoters and poisons. Physical properties and transfer of mass and energy in porous catalysts. Interpretation of kinetic data and determination of mechanisms of catalyzed reactions.

CHG8175 MATERIAL TRANSPORT (3cr.)

CHG8181 (ENVJ5501) BIOCHEMICAL ENGINEERING (3cr.)

CHG8186 (ENVJ5506) MODELLING OF STEADY-STATE PROCESSES (3cr.)
A comprehensive examination of techniques for building and analyzing process models is made. Topics include: linear least squares estimation, non-linear least squares estimation, multivariate parameter estimation, error in variables estimation, heteroscedasticity, design of experiments for precise parameter estimation and model discrimination.

CHG8187 INTRODUCTION TO POLYMER REACTION ENGINEERING (3cr.)
Introduction to principles governing polymerization reactions and the resultant physical properties of polymers. Theory and experimental methods for the

CHG8188 POLYMER PROPERTIES AND CHARACTERIZATION (3cr.)
Polymer properties are described and discussed in the context of their nature, source and means of measurement. Chemical and microstructural properties; physical states and transitions; thermal properties; mechanical properties and viscoelasticity models; degradation and stability; surface, electrical and optical properties, polymer additives; structure-property relationships.

CHG8189 CHEMICAL ENGINEERING ANALYSIS (3cr.)
Treatment and interpretation of experimental data. Formulation of ordinary and partial differential equations for the solution of problems arising in chemical engineering. Emphasis will be on problems requiring numerical techniques with examples taken from fluid flow, heat transfer and mass transfer. Selection of boundary conditions.

CHG8191 SELECTED TOPICS CHEM ENGINEER (3cr.)
Discussion of recent progress in chemical engineering.

CHG8192 (ENVJ5502) MEMBRANE APPLICATIONS IN ENVIRONMENTAL ENGINEERING (3cr.)
Course emphasizing the applications of membrane separation processes in the resolution of various environmental problems. Applications of reverse osmosis, ultrafiltration and pervaporation to the treatment of industrial waste waters. Applications of membrane gas and vapor permeation to the removal of pollutants from air. Discussion of fundamentals underlying each separation process.

CHG8194 (ENVJ5504) MEMBRANE SEPARATION PROCESSES (3cr.)
Advanced topics of membrane separations including reverse osmosis, ultrafiltration, gas separation, non-aqueous liquid separation, and membrane applications in biotechnology. The course involves problem solving in membrane transport, membrane design, and membrane process design.

CHG8195 (ENVJ5505) ADVANCED NUMERICAL METHODS IN TRANSPORT PHENOMENA (3cr.)
Survey course of numerical methods for solving linear and non-linear ordinary and partial differential equations. Techniques reviewed include Runge-Kutta and predictor-corrector methods, shooting techniques, control volume discretization methods and finite elements. Example problems from the field of transport phenomena.

CHG8196 (ENVJ5507) INTERFACIAL PHENOMENA IN ENGINEERING (3cr.)
Interfacial tension and interfacial free energy; contact angles; spreading of liquids; wetting of surfaces; experimental techniques. Interfacial tension of mixtures; Gibbs equation; absorbed and insoluble monolayers; properties of monolayers and films. Electrical phenomena at interfaces; the electrical double layer; zeta-potential; electrokinetic phenomena (electrophoresis, electro-osmosis, streaming potential); surface conductance. Dispersed systems; formation and practical uses of emulsions; spontaneous emulsification; flocculation.

CHG8198 (ENVJ5503) REVERSE OSMOSIS (3cr.)

CHG9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAMINATION (PhD)
CHG9999 THÈSE DE DOCTORAT / DOCTORAL THESIS

Chemistry (PhD)

Ottawa-Carleton Joint Program

Established in 1981, the Ottawa-Carleton Chemistry Institute (OCCI) combines the research strengths of the University of Ottawa and Carleton University. The institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Chemistry.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in the following research fields: inorganic chemistry; organic chemistry; theoretical chemistry; biological chemistry; analytical chemistry; and, physical chemistry. Additional information is posted in the departmental website.

The Institute is a participating unit in the collaborative program in Chemical and Environmental Toxicology at the master’s and doctoral levels.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocejip.ca) and the General Regulations of the graduate faculty at each of the two universities. The general regulations of the Faculty of Graduate and Postdoctoral
Admission

Admission to the graduate program in Chemistry is governed by the General Regulations of the Ottawa-Carleton Institute for Chemistry (OCIC) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

To be considered, applicants must:

1. Be the holder of a master's degree in Chemistry (or equivalent) with a minimum average of 75% (B+);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Transfer from Master’s to PhD Program

Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Completion of two graduate courses (6 credits) with a grade of A- or better in each;
2. Satisfactory progress in the research program;
3. Written recommendation by the supervisor and the advisory committee;
4. Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master’s. Following the transfer, all of the requirements of the doctoral program must be met: a total number of 12 credits of graduate coursework (MSc+PhD); the comprehensive examination (CHM9998) to be completed within twelve months of the transfer; participation in the departmental seminar series; and a thesis.

Collaborative Programs

The Department of Chemistry is a participating unit in the collaborative program in Chemical and Environmental Toxicology. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, see the description of the program posted on the FGPS website.

Program Requirements

Beyond the M.Sc. requirements, the following requirements must be met:

1. 6 credits of graduate courses at the 5000 level or above in chemistry or in related disciplines approved by the Department of Chemistry;
2. CHM8257 Seminar, which involves the presentation of a seminar and the regular attendance at the departmental seminar series;
3. CHM8998 Comprehensive Exam, which must be completed within twelve months of initial registration in the program;
4. CHM8998 Thesis Proposal, which must be completed before the end of the sixth session of registration in the program;
5. CHM9999 PhD Thesis. Presentation and successful defense of a thesis based on original research carried out under the direct supervision of a faculty member of the Department.

The Department may impose additional requirements depending on the student’s academic background.

Residence

Students must register full-time for a minimum of six sessions. In the case of transfer to the PhD from the master’s, the residency period is nine full-time sessions from the time of initial registration in the master’s program.
Minimum Standards
The passing grade in all courses is B. Students who fail two courses (equivalent to 6 credits), the thesis proposal, the comprehensive exam, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Duration of the program
The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits de l'Université d'Ottawa correspond à un cours de 0.5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

CHM7999 (CHEM 5909) THÈSE DE MAÎTRISE / MSc THESIS
CHM8256 (CHEM 5801) SEMINAR I
CHM8257 (CHEM 5802) SEMINAR II

CHM8301 (CHEM 5001) ANALYTICAL MASS SPECTROMETRY (1.5cr.)
The principles of ion sources and mass spectrometers will be described, together with their applications to problems in chemistry and biochemistry. Introduction to the chemistry gaseous ions. Ion optics. Special emphasis on interpreting mass spectra.

CHM8302 (CHEM 5902) ADVANCED TOPICS IN INORGANIC CHEMISTRY (1.5cr.)
Topics of current interest in inorganic chemistry. Variable content from year to year.

CHM8303 (CHEM 5204) DESCRIPTIVE ORGANOMETALLIC CHEMISTRY (1.5cr.)
Review of basic concepts of M-C bonds and of the preparation and reactivity of transition and non-transition metal organometallic species. Brief discussion of the most important catalytic processes (e.g. Ziegler-Natta, Fischer-Tropsch, catalytic hydrogenation and hydroformilation).

CHM8304 (CHEM 5901) ADVANCED TOPICS IN ORGANIC CHEMISTRY (1.5cr.)
Topics of current interest in organic chemistry. Variable content from year to year.

CHM8305 (CHEM 5400) SYNTHESIS METHODS (1.5cr.)
Discussion of modern reactions and reagents and their development. Modern methods such as Evans enolates, catalytic processes, organometallic methods. Combination of methods for the preparation of complex molecules and building blocks.

CHM8307 (CHEM 5205) IONS AND IONIC PROCESSES IN CHEMISTRY (1.5cr.)
Properties of water, hydration of ions, ionic interaction, colloidal and polymeric electrolytes. Ionization processes in solution.

CHM8308 (CHEM 5002) MULTINUCLEAR MAGNETIC RESONANCE SPECTROSCOPY (1.5cr.)

CHM8309 (CHEM 5903) ADVANCED TOPICS IN PHYSICAL / THEORETICAL CHEMISTRY (1.5cr.)
Topics of current interest in physical/theoretical chemistry. Variable content from year to year.

CHM8310 (CHEM 5007) INTRODUCTION TO PHOTOCHEMISTRY (1.5cr.)
Basic principles of photochemistry including selection rules, energy transfer processes and the properties of excited state reactions. Lasers and their applications to measurements of the dynamics of elementary reactions.

CHM8311 (CHEM 5008) ADVANCED AND APPLIED PHOTOCHEMISTRY (1.5cr.)

CHM8312 (CHEM 5507) APPLICATIONS OF THERMOCHEMISTRY TO CHEMICAL PROBLEMS (1.5cr.)
Measurement of and interrelationship between molecular, radical and ionic enthalpies and their relevance to bond strengths and chemical reactivity.

CHM8313 (CHEM 5508) ION STRUCTURES IN ORGANIC CHEMISTRY (1.5cr.)
Examination of the significance of structure and behaviour of organic cations and anions in gaseous and condensed phases.

CHM8314 (CHEM 5504) SURFACE CHEMISTRY ASPECTS OF ELECTROCHEMICAL SCIENCE (1.5cr.)

CHM8315 (CHEM 5505) ELECTROCHEMICAL SURFACE SCIENCE (1.5cr.)
Introduction to advanced in-situ techniques in electrochemistry: Scanning probe microscopy, Raman, infrared and laser spectroscopy. Prerequisite: CHM 8314, 8714.

CHM8316 (CHEM 5506) SURFACE CHEMISTRY (1.5cr.)
Adsorption phenomena and isotherms, surface areas of solids. Modern techniques in surface chemistry and surface science such as electron diffraction, Auger electron spectroscopy, photoelectron spectroscopy, electron energy loss spectroscopy, infrared and Raman spectroscopy. Current new techniques.

CHM8317 (CHEM 5104) IONIC REACTION INTERMEDIATES (1.5cr.)
Generation of ionic reaction intermediates in the condensed phase and their characterization by experimental techniques. Includes carbocations, zwitterionic intermediates.

CHM8318 (CHEM 5103) FREE RADICALS (1.5cr.)
Photochemical generation of free radical reaction intermediates in the condensed phase. Techniques to be explored include laser flash photolysis, pulse radiolysis, esr, CIDNP and matrix isolation.

CHM8319 (CHEM 5403) TOTAL SYNTHESSES (1.5cr.)
Discussion on philosophy and strategy development for complex syntheses, along with modern reagents and reactions that have shortened classical routes and lead to more efficient and atom economy.

CHM8320 (CHEM 5405) PERICYCLIC AND STEREOELECTRONIC EFFECTS (1.5cr.)
Pericyclic reactions, facial selectivity, stereoelectronic effects in carbohydrates and related acetal cleavage. Applications to complex synthetic problems.

CHM8321 (CHEM 5201) SOLID STATE CHEMISTRY (1.5cr.)
Thermodynamic and kinetic aspects of solid state synthesis. Characterization of solids. Chemical and physical properties of solids that may include aspects of intercalation reactions, ionic conductors, glasses, electronic, magnetic optical and physical/mechanical properties.

CHM8322 (CHEM 5203) TOPICS IN COORDINATION CHEMISTRY (1.5cr.)
Brief introduction to basic concepts in coordination chemistry. Topics to include the following: carbon dioxide fixation, dinitrogen fixation, activation, olefin metathesis, nature of the M-M bond.

CHM8323 (CHEM 5600) QUANTUM MECHANICAL METHODS THEORY (1.5cr.)
Examination of the theory behind quantum mechanical methods (HF, MP2, CI, DFT). Semi-empirical.

CHM8324 (CHEM 5601) QUANTUM MECHANICAL METHODS APPLICATIONS (1.5cr.)
Practical applications of methods taught in CHM 8323 such as thermochemistry, reaction pathway moeling, structure predictions. Prerequisite: CHM 8323 or 8723.

CHM8325 (CHEM 5003) SOLID STATE NMR SPECTROSCOPY (1.5cr.)
Brief introduction to solid state NMR spectroscopy. Topics include dipolar coupling interactions, chemical shielding anisotropy, the quadrupolar interaction and averaging techniques such as magic angle spinning.

CHM8326 (CHEM 5004) NMR SPECTROSCOPY (1.5cr.)
Advanced NMR techniques for both proton and carbon spectra, various decoupling and related experiments. Interpretation of NOSY, COSY and related data.

CHM8327 (CHEM 5005) PHYSICAL ORGANIC CHEMISTRY (1.5cr.)
Hammet functions, transition state energies, stereochemistry of organic compounds, and mechanisms of organic reactions and their determination.
CHM8328 (CHEM 5401) APPLICATIONS OF ORGANOMETALLIC CHEMISTRY TO SYNTHESIS (1.5cr.)
Study of organometallic methods, many of which have become catalytic and involve metals such as Cu, Pd, Pt, Mo, Cr, Ru. Various applications to be discussed including Stille coupling, Heck reaction, ring closing metathesis.

CHM8329 (CHEM 5402) MEDICINAL CHEMISTRY (1.5cr.)
Preparation of drugs, their mode of action, their use in treating of disease. Evolution of medicine due to chemistry. Discussion of metabolic pathways and their modification to control and/or circumvent disease.

CHM8330 (CHEM 5404) HETERATOMS (1.5cr.)
Focus on heterocycles. Reactivity of these heterocycles and their use for drugs and applications for the total synthesis particularly of alkaloids. Extensive examination of carbohydrate chemistry and other important oxygen heterocycles.

CHM8331 (CHEM 5300) PHYSICAL CHEMISTRY OF BIOLOGICAL MACROMOLECULES (1.5cr.)
Focus on how the application of physical techniques normally applied to small molecules, can be used to study macromolecular structure and function of DNA and proteins. Examples of applications to include: kinetics, electrochemistry, equilibria phenomena (thermodynamics).

CHM8332 (CHEM 5301) ELECTROCHEMICAL PHENOMENA IN BIOLOGICAL SYSTEMS (1.5cr.)
Description of theory accounting for the generation of membrane potentials. Application to the generation of nerve impulses.

CHM8333 (CHEM 5302) SURFACE PHENOMENA IN BIOLOGICAL SYSTEMS (1.5cr.)
Description of theory of surface tension phenomena in aqueous systems. Discussion of effects of cell and macromolecular structures in biological systems.

CHM8334 (CHEM 5009) NOVEL ORGANIC AND INORGANIC MOLECULES AND RADICALS (1.5cr.)
Topics to include neutralization-reionization techniques as well as flash pyrolysis and matrix isolation studies.

CHM8335 (CHEM 5006) IONIC PROCESSES IN THE ATMOSPHERE AND INTERSTELLAR SPACE (1.5cr.)
Discussion on the importance of ionic reactions in the upper atmosphere and in the interstellar medium. Study of dynamics of ion-molecule reactions and of experimental and theoretical approaches used for studying them.

CHM8336 (CHEM 5604) NON-EQUILIBRIUM KINETICS (1.5cr.)
Gas phase chemical kinetics of elementary and complex reaction mechanisms, as seen from a microscopic viewpoint. Unimolecular and bimolecular reactions under conditions of non-Boltzmann energy distributions. Consequences for combustion and atmospheric chemistry, as well as for fundamental kinetics.

CHM8337 (CHEM 5605) NON-LINEAR CHEMICAL KINETICS (1.5cr.)
Principles of non-linear dynamics as applied to very complex chemical reaction mechanisms containing feed-back processes. Monotonic, oscillatory, and chaotic dependence of concentrations on time. Gas phase and liquid phase reactions.

CHM8338 (CHEM 5100) UNIMOLECULAR REACTION DYNAMICS: EXPERIMENT AND THEORY (1.5cr.)
Presentation of the theoretical models that have been developed for the understanding of unimolecular reactions, focussing on statistical theories such as RRKM theory. Experimental techniques for exploring the kinetics and mechanism of unimolecular reactions, including mass spectrometry, coincidence spectroscopy and ZEKE spectroscopy.

CHM8339 (CHEM 5105) HETEROGENEOUS CATALYSIS (1.5cr.)
Principles of catalytic reactions and topics in modern applications of catalysis. Bonding of substrates on surfaces; cluster-surface analogy; ensemble requirements; mechanisms of catalysis on metal and metal oxide surfaces.

CHM8340 (CHEM 5106) ORGANO TRANSITION METAL CATALYSIS: E-H BOND ACTIVATION (1.5cr.)
Focus on the catalytic activation of E-H bonds by soluble organometallic complexes. Examples to include hydrogenation, hydrosilation and hydroboration catalysis, hydromination and hydrophosphination.

CHM8341 (CHEM 5107) TRANSITION-METAL CATALYZED POLYMERIZATION (1.5cr.)
Recent developments in polymerization catalysis via transition metal complexes, including insertion, metathesis, and atom-transfer polymerization. Brief overview of relevant concepts in polymer chemistry (e.g. molecular weight, polydispersity, living polymerization, the glass transition).

CHM8342 (CHEM 5200) CLAY MINERALS CHEMISTRY (1.5cr.)

CHM8343 (CHEM 5202) CHEMISTRY OF THE MAIN GROUP ELEMENTS (1.5cr.)
Fundamental and applied aspects of main group element chemistry. Topics may include non-metal chemistry, main group organometallic chemistry, application of main group element compounds to 3 uses of main group element compounds in synthesis.

CHM8344 (CHEM 5602) COMPUTATIONAL APPROACHES IN MEDICINAL CHEMISTRY (1.5cr.)
Theory and application of methods used in the pharmaceutical industry including molecular mechanics.

CHM8345 (CHEM 5603) MOLECULAR ENERGY TRANSFER (1.5cr.)
Principles of energy transfer during non-reactive molecular collisions as deduced from experiment and theory, mostly in the gas phase. Translational, rotational, vibrational and electronic energies are discussed.

CHM8505 SYNTHÈSE ORGÂNIQUE (1.5cr.)
Stratégies de synthèse complexes. Réactifs et réactions permettant des synthèses simplifiées et plus efficaces.

CHM8508 SPECTROCOPIE PAR RÉSONANCE MAGNÉTIQUE MULTINUCLEAIRE (1.5cr.)

CHM8714 ÉLECTROCHIMIE INTERFACIALE (1.5cr.)

CHM8722 SUJETS CHOISIS DE LA CHIMIE DE COORDINATION (1.5cr.)

CHM8723 MÉTHODES DE LA MÉCANIQUE QUANTIQUE THÉORIE (1.5cr.)
Description de la théorie sur laquelle sont basées les méthodes de chimie quantique (HF, MPS, CI, DFT). French equivalent of CHM 8323.

CHM8958 PROJET DE RECHERCHE / RESEARCH PROPOSAL
Préparation d'un projet de recherche, sans rapport avec le sujet de thèse, à soutenir oralement devant un comité d'examen. L'étudiant doit démontrer sa capacité à défendre et justifier le mérite scientifique, la méthodologie, l'importance et la nouveauté du projet. Il doit réussir ce cours dans l'année qui suit la réussite de l'examen général. Les étudiants dont les résultats ne seraient pas satisfaisants peuvent se réinscrire une fois et doivent alors réussir une session. Préparation de a research project, unrelated to the thesis topic, to be defended orally before an examining committee. Student required to demonstrate the ability to defend and justify the scientific merit, methodology, importance, and novelty of the project. Must be completed within one year of passing the comprehensive examination. Students who fail this activity may re-register for it once and must then successfully complete it within one session.

CHM9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION

CHM9999 (CHEM 6909) THÈSE DE DOCTORAT / PhD THESIS

phyj 5001 (3cr.)
Experimental characterization techniques in materials science, physics, chemistry, and mineralogy

PHYS30 (PHYS 30) EXPERIMENTAL CHARACTERIZATION TECHNIQUES IN MATERIALS SCIENCE, PHYSICS, CHEMISTRY, AND MINERALOGY (3cr.)
Survey of experimental techniques used in materials science, condensed matter physics, solid state chemistry, and mineralogy to characterize materials and solid substances. Diffraction (X-ray diffraction, neutron diffraction...), Spectroscopy (infra-red spectroscopy, Raman spectroscopy, nuclear magnetic resonance, Mössbauer spectroscopy, electron spin resonance...). Microscopy and imaging (scanning electron microscopy, transmission electron microscopy, optical microscopy, magnetic resonance imaging...). Other analytic techniques (thermal analysis, wet chemistry, bulk thermodynamic properties, linear response and dc susceptibility...).

Courses offered at Carleton University

CHM8355 (CHEM5000) TRACE ELEMENTAL ANALYSIS USING INDUCTIVELY COUPLED PLASMA EMISSION (ICP-ES) AND MASS SPECTROMETRY (ICP-MS) (1.5cr.)
ICP-ES/MS techniques are among the most powerful tools presently available for elemental analysis for a wide range of interests such as environmental, geological and biological applications. The fundamentals, state of the art instrumentation, applications, existing challenges, and new research and developments will be covered.

CHM8150 (CHEM5009) SPECIAL TOPICS IN MOLECULAR SPECTROSCOPY (3cr.)
Topics of current interest in molecular spectroscopy. In past years, the following areas have been covered: Electronic spectra of diatomic and triatomic molecules and their interpretation using molecular orbital diagrams; Raman and resonance Raman spectroscopy; symmetry aspects of vibrational and electronic levels of ions and molecules in solids in the presence of weak and strong resonant laser radiation.

CHM8181 (CHEM 5101) CHEMICAL PHYSICS OF ELECTRON-MOLECULE COLLISIONS (3cr.)
Basic classical scattering theory and quantum mechanical scattering theory. Experimental aspects, such as electron optics, electron gun fundamentals, energy analyzers and electron detectors. Applications to the understanding of the chemistry of materials.

CHM8346 (CHEM 5102) SUPERCritical FLUIDS (1.5cr.)
Fundamental and practical aspects of the uses of supercritical fluids in the chemistry laboratory. Thermodynamic treatment of high pressure multicomponent
phase equilibria, transport properties, solubilities, supercritical fluid extraction and chromatography for analytical purposes, reactions in supercritical fluids, equipment considerations, new developments.

CHM8126 (CHEM 5303) BIOORGANIC CHEMISTRY (3cr.)
Overview of recent developments in the mechanistic understanding of selected enzyme-catalyzed reactions. Topics include Cytochrome P450, methane monoxygenase, biotin and lipoic acid biosynthesis, methyl transfer, Vitamin B12, lipoxygenase, prostaglandin synthase; etc. Emphasis will be placed on biotransformations which are relatively poorly understood from a mechanistic point of view.

CHM8349 (CHEM 5304) FREE RADICALS IN CHEMISTRY AND BIOLOGY (1.5cr.)
Oxidative stress induced by free radicals plays a significant role in most fatal and chronic diseases. The chemistry of bio-radicals will be described and related to pathobiological processes such as lipid peroxidation and atherosclerosis, protein nitration and cross linking, and DNA scission.

CHM8356 (CHEM5308) PHYSICAL METHODS IN INORGANIC CHEMISTRY (1.5cr.)
The characterization of inorganic materials and coordination complexes by electronic absorption and electron paramagnetic spectroscopies, temperature and field dependent magnetic susceptibilities, and crystallography will be examined.

CHM8347 (CHEM 5309) ELECTRON TRANSFER: THEORY AND EXPERIMENT (1.5cr.)
The development of classical, semi-classical and quantum mechanical electronic transfer models is described. In addition, the course will examine recent experimental results and the application of electron transfer theory to biological systems.

CHM8164 (CHEM 5406) ORGANIC POLYMER CHEMISTRY (3cr.)
Basic principles of industrial and synthetic polymers. Polymerization and polymer characterization. Selected topics to cover some important polymers with emphasis on the synthesis, commodity plastics, engineering thermoplastics and specialty polymers. Students should have a basic knowledge of organic reaction mechanisms and stereochemistry. Previously offered at University of Ottawa. Revised description and prerequisites.

CHM8134 (CHEM 5407) SPECTROSCOPY FOR ORGANIC CHEMISTS (3cr.)
Analysis of proton NMR spectra. Fourier transform 13C NMR, strategies for structure elucidation, relaxation times, two-dimensional NMR. Aspects of mass spectrometry.

CHM8350 (CHEM 5408) INTRODUCTION TO POLYMER STRUCTURE AND MORPHOLOGY (1.5cr.)
Flexible and rigid rod polymers: effect of molecular constitution and conformation; examples of various polymer architectures and function; the amorphous state and glass transition; the crystalline state: typical crystal structures of polymers; polymorphism; crystallinity and long spacing. Thermal and solvent-induced crystallization; Lamellar and Spherulitic morphology.

CHM8351 (CHEM 5409) MORPHOLOGY OF POLYMERS AND COMPOSITES (1.5cr.)
Liquid crystalline state of polymers; morphology of block copolymers and polymer blends; plasticizers and fillers for tailoring properties; depression of glass transition and melting temperature; phase stability of polymer composites; mechanical properties; self assembled systems; polymer nano-composites for electronic devices; common experimental techniques.

CHM8348 (CHEM 5500) ANALYTICAL INSTRUMENTATION (1.5cr.)
Principles of modern electronics, devices and instruments. Measurement of photonic and electrochemical signals. Conditioning of signals for feedback control and microcomputer interfacing. Computational data analysis techniques such as simplex optimization. Applications in chemical analysis include amperometric detector for capillary electrophoresis, and surface plasmon resonance immunosensor.

CHM8352 (CHEM 5501) ANALYTICAL APPROACH TO CHEMICAL PROBLEMS (1.5cr.)
Case study of analytical approach to various chemical problems in agricultural, biochemical, environmental, food processing, industrial, pharmaceutical and material sciences. Analytical methods include capillary electrophoresis, chemiluminescence, Fourier transform infrared spectroscopy, inductively coupled plasma emission spectroscopy, mass spectrometry, biochemical sensors, and fiber optics for remote sensing.

CHM8353 (CHEM 5502) TRACE AND ULTRATRACE ANALYTICAL CHEMISTRY (3cr.)
Criteria for evaluation and selection of analytical techniques and methods. Electroanalytical techniques. Simultaneous and sequential multielement determination. Atomic absorption, atomic emission and atomic fluorescence spectrometry, using optical spectrometric and mass- spectrometric determination. Applications of these techniques at trace and ultratrace levels in complex matrices.

CHM8354 (CHEM 5503) CHEMICAL SPECIATION IN THE NATURAL ENVIRONMENT (3cr.)
Evaluation of analytical techniques and their capability for quantitative determination of chemical species (as opposed to total element-determination) in the natural environment. Electro- chemical techniques for determination of chemical speciation of nutrient and toxicant elements present in the natural environment.

CHM8156 (CHEM 5708) PRINCIPLES OF TOXICOLOGY (3cr.)
The basic theorems of toxicology with examples of current research problems. The concepts of exposure, hazard and risk assessment will be defined and illustrated with experimental material from some of the more dynamic areas of modern research.

CHM8157 (CHEM 5709) CHEMICAL TOXICOLOGY (3cr.)
Advanced course in chemical toxicology dealing with both chemical hazard and exposure. Overview of the empirical data relating to the toxicity of various
classes of chemicals to test organisms, followed by the study of toxicity at the cellular level, including studies of interactions between toxic substances and enzymatic systems. Data applicable to the interpretation and monitoring of the new WHMIS health regulations. Initial events in enzyme induction and mutagenesis. Study of predictive capabilities in the areas of structure-activity relationships and mechanisms of enzyme induction are considered, followed by an assessment of mechanisms of exposure to toxic chemicals.

CHM8167 (CHEM 5805) SEMINAR IN TOXICOLOGY (3cr.)
A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topics. Student, faculty and invited seminar speakers.

CHM8158 (CHEM5900) DIRECTED SPECIAL STUDIES (3cr.)
Under unusual circumstances and with the recommendation of the research supervisor, it is possible to engage in a directed study on a topic of particular value to the student. This may also be used for credit if there are insufficient course offerings in a particular field of chemistry.

CHM8104 (CHEM 5904) SCIENTIFIC DATA PROCESSING AND EVALUATION (3cr.)
Optimization of scientific measurements, calibration, uni-variate and multi-variate analysis of scientific data, 'intelligent' spreadsheets for scientific data processing and presentation, noise reduction using spreadsheets, correction for signal drifts; examples from chemistry, spectroscopy and other scientific disciplines. 
Prerequisites: CHEM 4301 or CHM 4315 or permission of the Department.

CHM5105 (CHEM5905) RADIOCHEMISTRY (3cr.)
A study of nuclear stability and decay; chemical studies of nuclear phenomena. Application of radioactivity. Prerequisites: permission of the Department.

Civil Engineering (PhD)

Ottawa-Carleton Joint Program

General Information

Established in 2000, the Ottawa-Carleton Institute of Environmental Engineering (OCIGEE) combines the teaching and research strengths of the Department of Civil Engineering and the Department of Chemical Engineering at the University of Ottawa with that of the Departments of Civil and Environmental Engineering at Carleton University.

The Institute offers graduate programs leading to the degrees of Master of Applied Science (MSc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Environmental Engineering.

The objective of these programs is to prepare candidates for careers in teaching and/or in research, in a private or a public setting. Graduates will acquire autonomy in conducting research and in preparing scholarly publications.

Members of the Institute are involved in four main research fields: water and waste processing or treatment; management of solid and hazardous waste; air pollution; water resources and groundwater management. Further information is posted on the departmental website.

Most of the courses in the graduate programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

Admission

Admission to the graduate programs in Civil Engineering is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a master’s degree with thesis in civil engineering, or in the sub-disciplines normally considered to be part of civil engineering;
2. Demonstrate strong research performance;
3. Provide at least two confidential letters of recommendation from professors who are familiar with the applicant’s work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

Program Requirements

PhD Degree Requirements

The requirements of this program are as follows:

1. Successful completion of a minimum of 15 course credits*;
2. Participation in the Civil Engineering departmental seminar series;
3. Successful completion of comprehensive examination (CVG5998);
4. Presentation and defense of a thesis (CVG9999) based on original research carried out under the direct supervision of a research faculty member in the Department.

*Students who have been allowed to transfer into the PhD program from a master's program without having completed a master's degree will require 30 course credits for the PhD degree which include credits transferred from the unfinished master's program.

Residence

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

Minimum Standards

The passing grade in all courses is 70% (B). Students who fail 6 credits, the thesis proposal, the comprehensive exam, the thesis, or whose progress is deemed unsatisfactory must withdraw from the program.

Duration of the program

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Courses
CVG5112 (CIVJ 5502) NUMERICAL MODELLING IN WATER RESOURCES (3cr.)
Discrete systems, water supply systems, EPANET; surface runoff routing, non-linear systems, HEC-RAS; watershed water balance, groundwater flow, space discretization, time discretization, transport of pollutant, two-dimensional flows, finite element modeling.

CVG5120 (CIVJ 5506) WATER RESOURCES SYSTEMS (3cr.)
Conservation of water resources. Multi-purpose project planning: study of domestic and foreign water development projects. Techniques for simulation, optimization, linear and dynamic programming.

CVG5122 (CIVJ 5508) GROUND WATER AND SEEPAGE (3cr.)
Types and physical properties of aquifers, hydraulic conductivity of isotropic, anisotropic and multilayered soils, unidirectional, radial and two-dimensional flows-steady and unsteady flows, Duspi's theory, method of images, partially penetrating wells, safe yields, groundwater contaminant transport, numerical modelling. Also offered at the undergraduate level with different requirements as CVG 4122 for which additional credit is precluded.

CVG5123 (CIVJ 5509) ADVANCED TOPICS IN HYDROLOGY (3cr.)
Selected topics of current interest in surface and groundwater hydrology.

CVG5124 (CIVJ 5605) COASTAL ENGINEERING (3cr.)
Key concepts in coastal engineering. Wave mechanics and coastal hydrodynamics, (2) sediment transport and coastal morphodynamics and (3) coastal structures and coastal zone management. Wave mechanics and coastal hydrodynamics to include small-amplitude wave theory, finite amplitude wave theories (Stokes, Cnoidal and solitary wave), wave generation, wave transformations, development and prediction, hydrodynamics of coastal circulation. Sediment transport and coastal morphodynamics to include: wave and current-induced sediment transport, coastal sediment processes, longshore and cross-shore beach morphologic transformations, etc. Coastal structures and coastal zone management to include: beach erosion control, coastal structures (dikes, breakwaters, groins, seawalls), beach nourishment, coastal pollution and control, nearshore area development.

CVG5125 (CIVJ 5601) STATISTICAL METHODS IN HYDROLOGY (3cr.)
Concepts of probability and random variables applied to hydrology. Statistical distributions, their approximation and analysis. Statistical inference, including tests of significance and estimation theory. Linear and multivariate correlation and regression techniques. Data generation and simulation techniques for design of water-resource systems. Introduction to hydrologic and meteorologic time series.

CVG5130 (ENVJ 5900) WASTEWATER TREATMENT PROCESS DESIGN (3cr.)
The physical, chemical and biological processes involved in the treatment of domestic and industrial wastes. Waste characteristics, stream assimilation, biological oxidation, aeration, sedimentation, anaerobic digestion, sludge disposal.

CVG5132 (ENVJ 5901) UNIT OPERATIONS OF WATER TREATMENT (3cr.)
Unit operations and unit processes involved in the treatment of a water supply for various uses. Topics included are: water quality, water microbiology, sedimentation, chemical treatment, disinfection, water chemistry, flocculation.

CVG5133 (ENVJ 5906) SOLID WASTE DISPOSAL (3cr.)
Collection and disposal of solid wastes. Sanitary landfill, composting, incineration and other methods of disposal. Material and energy recovery.

CVG5134 (ENVJ 5907) CHEMICAL ANALYSIS FOR ENVIRONMENTAL ENGINEERING (3cr.)

CVG5135 (CIVJ 5608) WATER SUPPLY AND SANITATION IN DEVELOPING COUNTRIES (3cr.)

CVG5137 (ENVJ 5905) WATER AND WASTEWATER TREATMENT PROCESS ANALYSIS (3cr.)
Mass balancing in complex systems. Reaction kinetics and kinetic data analysis: classical and computer based methods. Reactor design: ideal reactors and real reactors. Analysis of tracer tests. Interfacial mass transfer: common theories. Mass transfer models. Prerequisite: CVG 3132 or equivalent. Students with a Chemical Engineering background may not take this course for credit.

CVG5138 (ENVJ 5902) ADVANCED WATER TREATMENT (3cr.)
Scope, limitations and design procedures for water treatment processes for the removal of toxic and non-standard contaminants. Current water treatment problems and regulations, activated carbon treatment, ion exchange, disinfection practices and oxidation via advanced oxidation processes (ozonation and UV oxidation), iron and manganese removal, recent developments in coagulation, membranes, air stripping. Prerequisite: CVG 3132 or equivalent.

CVG5139 (ENVJ 5700) ENVIRONMENTAL ASSESSMENT OF CIVIL ENGINEERING PROJECTS (3cr.)
Procedures and methods for systematic evaluation of the environmental impact of civil engineering projects including wastewater disposal systems, solid waste disposal systems, and water resource development systems.

CVG5140 (CIVJ 5607) IRRIGATION AND DRAINAGE (3cr.)

**CVG5142 (CIVJ 5201) ADVANCED STRUCTURAL DYNAMICS** (3cr.)
Dynamic behaviour of civil engineering structures under excitations due to earthquakes, wind, waves, etc. Advanced methods in dynamic analysis of structures. Prediction of structural response. Design considerations.

**CVG5143 (CIVJ 5202) ADVANCED STRUCTURAL STEEL DESIGN** (3cr.)
Analysis of thin-walled beams, design applications including members under combined forces, analysis and design of beams under non-uniform torsion, limit state design methodology, comparative study of modern structural steel standards, formulating elastic and plastic interaction relations for members under combined forces, designing columns, beams, beam columns, for cross-sectional strengths, local buckling and global stability considerations, design of bracing systems.

**CVG5144 (CIVJ 5300) ADVANCED REINFORCED CONCRETE** (3cr.)

**CVG5145 (CIVJ 5203) THEORY OF ELASTICITY** (3cr.)
Stress-strain relations. Theories of plane stress and plane strain. Use of stress functions, energy and variational methods in the analysis of elastostatic problems.

**CVG5146 (CIVJ 5302) NUMERICAL METHODS OF STRUCTURAL ANALYSIS** (3cr.)
Numerical procedures and methods of successive approximations for the solution of structural problems. Virtual work, principles of minimum potential and complementary energy. Applications of variation and finite difference techniques to the solutions of complicated problems in beams, plates and shells.

**CVG5147 (CIVJ 5204) THEORY OF PLATES AND SHELLS** (3cr.)
Stress distribution in flat plates of various shapes. Large deflection theory, numerical methods. Membrane theory, bending theory for cylindrical shells, bending theory for shells of revolution.

**CVG5148 (CIVJ 5304) PRESTRESSED CONCRETE DESIGN** (3cr.)

**CVG5149 (CIVJ 5304) STRUCTURAL-STABILITY** (3cr.)
Elastic, inelastic, and torsional buckling of columns, beam column behaviour, plane and space frame stability, lateral torsional buckling of beams, global buckling of truss systems, plate and shell buckling, local buckling in tubulars, use of energy methods, matrix analysis, and finite element analysis in modeling stability problems, bracing requirements, standard provisions and design considerations in structural stability.

**CVG5150 (CIVJ 5206) ADVANCED CONCRETE TECHNOLOGY** (3cr.)
Cement: types, hydration, physical properties; aggregate: classification, grading, properties; fresh concrete: influence of basis constituents and admixtures on workability, mixing, placing; strength of hardened concrete; nature of strength, influence of constituents, curing methods; durability; chemical attack, frost action, thermal effects; elasticity, shrinkage and creep; special concrete; lightweight, high density; mix design; approaches, weigh batching, volume proportioning, special mixes; field and laboratory test methods.

**CVG5153 (CIVJ 5209) WIND ENGINEERING** (3cr.)
The structure and climate of wind; wind loading on structures; wind induced dynamic problems of structures; environmental aerodynamics; dispersion of pollutant; analysis of wind data; experimental investigations.

**CVG5154 (CIVJ 5308) RANDOM VIBRATION** (3cr.)

**CVG5155 (CIVJ 5306) EARTHQUAKE ENGINEERING** (3cr.)

**CVG5156 (CIVJ 5301) FINITE ELEMENT METHODS I** (3cr.)

**CVG5157 (CIVJ 5303) FINITE ELEMENT METHODS II** (3cr.)
CVG5158 (CIVJ 5307) ELEMENTS OF BRIDGE ENGINEERING (3cr.)
Introduction; limit state design; highway bridge design loads; analysis and design of concrete decks; impact and dynamics; load capacity rating of existing bridges and construction in cold climate.

CVG5159 (CIVJ 5309) LONG SPAN STRUCTURES (3cr.)

CVG5160 (CIVJ 5503) SEDIMENT TRANSPORT (3cr.)
An introduction to particle transport, with special emphasis on river engineering applications, including natural channel design. Sediment properties, initiation of motion, bed load, suspended load, fluvial dunes, alluvial channels, bank erosion and protection, natural channel design. Special topics include contaminated sediments, local scour, morphodynamic modelling, fluvial habitat.

CVG5161 (CIVJ 5106) MECHANICS OF UNSATURATED SOILS (3cr.)
Introduction to unsaturated soils, phases of an unsaturated soil, phase properties and relations, stress state variables for saturated and unsaturated soils. Measurement of soil suction: theory of soil suction, capillarity, measurements of total suction and matric suction. Flow Laws: flow of water and measurement of permeability, shear strength theory: history, failure envelope for unsaturated soils, triaxial and direct shear tests, typical results, simple testing procedures, volume change behavior including expansive soils behavior. Soil-water characteristic curve: its behavior and use in predicting the engineering properties of unsaturated soils, practical applications of the principles of unsaturated soils.

CVG5162 (CIVJ 5504) RIVER HYDRAULICS (3cr.)
Advanced concepts of river hydraulics, with an emphasis on field measurement techniques and application of numerical models. Navier-Stokes equations, turbulence, flow resistance, numerical modelling of simplified momentum and continuity equations, field-based measurement and statistical analysis of velocity fields. Special topics include contaminant transport, morphodynamic modelling.

CVG5171 (CIVJ 5102) STRENGTH AND DEFORMATION BEHAVIOUR OF SOIL AND ROCK (3cr.)
Principle of effective stress and pore pressure parameters; shear strength of saturated and partly saturated soils and rockfill; stress paths, residual strength, and liquefaction; classical theory of consolidation and its limitation; consolidation under constant and variable heads; non-linear theory of consolidation; and creep.

CVG5174 (CIVJ 5104) SOIL PLASTICITY (3cr.)
Applications of advanced constitutive relations to soil mechanics problems; modern concepts in soil plasticity, yield criteria, associated and non-associated flow rules, work hardening, kinematic hardening, and strain softening rules; comparisons between observed soil behaviour and the predictions of Cam-clay, Strain dilatancy, Endocrine models, Nested surfaces and Bounding surface models.

CVG5175 NUMERICAL METHODS FOR GEOtechnical ENGINEERS (3cr.)
Non-linear analysis of stresses and deformations using the effective stress concept; analysis of consolidation using the excess pore water pressure concept; flow through porous media; finite element, discrete element and finite difference methods; applications to foundations of structures, retaining walls, dams, tunnels, pipelines, human-made and natural slopes in rock and soil.

CVG5178 (CIVJ 5108) ICE MECHANICS (3cr.)
Ice conditions in the Arctic; ice physics; classification of ice; mechanical properties of ice; mathematical modelling of creep and fracture behaviour of ice; offshore structures in arctic environments; ice forces acting on structures; ice induced vibrations; iceberg impact loads; physical modelling of ice-structure interaction; ice as a construction material; case histories.

CVG5179 (ENVJ 5908) ANAEROBIC DIGESTION (3cr.)
Advanced theoretical, biological, and practical aspects of anaerobic digestion processes. Principles to be applied to the design and application of conventional and advanced anaerobic processes used for treatment of municipal and industrial wastewaters. Topics to include microbiology and biochemistry fundamentals, techniques for monitoring anaerobic digestion performance, municipal sludge stabilization, anaerobic composting, anoxic/anaerobic bioremediation, Andrew's dynamic model. Design of the following: two-phase digestion; Downflow Stationary Fixed Film (DSFF) reactors; Uplow Anaerobic Sludge Blanket (UASB); Uplow Blanket Filter (UBF) reactors; and Anaerobic Sequencing Batch Reactors (ASBR).

CVG5180 (ENVJ 5909) BIOLOGICAL NUTRIENT REMOVAL (3cr.)
Advanced theoretical, biological, and practical aspects of biological nutrient removal (BNR) (nitrification, denitrification and excess biological phosphorus) processes. Principles to be applied to the design and application of conventional and advanced BNR processes used for treatment of municipal and industrial wastewaters. Topics as follows: microbiology and biochemistry fundamentals of BNR, nitrification process design of suspended growth and fixed film growth systems, denitrification process design of suspended growth and fixed film growth systems, excess biological phosphorus removal design including prefermentation. Design of 2,3,4 and 5 stage BNR systems. General activated sludge model and Simworks for BNR systems. Retrofit of exiting plants and pilot plant testing for BNR.

CVG5232 (ENVJ 5911) UNIT OPERATIONS OF WATER TREATMENT LAB (1.5cr.)
Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physicochemical processes for particular applications, and b) design a full-scale facility. Conventional analytical techniques used in water treatment (pH, alkalinity, hardness, turbidity, color, spectrophotometric analysis). Process analysis techniques for process evaluation and scale-up including: zone sedimentation, batch flux settling tests, coagulation with iron and aluminum salts,
flocculent sedimentation, filtration and fluidization, flotation. Prerequisite: CVG 3132 or equivalent. Co-requisite: CVG 5132.

CVG5238 (ENVJ 5912) ADVANCED WATER TREATMENT PROCESSES LAB (1.5cr.)
Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physiochemical processes for the removal of toxic and non-standard contaminants, and b) design a full-scale facility. Tracer tests and none-ideal reactor behaviour, activated carbon adsorption equilibria and kinetics, aeration. Total organic carbon analysis, spectrophotometry. Process analysis, techniques for process evaluation and scale-up including: aeration, analysis of non-ideal flow conditions. Tracer study of three basins, adsorption isotherm tests, activated carbon mini-column tests, oxidation kinetic tests. Prerequisite: CVG 3132 or equivalent. Co-requisite: CVG 5138.

CVG5331 (ENVJ 5902) SLUDGE UTILIZATION AND DISPOSAL (3cr.)
Introduction to sludge processing technology and procedures to be used in the planning and design of sludge treatment processes. Evaluate the economics and performance of sludge unit process operations. Selection of methods for final disposition of sludge

CVG6000 RAPPORT EN GÉNIE CIVIL / CIVIL ENGINEERING REPORT (1cr.)

CVG6108 (CIVE 5906) DIRECTED STUDIES I (3cr.)
Special courses set up for one student on an exceptional basis. Limited to one in the Master's level and to two total Master's plus PhD.

CVG6109 (CIVE 5907) DIRECTED STUDIES II (3cr.)
Special courses set up for one student on an exceptional basis. Limited to one in the Master's level and to two total Master's plus PhD.

CVG 6300 TO 6320 SPECIAL TOPICS IN CIVIL ENGINEERING (3 cr.)

CVG6508 ÉTUDES DIRIGÉES I (3cr.)
Cours individuels créés seulement pour les cas exceptionnels. Un étudiant peut en suivre un au niveau de la maîtrise ou un total de deux pour les études de maîtrise et de doctorat.

CVG6509 ÉTUDES DIRIGÉES II (3cr.)
Cours individuels créés seulement pour les cas exceptionnels. Un étudiant peut en suivre un au niveau de la maîtrise ou un total de deux pour les études de maîtrise et de doctorat.

CVG7999 THÈSE DE M.Sc.A. / MASc THESIS
Pour les étudiants qui écrivent leur thèse de maîtrise après avoir fait leur travail de recherche en laboratoire. / For students writing the Master's thesis after completion of laboratory research.

CVG9998 EXAMEN GÉNÉRAL DE DOCTORAT / COMPREHENSIVE EXAMINATION (PhD)

CVG9999 THÈSE DE DOCTORAT / PhD THESIS
Pour les étudiants qui rédigent leur thèse de doctorat après avoir fait leur travail de recherche en laboratoire. / For students writing their PhD thesis after completion of laboratory research.

Computer Science (PhD)

Ottawa-Carleton Joint Program
Renseignements généraux

Students who wish to pursue studies in computer science leading to the degree of Master of Computer Science (MCS) or Doctor of Philosophy in Computer Science (PhD) can do so in joint programs offered by the School of Information Technology and Engineering at the University of Ottawa and the School of Computer Science at Carleton University under the auspices of the Ottawa-Carleton Institute for Computer Science. The Institute is responsible for supervising these programs and for providing a framework for interaction between the universities in graduate computer science education. In addition to the faculty members from the two computer science programs, the Institute also has members with computer science expertise from other departments. Requests for information and application forms should be sent to the graduate secretaries handling the admission process (Contact OICIS).

The program operates within the general framework of the “Regulations and Procedures for Joint Graduate Programs” (www.ocjip.ca) and the general regulations of the graduate faculty at each of the two universities.

Admission

A master's degree in Computer Science (with thesis or equivalent in terms of scholarly publications) with at least a "B+" (75-79%) average is
normally required for admission into the PhD program.

Students who are currently registered in the master’s program may, in exceptional cases, be permitted to transfer into the PhD program if they have completed all course requirements with at least a "A-" (80-84%) average and demonstrate significant promise for advanced research.

Residence

PhD candidates who were admitted with a master’s degree or who transfer to the PhD after completing the three sessions of residency at the master’s must spend at least six sessions in residence. Those admitted directly to the PhD from an honour’s baccalaureate must spend at least nine sessions in residence at the beginning of the program.

Note: Students who have been awarded a fellowship, scholarship or bursary for the purpose of studying on a full-time basis are required to maintain full-time registration for the period for which they hold the award.

Program Requirements

PhD Degree Requirements

- Students must successfully complete a minimum of 3 three-credit courses in at least three of the four areas below:
  - Software Engineering (category E);
  - Theory of Computing (category T)
  - Computer Applications (category A)
  - Computer Systems (category S)

  The admissions committee and the student’s advisory committee may impose additional requirements according to the student's background and research topic.

- Presentation of at least two seminars
- A comprehensive examination involving breadth and depth components
- A written thesis proposal defended at an oral examination
- A research thesis defended at an oral examination

Subject to the approval of the advisory committee, a student may take up to half of the course credits in the program in other disciplines (e.g. electrical engineering, mathematics and physics).

Courses

Les cours sont regroupés selon les catégories suivantes:

Génie du logiciel (symbole E dans la liste des cours)
- systèmes de bases de données et systèmes intelligents; génie informatique; conception de langages et de leurs traducteurs.

Théorie de l’informatique (symbole T dans la liste des cours)
- théorie des bases de données; principes de protocoles; théorie de la complexité; algorithmes algébriques; algorithmes combinatoires; algorithmes des nombres théoriques et géométriques; théorie des automates et langages formels.

Applications informatiques (symbole A dans la liste des cours)
- intelligence artificielle; applications graphiques; modélisation et simulation; analyse numérique; optimisation.

Systèmes informatiques (symbole S dans la liste des cours)
- architectures spécialisées; traitement du signal, image et langage; informatique répartie; réseaux juxtaposés et locaux; systèmes de bureautique.

Courses are grouped according to the following categories:

Software Engineering (code E in the course list)
- Database and Knowledge-based Systems; Software Engineering; Software Translator and Language Design.
Theory of Computing (code T in the course list)
- Theory of Databases; Principle of Protocols; Complexity Theory; Algebraic Algorithms; Combinatorial Algorithms; Number-Theoretic and Geometric Algorithms; Automata Theory and Formal Languages.

Computer Applications (code A in the course list)
- Artificial Intelligence; Computer Graphics; Modelling and Simulation; Numerical Analysis; Optimization.

Computer Systems (code S in the course list)
- Specialized Architectures; Signal, Image and Speech Processing; Distributed Computing; Local and Wide Area Networks; Office Information Systems.

Génie du logiciel (symbole E dans la liste des cours) / Software Engineering (code E in the course list)

CSI5107 (COMP 5609) PROGRAM CONSTRUCTION AND FAULT TOLERANCE (3cr.)

CSI5109 (COMP 5701) SPECIFICATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CSI5117 (COMP 5501) SOFTWARE QUALITY ENGINEERING (3cr.)

CSI5112 (COMP 5207) SOFTWARE ENGINEERING (3cr.)
Topics of current interest in Software Engineering, such as software development systems, structured systems analysis and design, management of software, software tools, validation and verification, programming environments.

CSI5113 (COMP 5001) FOUNDATIONS OF PROGRAMMING LANGUAGES (3cr.)

CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decompostition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.

CSI5118 (COMP 5302) AUTOMATED VERIFICATION AND VALIDATION OF SOFTWARE (3cr.)
Topics in formal test derivation methods, test management, high-level, CASE-based verification and validation, data-flow & control-flow measures and metrics for assessing quality of designs and code, regression analysis & testing. Prerequisite: a four-year undergraduate degree in computer science, computer engineering, or software engineering.

CSI5122 (COMP 5301) SOFTWARE USABILITY (3cr.)
Design principles and metrics for usability. Qualitative and quantitative methods for the evaluation of software system usability: Heuristic evaluation, usability testing, usability inspections and walkthroughs, cognitive walkthroughs, formal usability experimentation. Ethical concerns when performing studies with test users. Economics of usability. Integration of usability engineering into the software engineering lifecycle.

CSI5123 (COMP 5106) LANGUAGES FOR PARALLEL COMPUTING (3cr.)

CSI5134 (COMP 5004) FAULT TOLERANCE (3cr.)
Hardware and software techniques for fault tolerance. Topics include modeling and evaluation techniques, error detecting and correcting codes, module and system level fault detection mechanisms, design techniques for, fault-tolerant and fail-safe systems, software fault tolerance through recovery blocks, N-version programming, algorithm-based fault tolerance, checkpointing and recovery techniques, and survey of practical fault-tolerant systems.

CSI5143 (COMP 5403) REAL-TIME SYSTEMS DEVELOPMENT (3cr.)
An advanced course in real-time OS systems development that deals with modeling systems at different abstraction levels. A systematic and traceable modeling process is introduced. Topics include: modeling notations (including UML-RT), development process, design patterns, and system testing. Expect a substantial design project. Precludes additional credit for ELG 6186. Prerequisite: Computer Science CSI 5314 or equivalent.

CSI5184 (COMP 5804) LOGIC PROGRAMMING (3cr.)
Review of Logic Programming (LP) as a foundation of fifth generation software. Two approaches to LP: automated deduction and procedural semantics.
Software development methodology in the LP framework. Advanced Prolog programming. Implementations of LP. The course includes a programming project and a presentation.

**CSI5310 (COMP 5400) SOFTWARE PATTERNS** (3cr.)
Survey of current developments in software patterns, three-part rules expressing relations between software contexts, problems and solutions. Discussion of Pattern categories: architectural, design, analysis, refactoring, general-purpose, anti-patterns, and idioms. Students required to apply existing patterns and to develop and defend new ones. **Prerequisites: 93.304 or CSI 3300 or equivalent.**

**CSI5314 (COMP 5104) OBJECT-ORIENTED SOFTWARE DEVELOPMENT** (3cr.)

**CSI5507 (COMP 5609) LES PROGRAMMES: CONSTRUCTION ET TOLÉRANCE AUX FAUTES** (3cr.)

**CSI5509 (COMP 5701) MÉTHODES POUR LA SPÉCIFICATION DE SYSTÈMES RÉPARTIS** (3cr.)

**CSI5511 (COMP 5501) GÉNIE DE LA QUALITÉ DES LOGICIELS** (3cr.)

**CSI5584 (COMP 5804) PROGRAMMATION LOGIQUE** (3cr.)

**CSI7161 (COMP 6603) ADVANCED TOPICS IN PROGRAMMING SYSTEMS AND LANGUAGES** (3cr.)

**CSI7314 (COMP 6104) ADVANCED TOPICS IN OBJECT-ORIENTED SYSTEMS** (3cr.)

**CSI7561 (COMP 6603) ÉTUDES AVANCÉES EN SYSTÈMES ET LANGUAGES DE PROGRAMMATION** (3cr.)

**Théorie de l’informatique (symbole T dans la liste des cours) / Theory of Computing (code T in the course list)**

**CSI5100 (COMP 5306) DATA INTEGRATION** (3cr.)
Materialized and virtual approaches to integration of heterogeneous and independent data sources. Emphasis on data models, architectures, logic-based techniques for query processing, metadata and consistency management, the role of XML and ontologies in data integration; connections to schema mapping, data exchange, and P2P systems. **Prerequisite: COMP 3005 or equivalent.**

**CSI5101 (COMP 5307) KNOWLEDGE REPRESENTATION** (3cr.)
KR is concerned with representing knowledge and using it in computers. Emphasis on logic-based languages for KR, and automated reasoning techniques and systems; important applications of this traditional area of AI to ontologies and semantic web. **Prerequisites: COMP 1805 and COMP 3005, or equivalents.**

**CSI5102 (COMP 5308) TOPICS IN MEDICAL COMPUTING** (3cr.)

**CSI5104 (COMP/MATH 5807) FORMAL LANGUAGE AND SYNTAX ANALYSIS** (3cr.)

**CSI5107 (COMP 5609) PROGRAM CONSTRUCTION AND FAULT TOLERANCE** (3cr.)

**CSI5108 (COMP 5700) SOFTWARE SPECIFICATION AND VERIFICATION** (3cr.)

**CSI5110 (COMP 5707) PRINCIPLES OF FORMAL SOFTWARE DEVELOPMENT** (3cr.)
Methodologies in formal software specification, development, and verification. The use of theorem proving, automated deduction, and other related formal methods for software correctness. Applications in program verification, mobile code safety, and protocol verification.

CSI5121 (COMP 5408) ADVANCED DATA STRUCTURES (3cr.)

CSI5126 (COMP 5108) ALGORITHMS IN BIOINFORMATICS (3cr.)
Fundamental mathematical and algorithmic concepts underlying computational molecular biology; physical and genetic mapping, sequence analysis (including alignment and probabilistic models), genomic rearrangement, phylogenetic inference, computational proteomics and systems modelling of the whole cell. Prerequisites: CSI 3105, COMP 3804 or equivalent.

CSI5127 (COMP 5409) APPLIED COMPUTATIONAL GEOMETRY (3cr.)

CSI5144 (COMP 5404) COMPUTER-AIDED PROGRAM VERIFICATION (3cr.)

CSI5148 (COMP 5103) WIRELESS AD HOC NETWORKING (3cr.)

CSI5149 (COMP 5007) GRAPHICAL MODELS (3cr.)
Bayesian networks, factor graphs, Markov random fields, maximum a posteriori probability (MAP) and maximum likelihood (ML) principles, elimination algorithm, sum-product algorithm, decomposable and non-decomposable models, junction tree algorithm, completely observed models, iterative proportional fitting algorithm, expectation-maximization (EM) algorithm, iterative conditional modes algorithm, variational methods, applications. Precludes credit for ELG5131 (EAGJ5131) and ELG7177 (EACJ 5605). Prerequisite: Permission of the program director.

CSI5161 (COMP 5606) PRINCIPLES OF DISTRIBUTED SIMULATION (3cr.)
Distributed simulation principles and practices. Synchronization protocols: Optimistic vs Conservative, Deadlock detection in conservative simulations, Time warp simulation. Distributed interactive simulation: Data distribution management, Interest management, High Level Architectures (HLA), Run Time Infrastructure (RTI). Distributed web-based simulation. Distributed agent based simulation. Real time applications of distributed simulation. Distributed and collaborative virtual simulations.

CSI5162 (COMP 5702) ORDER: ITS ALGORITHMS AND GRAPHICAL DATA STRUCTURES (3cr.)
In general terms, this course aims to pursue the twin themes of graphical data structures and optimization in theoretical computer science. The particular application areas bear on computational geometry and scheduling; the theoretical tools which we develop arise from ordered sets. To this end the course intends to provide a comprehensive introduction to the combinatorial and computational theory of ordered sets. The special emphasis on the upward drawing and linear extension is intended to develop the tools appropriate to the applications of ordered sets in computer science.

CSI5163 (COMP 5703) ALGORITHM ANALYSIS AND DESIGN (3cr.)
Topics of current interest in the design and analysis of computer algorithms for graph-theoretical applications; e.g. shortest paths, chromatic number, etc. Lower bounds, upper bounds, and average performance of algorithms. Complexity theory.

CSI5164 (COMP 5008) COMPUTATIONAL GEOMETRY (3cr.)

CSI5165 (COMP 5709) COMBINATORIAL ALGORITHMS (3cr.)
Design of algorithms for solving problems that are combinatorial in nature, using both sequential and parallel models of computation. Parallel algorithms for enumerating basic combinatorial objects (permutations, combinations, set partitions) and for solving optimization problems (knapsack, minimal cover, branch-and-bound). Polyminoes, polygonal systems, enumeration and classification and benzenoid and coronoid hydrocarbons in chemistry. Combinatorial geometry (Voronoi diagrams, polytopes arrangements). Algorithmic problems in many-valued logics (base enumeration, tautology checking, minimization, finding the spectra).

CSI5166 (COMP 5805) APPLICATIONS OF COMBINATORIAL OPTIMIZATION (3cr.)
Topics in combinatorial optimization with emphasis on applications in Computer Science. Topics include network flows, various routing algorithms, polyhedral combinatorics, and the cutting plane method.

CSI5169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
Computational aspects and applications of design and analysis of mobile and wireless networking. Topics include Physical, Link Layer, Media Access Control, Wireless, Mobile LANs (Local Area Networks), Ad-Hoc, Sensor Networks, Power Consumption optimization, Routing, Searching, Service Discovery, Clustering, Multicasting, Localization, Mobile IP/TCP (Internet Protocol/Transmission Control Protocol), File Systems, Mobility Models, Wireless Applications. (Cannot be combined for credit with ELG 6168)

CSI5173 (COMP 5203) DATA NETWORKS (3cr.)

CSI5174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)
Review of formal specification and description techniques for distributed and open systems. Verification techniques. Correctness proofs. Verification of general

**CS15185 (COMP 5107) STATISTICAL AND SYNTACTIC PATTERN RECOGNITION (3cr.)**

**CS15308 (COMP 5003) PRINCIPLES OF DISTRIBUTED COMPUTING (3cr.)**

**CS15367 (COMP 5300) STRUCTURE IN COMPLEXITY THEORY (3cr.)**

**CS15390 (COMP 5005) LEARNING SYSTEMS FOR RANDOM ENVIRONMENTS (3cr.)**

**CS15507 (COMP 5609) LES PROGRAMMES: CONSTRUCTION ET TOLÉRANCE AUX FAUTES (3cr.)**

**CS15508 (COMP 5700) SPÉCIFICATION ET VÉRIFICATION DE LOGICIELS (3cr.)**

**CS15510 (COMP 5707) PRINCIPE DE DÉVELOPPEMENT FORMEL DE LOGICIELS (3cr.)**

**CS15526 (COMP 5180) ALGORITHMES EN BIOINFORMATIQUE (3cr.)**
Assemblage de l'ADN, recherche de gènes, comparaison de chaînes, alignement de séquences, structures grammaticales, structures secondaires et ternaires. Les récents développements, tels que les pucers d'ADN et de protéines. Travail additionnel requis dans le cas des étudiants inscrits sous la cote CSI 5526. Préalable: CSI 3505 ou (dans le cas des étudiants diplômés) permission du responsable de programme.

**CS15562 (COMP 5702) ORDRE: ALGORITHMES ET STRUCTURES GRAPHIQUES DE DONNÉES (3cr.)**
Structures graphiques de données et optimisation en informatique théorique. Applications à la géométrie computationnelle et à l'ordonnancement; outils engendrés par les ensembles ordonnés. Théorie combinatoire et computationnelle, d'ensembles ordonnés. Accent sur le "upward drawing" et l'extension linéaire, les deux outils pour les applications d'ensembles ordonnés en informatique.

**CS15565 (COMP 5709) ALGORITHMES COMBINATOIRES (3cr.)**
Conception d'algorithmes de problèmes de nature combinatoire, à l'aide de modèles séquentiels et parallèles. Algorithmes parallèles pour l'énumération d'objets combinatoires de base (permutations, combinaisons, partitions), et pour résoudre des problèmes d'optimisation (knapsack, recouvrement minimal, méthode branch-and-bound); systèmes polygonaux, applications en chimie; géométrie combinatoire (diagrammes de Voronoï, polytopes, arrangements); problèmes en logique à valeur multiple, énumération de base, vérification de tautologie, minimisation, recherche du spectre.

**CS17610 (COMP 6601) ADVANCED TOPICS IN THE THEORY OF COMPUTING (3cr.)**

**CS1770 (COMP 6602) ADVANCED TOPICS IN DISTRIBUTED COMPUTING (3cr.)**

**CS17970 (COMP 6602) THÈMES EN INFORMATIQUE RÉPARTIE**

Applications informatiques (symbole A dans la liste des cours) / Computer Applications (code A in the course list)

**CS15100 (COMP 5306) DATA INTEGRATION (3cr.)**
Materialized and virtual approaches to integration of heterogeneous and independent data sources. Emphasis on data models, architectures, logic-based techniques for query processing, metadata and consistency management, the role of XML and ontologies in data integration; connections to schema mapping, data exchange, and P2P systems. Prerequisite: COMP 3005 or equivalent.

**CS15101 (COMP 5307) KNOWLEDGE REPRESENTATION (3cr.)**
KR is concerned with representing knowledge and using it in computers. Emphasis on logic-based languages for KR, and automated reasoning techniques and systems; important applications of this traditional area of AI to ontologies and semantic web. Prerequisites: COMP 1805 and COMP 3005, or equivalents.
CSI5102 (COMP 5308) TOPICS IN MEDICAL COMPUTING (3cr.)

CSI5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4185 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

CSI5114 (COMP 5504) AUTOMATED OFFICE SYSTEMS (3cr.)
Study of office automation and its extension into commerce and marketing. Tools for collaboration, information transformation, data gathering, storage and retrieval, office agents and CSCW, funds transfer, electronic mail systems and messaging, use of WWW. Ergonomic, legal and regulatory aspects, social and economic factors.

CSI5116 (COMP 5407) AUTHENTICATION AND SOFTWARE SECURITY (3cr.)
Specialized topics in security including advanced authentication techniques, user interface aspects, electronic and digital signatures, security infrastructures and protocols, software vulnerabilities affecting security, non-secure software and hosts, protecting software and digital content. Prerequisites: Basic course in Statistics or permission of the program director.

CSI5124 (COMP 5204) COMPUTATIONAL ASPECTS OF GEOGRAPHIC INFORMATION SYSTEMS (3cr.)

CSI5126 (COMP 5108) ALGORITHMS IN BIOINFORMATICS (3cr.)
Fundamental mathematical and algorithmic concepts underlying computational molecular biology; physical and genetic mapping, sequence analysis (including alignment and probabilistic models), genomic rearrangement, phylogenetic inference, computational proteomics and systems modelling of the whole cell. Prerequisites: CSI 3105, COMP 3804 or equivalent.

CSI5128 (COMP 5002) SWARM INTELLIGENCE (3cr.)

CSI5129 (COMP 5305) ADVANCED DATABASE SYSTEMS (3cr.)

CSI5145 (COMP 5109) STATISTICAL APPROACHES TO NATURAL LANGUAGE PROCESSING (3cr.)

CSI5146 (COMP 5402) COMPUTER GRAPHICS (3cr.)

CSI5147 (COMP 5201) COMPUTER ANIMATION (3cr.)

CSI5151 (COMP 5205) VIRTUAL ENVIRONMENTS (3cr.)

CSI5162 (COMP 5702) ORDER: ITS ALGORITHMS AND GRAPHICAL DATA STRUCTURES (3cr.)
In general terms, this course aims to pursue the twin themes of graphical data structures and optimization in theoretical computer science. The particular application areas bear on computational geometry and scheduling; the theoretical tools which we develop arise from ordered sets. To this end the course intends to provide a comprehensive introduction to the combinatorial and computational theory of ordered sets. The special emphasis on the upward drawing and linear extension is intended to develop the tools appropriate to the applications of ordered sets in computer science.

CSI5168 (COMP 5309) DIGITAL WATERMARKING (3cr.)
Overview of recent advances in watermarking of image, video, audio, and other media. Spatial, spectral, and temporal watermarking algorithms. Perceptual models. Use of cryptography in steganography and watermarking. Robustness, security, imperceptibility, and capacity of watermarking. Content authentication, copy control, intellectual property, digital rights management, and other applications. Prerequisites: ELG 4172 or CEG 4311 or CSI 4135 or equivalent.

CSI5180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE (3cr.)
A programming-oriented introduction to selected topics in Artificial Intelligence (A.I.). Topics for consideration include: A.I. programming techniques, pattern matching systems, natural language systems rule-based systems, constraint systems, learning systems, and cognitive systems. Assignments will be both (a)
programming-oriented, requiring implementation and/or extensions of prototypes in Lisp and/or Prolog and (b) research-oriented, requiring readings of special topics in current A.I. journals.

CS15183 (COMP 5206) EVOLUTIONARY COMPUTATION AND ARTIFICIAL LIFE (3cr.)
CS15304 (COMP 5602) KNOWLEDGE ENGINEERING (3cr.)
Review of basic concepts from artificial intelligence for knowledge engineering. Types of knowledge and knowledge representations. The importance of logic and natural language. Expert systems and other knowledge-based software. Knowledge acquisition tools and techniques. The relation to software engineering. Exercises in knowledge acquisition, representation, and processing will be given.
CS15306 (COMP 5006) NATURAL LANGUAGE UNDERSTANDING (3cr.)
CS15380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S) (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.
CS15386 (COMP 5505) NATURAL LANGUAGE PROCESSING (3cr.)
Definitions, applications, challenges, lexicons, thesauri, corpora and other linguistic resources. Morphological analysis; tagging. Selected syntactic theories: phrase structure grammars, unification-based grammars.Parsing techniques: chart, deterministic parsing, logic grammars. Selected semantic representations: logic, logical forms, conceptual graphs. Element of semantic and pragmatic analysis: reference, scope, focus. Elements of statistical language processing and text mining. Introduction to corpus linguistics. Term projects, one on syntax and one on semantics, will be done in Prolog and logic grammars. Prerequisite: CSI 4106 or permission of the program director.
CS15387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)
CS15388 (COMP 5801) TOPICS IN MACHINE LEARNING (3cr.)
Prerequisite: CSI 4106 or permission of the program director.
CS15389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.
CS15514 (COMP 5504) BUREAUTIQUE (3cr.)
Une étude de la bureautique. Les systèmes de bureautique, réseaux locaux, systèmes de traitement de texte, transferts de fonds, messageries et échanges de documents. La politique économique, sociale et légale des systèmes bureautiques.
CS15526 (COMP 5180) ALGORITHMS ET BIOINFORMATIQUE (3cr.)
Assemblage de l'ADN, recherche de gènes, comparaison de chaînes, alignement de séquences, structures grammaticales, structures secondaires et tertiaires. Les récents développements, tels que les puces d'ADN et de protéines. Travail additionnel requis dans le cas des étudiants inscrits sous la cote CSI 5526. Préalable: CSI 3505 ou (dans le cas des étudiants diplômés) permission du responsable de programme.
CS15562 (COMP 5702) ORDRE: ALGORITHMES ET STRUCTURES GRAPHIQUES DE DONNÉES (3cr.)
Structures graphiques de données et optimisation en informatique théorique. Applications à la géométrie computationnelle et à l'ordonnancement; outils engendrés par les ensembles ordonnés. Théorie combinatoire et computationnelle, d'ensembles ordonnés. Accent sur le "upward drawing" et l'extension linéaire, les deux outils pour les applications d'ensembles ordonnés en informatique.
CS15580 (COMP 5100) SUJETS EN INTELLIGENCE ARTIFICIELLE (3cr.)
CS15780 (COMP 5405) SYSTÈMES ET ARCHITECTURES DES LOGICIELS POUR LE COMMERCE ÉLECTRONIQUE (3cr.)
CS15787 (COMP 5706) FOUILLE DES DONNÉES ET APPRENTISSAGE DES CONCEPTS (3cr.)

CS15789 (COMP 5401) TECHNOLOGIES DU Commerce ÉLECTRONIQUE (3cr.)

CS17162 (COMP 6604) ADVANCED TOPICS IN COMPUTER APPLICATIONS (3cr.)

Systèmes informatiques (symbole S dans la liste des cours) / Computer Systems (code S in the course list)

CS15105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure; identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4185 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

CS15109 (COMP 5701) SPECIFICATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CS15114 (COMP 5504) AUTOMATED OFFICE SYSTEMS (3cr.)
Study of office automation and its extension into commerce and marketing. Tools for collaboration, information transformation, data gathering, storage and retrieval, office agents and CSCW, funds transfer, electronic mail systems and messaging, use of WWW. Ergonomic, legal and regulatory aspects, social and economic factors.

CS15116 (COMP 5407) AUTHENTICATION AND SOFTWARE SECURITY (3cr.)
Specialized topics in security including advanced authentication techniques, user interface aspects, electronic and digital signatures, security infrastructures and protocols, software vulnerabilities affecting security, non-secure software and hosts, protecting software and digital content. Prerequisites: Basic course in Statistics or permission of the program director.

CS15129 (COMP 5305) ADVANCED DATABASE SYSTEMS (3cr.)

CS15131 (COMP 5704) PARALLEL ALGORITHMS AND THEIR IMPLEMENTATION (3cr.)
Introduction: models of computation, levels of parallelism; performance measures for parallel algorithms; need for parallel algorithms. Parallel algorithms: techniques in matrix multiplication, solution of linear equations, transforms and differential equations; systolic arrays for the implementation of parallel algorithms in the areas of matrix arithmetic, transforms and relational database operations. VLSI implementations: VLSI and parallel computing structures; mapping of high-level computations into VLSI structures.

CS15132 (COMP 5105) PARALLEL PROCESSING SYSTEMS (3cr.)
Introduction to issues involved in designing and using parallel processing systems. Topics include: taxonomy and applications of parallel systems; SIMD systems; multiprocessor systems; multiprocessor systems; computation versus communication issues in parallel processing; scheduling parallel systems; spinning versus blocking; interconnection networks; hot-spot contention. Prerequisite: permission of the School.

CS15133 (COMP 5608) SIMULATION AND TESTING OF LOGIC CIRCUITS (3cr.)

CS15134 (COMP 5004) FAULT TOLERANCE (3cr.)
Hardware and software techniques for fault tolerance. Topics include modeling and evaluation techniques, error detecting and correcting codes, module and system level fault detection mechanisms, design techniques for, fault-tolerant and fail-safe systems, software fault tolerance through recovery blocks, N-version programming, algorithm-based fault tolerance, checkpointing and recovery techniques, and survey of practical fault-tolerant systems.

CS15141 (COMP 5009) ASSOCIATIVE DATA STRUCTURES AND ADVANCED DATABASES (3cr.)
CS15142 (COMP 5402) PROTOCOLS FOR MOBILE AND WIRELESS NETWORKS (3cr.)

CS15143 (COMP 5403) REAL-TIME SYSTEMS DEVELOPMENT (3cr.)
An advanced course in real-time OO systems development that deals with modeling systems at different abstraction levels. A systematic and traceable modeling process is introduced. Topics include: modeling notations (including UML-RT), development process, design patterns, and system testing. Expect a substantial design project. Precludes additional credit for ELG 6186. Prerequisite: Computer Science CSI 5314 or equivalent.

CS15147 (COMP 5201) COMPUTER ANIMATION (3cr.)

CS15148 (COMP 5103) WIRELESS AD HOC NETWORKING (3cr.)

CS15161 (COMP 5606) PRINCIPLES OF DISTRIBUTED SIMULATION (3cr.)

CS15168 (COMP 5309) DIGITAL WATERMARKING (3cr.)
Overview of recent advances in watermarking of image, video, audio, and other media. Spatial, spectral, and temporal watermarking algorithms. Perceptual models. Use of cryptography in steganography and watermarking. Robustness, security, imperceptibility, and capacity of watermarking. Content authentication, copy control, intellectual property, digital rights management, and other applications. Prerequisites: ELG 4172 or CEG 4311 or CSI 4133 or equivalent.

CS15169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
Computational aspects and applications of design and analysis of mobile and wireless networking. Topics include Physical, Link Layer, Media Access Control, Wireless, Mobile LANs (Local Area Networks), Ad-Hoc, Sensor Networks, Power Consumption optimization, Routing, Searching, Service Discovery, Clustering, Multicasting, Localization, Mobile IP/TCP (Internet Protocol/Transmission Control Protocol), File Systems, Mobility Models, Wireless Applications. (Cannot be combined for credit with ELG 6168)

CS15170 (COMP 5800) DISTRIBUTED DATA PROCESSING (3cr.)
Graph- and non-graph-related algorithms in a distributed environment, such as breadth-first-search, selection in a ring, distributed file sorting, etc. Approaches to distributed database management design: distributed query and update processing, concurrency control, optimal allocation of resources and users, etc. Modelling techniques for distributed systems, such as Petri-nets, etc. Security in a distributed environment.

CS15171 (COMP 5303) NETWORK ARCHITECTURES, SERVICES, PROTOCOLS AND STANDARDS (3cr.)
Contemporary network architectures and protocols, with special consideration of telephony and mobility standards. Wireline and wireless network evolution. Telephony features and the feature interaction problem. Intelligent network architecture. Cellular networks and personal communications systems. Seamless network architectures. Mobile data communications. The Open Distributed Processing Reference model and derived architectures. Discussion of sample current architectures and issues, such as General System for Mobile Communication, IEE/TIA 41, Wireless Intelligent Networks, International Mobile Telephony 2000, migration towards the Internet. Prerequisites: No prerequisites except the general maturity and knowledge of data communications principles that should have been acquired by Computer Engineering and Computer Science graduates.

CS15173 (COMP 5203) DATA NETWORKS (3cr.)

CS15174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CS15185 (COMP 5107) STATISTICAL AND SYNTACTIC PATTERN RECOGNITION (3cr.)
CS15308 (COMP 5003) PRINCIPLES OF DISTRIBUTED COMPUTING (3cr.)

CS15311 (COMP 5101) DISTRIBUTED DATABASES AND TRANSACTION PROCESSING SYSTEMS (3cr.)
Principles involved in the design and implementation of distributed databases and distributed transaction processing systems. Topics include: distributed and multi-database system architectures and models, atomicity, synchronization and distributed concurrency control algorithms, data replication, recovery techniques, and reliability in distributed databases.

CS15312 (COMP 5102) DISTRIBUTED OPERATING SYSTEMS (3cr.)
CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S) (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5509 (COMP 5701) MÉTHODES POUR LA SPÉCIFICATION DE SYSTÈMES RÉPARTIS (3cr.)

CSI5514 (COMP 5504) BUREAUTIQUE (3cr.)
Une étude de la bureautique. Les systèmes de bureautique, réseaux locaux, systèmes de traitement de texte, transferts de fonds, messageries et échanges de documents. La politique économique, sociale et légale des systèmes bureautiques.

CSI5780 (COMP 5405) SYSTÈMES ET ARCHITECTURES DES LOGICIELS POUR LE COMMERCE ÉLECTRONIQUE (3cr.)
Préalables: CSI 4528 et CSI 3540, ou l'équivalent, ou acceptation dans l'un des programmes de maîtrise en technologies des affaires électroniques ou dans le certificat d'études supérieures en commerce électronique.

CSI5789 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE (3cr.)

CSI7131 (COMP 6100) ADVANCED PARALLEL AND SYSTOLIC ALGORITHMS (3cr.)

CSI7163 (COMP 6605) ADVANCED TOPICS IN COMPUTER SYSTEMS (3cr.)

CSI7170 (COMP 6602) ADVANCED TOPICS IN DISTRIBUTED COMPUTING (3cr.)

CSI7970 (COMP 6602) THÈMES EN INFORMATIQUE RÉPARTIE

Thèses et projets / Theses and Projects

CSI5140 (COMP 5900) SELECTED TOPICS IN COMPUTER SCIENCE (3cr.)

CSI5900 (COMP 5902) PROJETS DE RECHERCHE EN INFORMATIQUE / GRADUATE PROJECTS IN COMPUTER SCIENCE (3cr.)

CSI5901 (COMP 5901) ÉTUDES DIRIGÉES / DIRECTED STUDIES (3cr.)

CSI5902 (COMP 5904) COLLOQUE / SEMINAR (3cr.)

CSI5903 STAGE EN COMMERCE ÉLECTRONIQUE/ ELECTRONIC COMMERCE WORK TERM (3cr.)
Expérience en milieu de travail. Noté: S (satisfaisant)/ NS (non satisfaisant) selon les résultats du rapport écrit et l'évaluation de l'employeur. Préalables : recevoir la permission du Comité du programme. / Practical experience. S (satisfactory) / NS (not satisfactory) grade, to be based on the grades obtained for the written report as well as on the evaluations of the employer. Prerequisites: permission of the Program Committee.

CSI6001 STAGE COOP I / CO-OP WORK TERM I (6cr.)
Expérience en milieu de travail. Noté P (réussite) / / F (échec) par un professeur du programme selon les résultats du rapport écrit et l'évaluation du superviseur de stage. Préalable : permission du responsable des études supérieures. / Experience in a workplace setting. Graded P (pass) / F (fail) by a professor in the program based on the written report and the evaluation of the internship supervisor. Prerequisite: permission of the graduate studies co-ordinator.

CSI6002 STAGE COOP II / CO-OP WORK TERM II (6cr.)
Counselling and Spirituality (PhD)

The Faculty of Human Sciences at Saint Paul University offers graduate programs leading to a graduate certificate in Couple Counselling and Spirituality and to a master's (MA) and doctoral (PhD) degrees in Counselling and Spirituality, all of which are conferred jointly by the Senates of Saint Paul University and the University of Ottawa under the terms of the federation agreement between them.

Program Description

The PhD program prepares counselors specialized in spirituality, who are also scholar/researchers, for careers as clinicians as well as university professors and researchers.

Students will specialize in one of three fields: issues relating to special populations within society, existential and spiritual issues in counselling, and counselling in multi-faith and cross-cultural settings. These fields are described below.

Special Populations. The unique spiritual, social, and mental health needs of special populations are studied from a multidisciplinary perspective. Systemic issues related to special populations include but are not limited to the following: the challenges facing people who are homeless, people living in poverty, victims of sexual abuse and trauma, women diagnosed with breast cancer.

Existential and Spiritual Issues in Counselling. This field addresses clients' search for meaning and purpose in their lives. Spiritual and existential issues in counselling surface when people try to make sense of their lives, especially during moments of existential crises, trauma, major loss, death, sickness and life transitions.

Counselling in Multi-faith and Cross-cultural Settings. To respond to the personal and social needs, values and goals of diverse cultural and religious groups in Canada, counsellors must understand these cultures and their spirituality.

Objectives of the program

The goal of this program is to educate counsellors specialized in spirituality who are also researchers capable of independent and collaborative research. As researchers, they will be able to contribute to the knowledge base that informs counselling and spirituality.

Graduates from the PhD program will be prepared to:

1. Demonstrate in-depth knowledge of one of the three fields mentioned above;
2. Design and conduct research that contributes to the advancement of the discipline of Counselling and Spirituality;
3. Practice as counselor with a specialization in spirituality.
The program is offered in English and in French.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

**Admission**

Admission to the graduate programs in counselling and spirituality is governed by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applications to the PhD program are evaluated based on the following criteria:

1. A master’s degree in a related discipline such as counselling, spirituality, practical theology, health care, psychology, social work, pastoral studies or a discipline judged equivalent to these, with a minimum overall average of 75% (B+);
2. Completion of at least one course in each of the following: research methods, professional ethics, psychopathology and treatment, counselling, spirituality and religion;
3. Completion of at least three undergraduate courses in the area of spirituality and religion and one graduate course such as IPA5134, or IPA5144. Depending on the candidate’s background the Admissions Committee may require additional courses prior to admission such as IPA6120, IPA6108, IPA5106, and IPA5151;
4. A good academic performance and research potential as shown by official transcripts, major research paper, master’s thesis, research reports, publications in peer-reviewed journals, abstracts, presentations, etc. The admission dossier must include a written description in the form of a basic outline of the proposed research project;
5. At least 120 hours of supervised direct, face-to-face, contact with clients;
6. Successful completion of an admission interview with the Admissions Committee. The factors evaluated at this interview will include the relevance of the candidate’s proposed research topic, the candidate’s previous experience, the capacity of the candidate to succeed in doctoral-level studies, personal aptitude and interpersonal skills, and the availability of appropriate core faculty to direct their research;
7. Three confidential letters of recommendation, including at least one addressing clinical skills and one addressing academic strengths from a professor who has known the applicant and is familiar with the candidate’s work;
8. A statement of purpose indicating the interests, career goals, research focus, and other factors relevant to the proposed research area;
9. Identification of two potential thesis supervisors, ranked in order of preference, who must be members of the program and of the FGPS.

**Language requirement**

All applicants must be able to understand, speak and write proficiently in either English or French and must have a passive knowledge (ability to read and understand university level texts) of the other language. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the "Admission" section of the General Regulations of the FGPS.

**Program Requirements**

**Program Requirements**

The following requirements must be met:

1. Six compulsory graduate course of 3 credits each: IPA8101, IPA8102, IPA8103, IPA8104, IPA8105; IPA8106;
2. Completion of a minimum of 1500 hours of clinical practicum, with at least 250 hours within Saint Paul University: IPA8201 and IPA8202;
3. Comprehensive examination (IPA9998);
4. Thesis proposal (IPA9997);
5. Presentation and defence of a thesis (IPA9999) based on original research carried out under the direct supervision of a faculty member in the Faculty of Human Sciences and the FGPS. The thesis can be either a monograph or a series of articles prepared for publication in scholarly journals (See the FGPS guide: "Preparing a Thesis or a Research Paper: A Guide for Graduate Students and Supervisors.").

**Thesis Advisory Committee**

The Thesis Advisory Committee is formed during the first session of registration in the program. It is composed of the thesis supervisor and two additional faculty members. At least two members of the Committee must be from the Faculty of Human Sciences.

**Comprehensive exam**

IPA9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAM

The comprehensive examination, which has a written and an oral component, allows students to demonstrate the depth and breadth of knowledge gained from course work, and their ability to integrate concepts, principles and theories, and apply these to counselling and spirituality. In addition, the comprehensive exam provides students with the opportunity to defend their written work orally.

The procedures for the Comprehensive exam are available on the program website.
The evaluation of the written and oral exam is on a Satisfactory/Not Satisfactory basis.

A student who fails the comprehensive examination has the right to one retake. A second failure leads to compulsory withdrawal from the program.

**Thesis Proposal**
The proposal and ethics approval must be completed before data collection can commence.

**Residence**
All students must complete a minimum of six sessions of full-time registration.

**Minimum Standards**
The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), the thesis proposal, the comprehensive exam or whose progress is deemed unsatisfactory must withdraw from the program.

**Duration of the program**
The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration.

**Courses**

IPA5122 BASIC CONCEPTS IN COUNSELLING (3cr.)
IPA5123 PSYCHOLOGY OF LEARNING (3cr.)
IPA5124 SOCIAL PSYCHOLOGY (3cr.)
IPA5127 ABNORMAL BEHAVIOUR (3cr.)
IPA5128 HUMAN SEXUALITY (3cr.)
IPA5131 METHODOLOGY OF EMPIRICAL RESEARCH (3cr.)
IPA5134 PRACTICAL THEOLOGY (3cr.)
This course presents new developments in Practical Theology with its particular interdisciplinary perspectives on faith and practice. The origins and development of Practical Theology are presented as a background to its specific methods and content. Practical Theology is situated within the modern context of theology. The course introduces the pastoral practitioner and the student of theology to theological examination of the components of ministry and of contemporary expressions of faith.

IPA5138 THEORIES OF FAMILY SYSTEMS AND INTERVENTION (3cr.)
This course presents a brief history of the helping professions in relation to family interventions. Theories of family systems are presented; well functioning and dysfunctional families are examined. Different models of the family are treated. Students learn interviewing and evaluation techniques for the family and especially communication and reframing skills.

IPA5142 WORKING WITH TRAUMA AND VIOLENCE IN FAMILIES (3cr.)
The goal of this course is to examine theory, research, and interventions practices related to violence and abuse that occurs in the context of marriage and family relationships. It is designed for couple and family therapists, as well as other professionals who wish to expand their knowledge of violence and abuse, increase their awareness of potentially abusive situations, and improve their intervention skills.

IPA5144 THEOLOGY AND COUNSELLING (3cr.)
This course presents counselling and spirituality in the broad context of human existence and interpersonal relationships in the light of some spiritual and religious traditions. Practical theology, spiritual/religious traditions and the social sciences, particularly psychology, are used to show how counselling and spirituality serve societal needs. It shows how developments in counselling and spirituality are related to new understandings of social and spiritual/religious growth, and presents new models of effective practice. Students learn to assess spiritual/religious needs, to set spiritual/religious goals for growth, and to develop strategies for their implementation.

IPA5146 PROFESSIONAL ISSUES AND ETHICS IN PASTORAL COUNSELLING (3cr.)
IPA5149 PROFESSIONAL ISSUES AND ETHICS IN SPIRITUAL CARE (3cr.)
The typical MD/PhD curriculum sequence is outlined below.

**Stage I - Multidisciplinary Blocks:**

**A. BIOLOGY**
- **A1.1 PHYSIOLOGY OF THE NERVOUS SYSTEM** (3cr.)
  - A1.1.1 STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM (3cr.)
  - A1.1.2 STRUCTURE AND FUNCTION OF THE EYE AND EAR (3cr.)
  - A1.1.3 STRUCTURE AND FUNCTION OF THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS (3cr.)
  - A1.1.4 INTERPRETATION OF TESTS AND THEIR APPLICATIONS (3cr.)

**A. MEDICINE**
- **A1.2 PHYSIOLOGY OF THE REPRODUCTIVE SYSTEMS** (3cr.)
- **A1.3 PHYSIOLOGY OF THE GLANDULAR SYSTEMS** (3cr.)
- **A1.4 PHYSIOLOGY OF THE IMMUNE SYSTEM** (3cr.)
- **A1.5 PHYSIOLOGY OF THE NUTRITION** (3cr.)
- **A1.6 PHYSIOLOGY OF THE ENVIRONMENT** (3cr.)

**A. PSYCHOLOGY**
- **A1.7 PSYCHOLOGICAL ASPECTS OF THE NERVOUS SYSTEM** (3cr.)
- **A1.8 PSYCHOLOGICAL ASPECTS OF THE EYE AND EAR** (3cr.)
- **A1.9 PSYCHOLOGICAL ASPECTS OF THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **A1.10 PSYCHOLOGICAL ASPECTS OF THE IMMUNE SYSTEM** (3cr.)
- **A1.11 PSYCHOLOGICAL ASPECTS OF THE NUTRITION** (3cr.)
- **A1.12 PSYCHOLOGICAL ASPECTS OF THE ENVIRONMENT** (3cr.)

**A. ETHICS**
- **A1.13 ETHICAL AND LEGAL ISSUES IN THE NERVOUS SYSTEM** (3cr.)
- **A1.14 ETHICAL AND LEGAL ISSUES IN THE EYE AND EAR** (3cr.)
- **A1.15 ETHICAL AND LEGAL ISSUES IN THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **A1.16 ETHICAL AND LEGAL ISSUES IN THE IMMUNE SYSTEM** (3cr.)
- **A1.17 ETHICAL AND LEGAL ISSUES IN THE NUTRITION** (3cr.)
- **A1.18 ETHICAL AND LEGAL ISSUES IN THE ENVIRONMENT** (3cr.)

**B. CLINICAL MEDICINE**
- **B1.1 INTRODUCTION TO THE NERVOUS SYSTEM** (3cr.)
- **B1.2 INTRODUCTION TO THE EYE AND EAR** (3cr.)
- **B1.3 INTRODUCTION TO THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **B1.4 INTRODUCTION TO THE IMMUNE SYSTEM** (3cr.)
- **B1.5 INTRODUCTION TO THE NUTRITION** (3cr.)
- **B1.6 INTRODUCTION TO THE ENVIRONMENT** (3cr.)

**C. CLINICAL MEDICINE**
- **C1.1 CLINICAL CASE MANAGEMENT** (3cr.)
- **C1.2 CLINICAL DECISION MAKING** (3cr.)
- **C1.3 CLINICAL RESEARCH METHODS** (3cr.)
- **C1.4 CLINICAL COMMUNICATION SKILLS** (3cr.)
- **C1.5 CLINICAL LEADERSHIP** (3cr.)

**D. CLINICAL MEDICINE**
- **D1.1 CLINICAL PRACTICE IN THE NERVOUS SYSTEM** (3cr.)
- **D1.2 CLINICAL PRACTICE IN THE EYE AND EAR** (3cr.)
- **D1.3 CLINICAL PRACTICE IN THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **D1.4 CLINICAL PRACTICE IN THE IMMUNE SYSTEM** (3cr.)
- **D1.5 CLINICAL PRACTICE IN THE NUTRITION** (3cr.)
- **D1.6 CLINICAL PRACTICE IN THE ENVIRONMENT** (3cr.)

**E. CLINICAL MEDICINE**
- **E1.1 CLINICAL PRACTICE IN THE NERVOUS SYSTEM** (3cr.)
- **E1.2 CLINICAL PRACTICE IN THE EYE AND EAR** (3cr.)
- **E1.3 CLINICAL PRACTICE IN THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **E1.4 CLINICAL PRACTICE IN THE IMMUNE SYSTEM** (3cr.)
- **E1.5 CLINICAL PRACTICE IN THE NUTRITION** (3cr.)
- **E1.6 CLINICAL PRACTICE IN THE ENVIRONMENT** (3cr.)

**F. CLINICAL MEDICINE**
- **F1.1 CLINICAL PRACTICE IN THE NERVOUS SYSTEM** (3cr.)
- **F1.2 CLINICAL PRACTICE IN THE EYE AND EAR** (3cr.)
- **F1.3 CLINICAL PRACTICE IN THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **F1.4 CLINICAL PRACTICE IN THE IMMUNE SYSTEM** (3cr.)
- **F1.5 CLINICAL PRACTICE IN THE NUTRITION** (3cr.)
- **F1.6 CLINICAL PRACTICE IN THE ENVIRONMENT** (3cr.)

**G. CLINICAL MEDICINE**
- **G1.1 CLINICAL PRACTICE IN THE NERVOUS SYSTEM** (3cr.)
- **G1.2 CLINICAL PRACTICE IN THE EYE AND EAR** (3cr.)
- **G1.3 CLINICAL PRACTICE IN THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **G1.4 CLINICAL PRACTICE IN THE IMMUNE SYSTEM** (3cr.)
- **G1.5 CLINICAL PRACTICE IN THE NUTRITION** (3cr.)
- **G1.6 CLINICAL PRACTICE IN THE ENVIRONMENT** (3cr.)

**H. CLINICAL MEDICINE**
- **H1.1 CLINICAL PRACTICE IN THE NERVOUS SYSTEM** (3cr.)
- **H1.2 CLINICAL PRACTICE IN THE EYE AND EAR** (3cr.)
- **H1.3 CLINICAL PRACTICE IN THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **H1.4 CLINICAL PRACTICE IN THE IMMUNE SYSTEM** (3cr.)
- **H1.5 CLINICAL PRACTICE IN THE NUTRITION** (3cr.)
- **H1.6 CLINICAL PRACTICE IN THE ENVIRONMENT** (3cr.)

**I. CLINICAL MEDICINE**
- **I1.1 CLINICAL PRACTICE IN THE NERVOUS SYSTEM** (3cr.)
- **I1.2 CLINICAL PRACTICE IN THE EYE AND EAR** (3cr.)
- **I1.3 CLINICAL PRACTICE IN THE GASTROINTESTINAL AND HEPATOBILIARY SYSTEMS** (3cr.)
- **I1.4 CLINICAL PRACTICE IN THE IMMUNE SYSTEM** (3cr.)
- **I1.5 CLINICAL PRACTICE IN THE NUTRITION** (3cr.)
- **I1.6 CLINICAL PRACTICE IN THE ENVIRONMENT** (3cr.)
IPA5560 ÉTUDES EN COUNSELLING ET SPIRITUALITÉ (3cr.)

IPA5561 L’ABUS SEXUEL ET SES TRAUMATISMES (3cr.)
L’abus sexuel fait l’objet d’un examen en profondeur : la théorie, la recherche ainsi que les approches thérapeutiques sont mises de la partie. Ce cours s’adresse aux conseillers appelés à travailler avec des individus, des couples et des familles qui ont fait l’objet d’abus dans leur vie. Il leur permettra de comprendre la dynamique de l’abus sexuel selon différents cadres théoriques, de favoriser la réflexion sur les valeurs et l’éthique et de concevoir des plans et des stratégies de traitement.

IPA5562 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI II (3cr.)

IPA5563 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI III (3cr.)

IPA5564 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI IV (3cr.)

IPA6103 SPIRITUALITY AND HUMAN DEVELOPMENT (3cr.)

IPA6108 PSYCHOPATHOLOGY AND TREATMENT (3cr.)

IPA6114 NORMAL PERSONALITY (3cr.)

IPA6115 PERSONAL DEVELOPMENT SEMINAR

IPA6120 THEORIES OF INDIVIDUAL COUNSELLING (3cr.)

IPA6121 THEORIES OF PERSONALITY (3cr.)

IPA6151 SPIRITUALITY AND ADAPATION TO ILLNESS (3cr.)

IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)

IPA6156 RESEARCH SEMINAR (3cr.)

IPA6157 SUPERVISION (3cr.)

IPA6160 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM I (4cr.)

IPA6161 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM II (4cr.)

IPA6181 CLINICAL PASTORAL EDUCATION (CPE) EXTENDED PRACTICUM I (4cr.)

IPA6182 CLINICAL PASTORAL EDUCATION (CPE) EXTENDED PRACTICUM II (4cr.)

IPA6183 CLINICAL PASTORAL EDUCATION (CPE) EXTENDED PRACTICUM III (4cr.)

IPA6184 CLINICAL PASTORAL EDUCATION (CPE) EXTENDED PRACTICUM IV (3cr.)

IPA6221 PRACTICUM IN INDIVIDUAL COUNSELLING I (6cr.)

IPA6257 MA THESIS (12cr.)

IPA6260 CLINICAL PASTORAL EDUCATION (CPE) SUMMER PRACTICUM (6cr.)

IPA6301 THEOLOGICAL QUESTIONS IN FAMILY LIFE (3cr.)

IPA6310 LAW AND THE FAMILY (1cr.)

IPA6312 FAMILY DEVELOPMENT AND GROWTH (3cr.)

IPA6508 PSYCHOPATHOLOGIE ET TRAITEMENT (3cr.)

IPA6514 PERSONNALITÉ NORMALE (3cr.)

IPA6515 SÉMINAIRE DE DÉVELOPPEMENT PERSONNEL
IPA6520 THÉORIES DU COUNSELLING INDIVIDUEL (3cr.)
IPA6521 THÉORIES DE LA PERSONNALITÉ (3cr.)
IPA6551 SPIRITUALITÉ ET ADAPTATION À LA MALADIE (3cr.)
IPA6552 THÉOLOGIE ET SOINS SPIRITUELS (3cr.)
IPA6556 SÉMINAIRE DE RECHERCHE (3cr.)
IPA6557 SUPERVISION (3cr.)
IPA6560 PRACTICUM I EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6561 PRACTICUM II EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6581 PRACTICUM I ÉTALÉ EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6582 PRACTICUM II ÉTALÉ EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6583 PRACTICUM III ÉTALÉ EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6584 PRACTICUM IV ÉTALÉ EN ÉDUCATION PASTORALE CLINIQUE (3cr.)
IPA6621 PRACTICUM DU COUNSELING INDIVIDUEL I (6cr.)
IPA6657 SÉMINAIRE DE RECHERCHE (12cr.)
IPA6660 PRACTICUM ESTIVAL EN ÉDUCATION PASTORALE CLINIQUE (6cr.)
IPA6701 QUESTIONS THÉOLOGIQUES RELATIVES À LA FAMILLE (3cr.)
IPA6703 SPIRITUALITÉ ET DÉVELOPPEMENT HUMAIN (3cr.)
IPA6710 LE DROIT CONCERNANT LA FAMILLE (3cr.)
IPA6712 DÉVELOPPEMENT ET CROISSANCE FAMILIALE (3cr.)
IPA7102 PHENOMENOLOGY OF HUMAN RELATIONSHIPS IN LOVE AND MARRIAGE (3cr.)
IPA7103 THEOLOGICAL QUESTIONS IN MARITAL COUNSELLING (3cr.)
IPA7104 THEORIES OF COUPLE COUNSELLING (3cr.)
IPA7105 ASSESSMENT PROCEDURES IN PASTORAL COUNSELLING (3cr.)
IPA7108 INTEGRATIVE SEMINAR
IPA7109 SURVEY OF SEXUAL DYSFUNCTION AND TREATMENT (3cr.)
The purpose of this course is to present the dysfunctions of human sexuality and to survey various treatments. Male and female dysfunctions; the biological and psychological determinants; sexual dysfunction and marital interaction. Modes of sexual therapy; when and where to refer clients. The moral and ethical considerations.
IPA7162 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM III (4cr.)
IPA7163 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM IV (3cr.)
IPA7205 PRACTICUM IN COUPLE COUNSELLING (6cr.)
IPA7221 PRACTICUM IN INDIVIDUAL COUNSELLING III (6cr.)
IPA7502 PHÉNOMÉNOLOGIE DES RELATIONS HUMAINES DANS L’AMOUR ET DANS LE MARIAGE

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IPA7503 QUESTIONS THÉOLOGIQUE ET VIE DE COUPLE

IPA7505 PROCÉDURES D'ÉVALUATION EN COUNSELLING ET SPIRITUALITÉ (3cr.)

IPA7507 DIAGNOSTIC ET INTERACTIONS DYSFONCTIONNELLES DANS LE COUPLE (3cr.)

IPA7508 SÉMINAIRE D’INTÉGRATION

IPA7509 DYSFONCTIONNEMENT SEXUEL : ÉTUDE ET TRAITEMENT (3cr.)
Ce cours offre aux étudiants une connaissance du dysfonctionnement de la sexualité humaine et des divers traitements en usage chez les sexologues et les psychologues. Les dysfonctions chez les hommes et chez les femmes; les facteurs biologiques et psychologiques; la dysfonction sexuelle et l’interaction de couple. Quand et où référer un client. Considérations éthiques et morales.

IPA7562 PRACTICUM III EN RÉÉDUCATION PASTORALE CLINIQUE (4cr.)

IPA7563 PRACTICUM IV EN RÉÉDUCATION PASTORALE CLINIQUE (3cr.)

IPA7605 PRACTICUM DU COUNSELLING DE COUPLE (6cr.)

IPA7621 PRACTICUM DU COUNSELLING INDIVIDUEL III (6cr.)

IPA8101 SPIRITUALITY AND COUNSELLING (3cr.)
Study of qualitative and hermeneutical methods as these are used in the social sciences and in theological study of spirituality. Comparative study of one or more Christian spiritual traditions and one or more spiritual traditions within other religions and secular culture to increase understanding and practice of spirituality. The course is designed to highlight the role of spirituality in the emotional well-being and adjustment of individuals. This course will treat the question of personal and spiritual growth. The importance of spiritual practices and the overall relationship of spirituality to the counselling process will also be considered.

IPA8102 COUNSELLING IN MULTI-FaITH AND CROSS-CULTURAL SETTINGS (3cr.)
This course examines counselling in a culturally pluralistic spiritual and religious context. It examines the possibility of mutuality and dialogue using a comparative religions approach from social science and theological perspectives. The theory and practice proposed focuses on the differing spiritual and secular humanist journeys of the counsellor and the client, and the possibility of meeting in difference. Topics covered include: the impact of enculturation, intercultural identity, inter-religious dialogue, intercultural competence on both parties; the ways in which intercultural competence and intercultural growth contribute to spiritual growth. The course enables counsellors and their clients to assess the extent to which spiritual values, beliefs and practices are an asset or a liability for clients in reaching their counselling goals.

IPA8103 ISSUES IN SPECIAL POPULATIONS (3cr.)
This course treats issues related to the needs and social status of certain special populations. Accumulated data on group characteristics and challenges facing some special populations, such as those who are aged or those who are homeless, are critically reviewed. Membership in some social groups may involve loss of social privileges, as well as diminished access to mental and health care resources. Students explore issues related to the unique spiritual and mental health needs of these groups, their social circumstances, and the implications for service provision. Growing problems concerning assessment, intervention, and the increased barriers to services are examined from the point of view of community approaches to research and intervention. The role of counsellors working with persons with unique needs, individually or at the community level, will be addressed.

IPA8104 EXISTENTIAL ISSUES IN COUNSELLING (3cr.)
This course explores meaning-of-life issues often presented by clients in a variety of contexts, including, but not limited to, the quest for increased well-being, existential crises, life transitions, loss and death, end-of-life, and trauma. Qualitative methods of data collection and analysis are critically reviewed to gain insight into the meaning participants give to their lived experience, the meaning they place on events, processes, perceptions and into the ways in which they connect these meanings to the social world around them. A variety of religious, spiritual and secular humanist sources of and responses to existential issues are treated.

IPA8105 RESEARCH METHODS AND DESIGN PROBLEMS IN COUNSELLING AND SPIRITUALITY (3cr.)
The focus of this course is the critical analysis and discussion of the challenges that counsellors face in choosing and applying qualitative and quantitative methods to spirituality. In-depth study of design pitfalls that arise from the complexity and unpredictability of working with human subjects given the multi-cultural complexity of pluralistic societies. Potential topics include sampling issues, measurement issues, and special analytic techniques.

IPA8106 DOCTORAL SEMINAR (3cr.)
The doctoral seminar helps prepare students for their doctoral thesis. Students will develop their thesis proposals and present drafts in oral and written format for critique. Guest lecturers will select readings and lead seminars related to relevant research topics such as proposal writing, conceptual frameworks, ethics, methods and procedures, and statistical analysis.
IPA8201 INTERNAL CLINICAL PRACTICUM
The internal clinical practicum takes place in the Saint Paul University Counselling Centre. The goal of the practicum is to put into practice the theoretical knowledge of counselling and spirituality. Supervisors will specify the goals, objectives and syllabus of practicum. They will use observation, debriefing, peer review, written and oral feedback, and direct intervention and observation, to instruct and evaluate students. Minimum number of hours: 250. Graded S/NS.

IPA8202 EXTERNAL CLINICAL PRACTICUM
Clinical practice in an external location that must be approved by the program director. Graded S/NS. Students complete a minimum of 1500 hours of supervised training, internal and external practicum combined.

IPA8501 SPIRITUALITÉ ET COUNSELLING (3cr.)
Analyse des méthodes qualitatives et herménétiques utilisées en sciences sociales et dans l’étude théologique de la spiritualité. Étude comparée d’une ou de plusieurs traditions spirituelles au sein des religions chrétiennes et autres confessions religieuses ainsi que de la culture laïque, afin d’accroître la compréhension et la pratique de la spiritualité. Le cours est conçu de façon à mettre en lumière le rôle de la spiritualité dans le bien-être de l’individu sur le plan affectif. Ce cours traitera de la question de la croissance personnelle et spirituelle. On y abordera également l’importance des pratiques spirituelles et le lien entre spiritualité et processus de counselling dans son ensemble.

IPA8502 LE COUNSELLING DANS UN CONTEXTE MULTICULTUREL ET INTERCONFESSIONNEL (3cr.)
Ce cours aborde la pratique du counselling dans un contexte multiculturel et interconfessionnel. Il étudie la possibilité de la réciprocité et du dialogue utilisant une approche comparée des religions à partir des perspectives des sciences sociales et de la théologie. La théorie et la pratique proposées mettent l’accent sur la différence entre le cheminement du conseiller et celui du client dans les contextes spirituels et humanistes laïques, et sur la possibilité de rencontres dans la différence. Les sujets couverts incluent l’impact de l’inculturation, de l’identité interculturelle, du dialogue interconfessionnel et de la compétence interculturelle des deux parties en cause ; la manière selon laquelle la compétence et la croissance interculturelle contribuent au développement spirituel. Le cours permet aux conseillers et à leurs clients d’évaluer dans quelle mesure les valeurs spirituelles, les croyances et les pratiques sont un avantage ou un inconvénient pour les clients dans l’atteinte de leurs objectifs en counselling.

IPA8503 QUESTIONS CONCERNANT DES PERSONNES MARGINALISÉES (3cr.)
Ce cours traite des problèmes reliés aux besoins et au statut social de certains groupes spécifiques et de personnes marginalisées. Des données recueillies sur des caractéristiques de groupes et les défis auxquels font face certains groupes marginalisés (par exemple, les personnes âgées ou les sans-abri) seront analysées. L’appartenance à certains groupes sociaux peut entraîner la perte de privilèges sociaux de même qu’un accès limité aux ressources en soins de santé physique et mentale. Les étudiants exploreront les problèmes reliés aux besoins spécifiques en spiritualité et en santé mentale de ces personnes, leurs conditions sociales et les implications concernant l’obtention de services. Ils feront l’étude des problèmes croissants en rapport avec l’évaluation, l’intervention et l’accès aux services, et ce, du point de vue d’approches communautaires sur le plan de la recherche et de l’intervention. On abordera le rôle des conseillers qui travaillent soit avec des individus soit avec des groupes communautaires présentant des besoins particuliers.

IPA8504 LES ENJEUX EXISTENTIELS EN COUNSELLING (3cr.)
Ce cours explore les enjeux reliés au sens de la vie que présentent souvent les clients dans des contextes divers – incluant, mais non limités à – un bien-être accru, des crises existentielles, des transitions de vie, des pertes, la mort, la fin de la vie et le trauma. Les méthodes qualitatives de la collecte des données et leur analyse seront examinées pour comprendre le sens accordé par les participants à leur expérience de vie, aux événements, processus et perceptions, afin de saisir la manière dont ils relient le sens de ces concepts à leur environnement social. Seront aussi abordées dans ce cours différentes sources et réponses religieuses, spirituelles et humanistes sur des questions existentielles.

IPA8505 MÉTHODES ET MODÈLES DE RECHERCHES EN COUNSELLING ET SPIRITUALITÉ (3cr.)
Ce cours poursuit les objectifs d’analyser de manière critique et de discuter les défis que rencontrent le conseiller dans le choix et l’application des méthodes qualitatives et quantitatives au regard des questions de spiritualité. Étude approfondie des défis à relever pour faire des recherches impliquant des sujets humains dans toute leur complexité et imprévisibilité vivant dans une société pluraliste et multiculturelle. Les thèmes possibles incluent l’échantillonnage, la mesure, les techniques spéciales d’analyse.

IPA8506 SÉMINAIRE DE DOCTORAT (3cr.)
Ce séminaire fournit de l’aide à l’étudiant qui se prépare à sa thèse doctorale. L’étudiant rédigera son projet de thèse et le soumettra à l’oral et à l’écrit pour évaluation. Des professeurs invités proposeront un choix de lecture et dirigeront des ateliers portant sur des sujets de recherches pertinents tels que, la rédaction de thèses, le cadre conceptuel de la recherche, l’éthique, les méthodes et procédures, l’analyse statistique, etc.

IPA8601 STAGE CLINIQUE INTERNE
Le stage clinique interne se déroule au Centre de counselling de l’Université Saint-Paul. L’objectif du practicum est de mettre en pratique les connaissances théoriques du counselling et de la spiritualité. Les superviseurs cliniques définiront les buts, les objectifs et le plan du practicum. Ils utiliseront l’observation, le « debriefing », les commentaires des pairs, la rétrospective écrite et orale ainsi que les interventions et observations directes pour aider et évaluer les étudiants. Nombre minimum d’heures : 250. Noté S/NS.

IPA8602 STAGE CLINIQUE EXTERNE
Pratique clinique dans un centre externe qui doit être approuvé au préalable par la direction du programme. Noté S/NS. Les étudiants complètent un minimum de 1500 heures de practicum supervisé dans leurs stages cliniques interne et externe combinés.

IPA9997 PROPOSITION DE THÈSE / THESIS PROPOSAL
IPA9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAM

IPA9999 THÈSE DE DOCTORAT / DOCTORAL THESIS

**Criminology (PhD)**

The Department of Criminology offers a program leading to the PhD in criminology with a particular focus on the creation and reform of criminal justice policies in Canada. The program is offered in English and in French.

Criminal justice policies are based on a combination of cultural elements, specialized knowledge, laws and social practices that determine behaviour of a potentially criminal nature and the kind of response society can or should adopt.

The field is divided into two areas. The first addresses the process by means of which criminal justice policies (including laws and institutions such as the police, prison, etc.) are created and developed. The second concerns the theoretical and empirical analysis of the implementation of such policies. It examines how institutions function and attempts to assess the social consequences of these policies so as to suggest new reforms or alternative measures of a more moderate nature and more respectful of human dignity.

**Admission**

To be eligible for admission to the PhD program, students must hold a master's degree (thesis or research paper) in criminology or a related discipline, with a minimum average of 75 % (B+). A brief description (one or two pages) of the proposed research project must be submitted. Admission to the program will depend on the possibility of finding a professor to supervise the candidate's research.

**Language Requirements**

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the PGPS.

**Program Requirements**

**PhD Degree Requirements**

The minimal course requirements are stated below. Students may be required to take additional courses to ensure that they have the knowledge and skills needed to pursue their program. The passing grade in all courses is 70 per cent (B).

1. CRM8100 DOCTORAL SEMINAR (3cr.)
   and
   CRM8101 DOCTORAL SEMINAR II (3cr.)
2. CRM8110 RESEARCH METHODOLOGY IN CRIMINOLOGY II (3cr.)
3. One elective course (3 cr.) in criminology or in another discipline with the Department’s approval.
4. CRM9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION
5. CRM9997 PROJET DE THÈSE / THESIS PROPOSAL
6. CRM9999 THÈSE DE DOCTORAT / PhD THESIS

The comprehensive examination has a written and an oral component.

The written component must be successfully completed before taking the oral exam. For the oral component, the Department's Graduate Studies Committee sets a list of compulsory readings both in French and in English. The oral examination will be based on these readings. A passive knowledge of the second language is compulsory.

The exam must take place at the latest by the end of the fifth session. The Graduate Studies Committee can exceptionally give an extension (maximum one session). A candidate who fails this examination may be permitted to repeat it once.

The thesis proposal should be approved by the student's advisory committee before the end of the sixth session of registration and after successfully completing
the comprehensive examination.

Residence

All full-time students must complete a minimum of six sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the initial registration in the program.

Duration of the program

Students are expected to fulfill all requirements within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

In accordance with University of Ottawa policy, students have a right to produce their work and to answer examination questions in French or in English.

Courses

Required courses are offered in English and French every year. Optional courses are offered periodically.

CRM5390 GUIDED READINGS I (3cr.)
Designed to meet the particular needs of one or more students in the qualifying year of the MA or MCA programs. (Students are limited to one guided readings course per year.)

CRM5790 LECTURES DIRIGÉES I (3cr.)
Ce cours répond aux besoins particuliers d'étudiants inscrits à l'année propédeutique du programme de M.A. ou de M.C.A.

CRM6320 RESEARCH METHODOLOGY IN CRIMINOLOGY I (3cr.)
Study of the main epistemological questions regarding research activities in criminology; in-depth analysis of data collection methods with a focus on data treatment and analysis. Prerequisites: CRM 3334 and CRM 4304 or the equivalent.

CRM6325 RESEARCH SEMINAR IN CRIMINOLOGY (3cr.)
Annual seminar (every two weeks) with the following objectives: (a) detailed analysis of the procedures involved in the implementation of a research activity; formulation of a research project (research problem and theoretical framework) at the end of the fall session; presentation of the final research project (research problem, theoretical framework and methodology) at the end of the winter session.

CRM6330 QUANTITATIVE METHODS IN CRIMINOLOGY (3cr.)
Study of various epistemological, methodological and ethical questions regarding the use of quantitative methods of data collection and analysis.

CRM6331 QUALITATIVE METHODS IN CRIMINOLOGY (3cr.)
Study of various epistemological, methodological and ethical questions regarding the use of qualitative methods of data collection and analysis.

CRM6340 THEORIES OF INTERVENTION IN CRIMINOLOGY AND ALTERNATIVE PRACTICES (3cr.)
Examination of the theories and bases of the treatment of the criminalized in our society. Analysis of alternative forms of practice.

CRM6341 COUNSELLING IN CRIMINOLOGY (3cr.)
Nature, analysis and limitations of counselling in criminology.

CRM6342 COMMUNITY INTERVENTION IN CRIMINOLOGY (3cr.)
Community methods of intervention; responsibility and limits. Use of community resources. Participation in correction and social action.

CRM6343 SOCIAL POLICY AND CRIMINOLOGY (3cr.)
Issues underlying social policies with respect to crime and social control. The process of policy formation; critical and comparative aspects.

CRM6345 FIELD PLACEMENT SEMINAR (3cr.)
Restricted to students registered in the field placement (CRM 6400). Critical reflection on the field placement experience. Discussion of issues related to the field placement settings of the students. Oral presentation and written report. Graded S/NS.

CRM6350 CONTEMPORARY CRIMINOLOGICAL THEORIES (3cr.)
Analysis of current problems in criminological theory.

CRM6353 REPRESENTATIONS AND IDEOLOGIES OF CRIME (3cr.)
Study of the representations and ideologies of crime and social control.

**CRM6354 SOCIAL HISTORY OF THE CRIMINAL JUSTICE SYSTEM** (3cr.)
Problems of research on the history of penal institutions; analysis of selected cases or situations.

**CRM6355 COMPARATIVE CRiminology** (3cr.)
Discussion of the bases of comparative analysis in criminology; analysis of specific situations.

**CRM6359 EVALUATION OF CRIMINAL JUSTICE PROGRAMS, POLICIES AND LEGISLATION** (3cr.)
Evaluation principles, approaches, models and methods; analysis of programs, policies and their theoretical underpinnings; selection of evaluation questions, preparation of a proposal and development of evaluation research tools.

**CRM6360 PHILOSOPHY OF CRIMINAL LAW** (3cr.)
Critical examination of the main theories and ideologies of the role of criminal law; the reform of criminal law.

**CRM6361 CRIME PREVENTION** (3cr.)
The impact and function of prevention research in criminology; prevention programs; evaluation.

**CRM6362 CRIMINAL JUSTICE AND THE VICTIMS OF CRIME** (3cr.)
The impact of the Victims Movement on the aims and operation of the criminal justice system.

**CRM6363 POLICE AND SOCIETY** (3cr.)
The role and functioning of the police in contemporary society; relation to the state and to civil society.

**CRM6364 SENTENCING** (3cr.)
Analysis of the aims and operation of sentencing.

**CRM6365 THE SOCIO-POLITICS OF INCARCERATION** (3cr.)
Analysis of the socio-political aims, functions and consequences of incarceration. The politicization of reform; abolition; prisoners rights movements.

**CRM6367 WOMEN AND CRIMINAL JUSTICE** (3cr.)
Women as criminals and victims; the impact of the operation of the criminal justice system on women.

**CRM6370 CORPORATE CRIME** (3cr.)
Analysis of the differential responses to various forms of corporate crime.

**CRM6371 POLITICAL CRIME** (3cr.)
Analysis of the political crime and of the differential responses to the phenomenon.

**CRM6380 SELECTED TOPICS I** (3cr.)
Various topics will be discussed from year to year.

**CRM6381 SELECTED TOPICS II** (3cr.)
Various topics will be discussed from year to year.

**CRM6400 FIELD WORK IN CRIMINOLOGY II** (6cr.)
Restricted to students registered in the MCA program.

**CRM6720 MÉTHODOLOGIE DE RECHERCHE EN CRIMINOLOGIE I** (3cr.)
Étude des principaux problèmes épistémologiques concernant les activités de recherche en criminologie; approfondissement de certaines techniques de cueillette, et surtout, de traitement et d'analyse de données. Préalables: CRM 3734 et CRM 4704 ou leur équivalent.

**CRM6725 SÉMINAIRE DE RECHERCHE EN CRIMINOLOGIE** (3cr.)
Séminaire annuel (rencontres aux deux semaines) poursuivant les trois objectifs suivants : (a) analyse détaillée des différentes étapes de la mise en oeuvre d'une activité de recherche; (b) formulation de l'ébauche d'un projet de recherche (objet et cadre théorique) à la fin de la session d'automne; (c) présentation d'un projet définitif de recherche (objet, cadre théorique et méthodologie) à la fin de la session d'hiver.

**CRM6730 MÉTHODOLOGIE QUANTITATIVE EN CRIMINOLOGIE** (3cr.)
Étude des différentes questions d'ordre épistémologique, méthodologique et éthique concernant l'utilisation des techniques quantitatives d'enquête et d'analyse.

**CRM6731 MÉTHODOLOGIE QUALITATIVE EN CRIMINOLOGIE** (3cr.)
Étude des différentes questions d'ordre épistémologique, méthodologique et éthique concernant l'utilisation des techniques qualitatives d'enquête et d'analyse.

**CRM6740 THÉORIES DE L'INTERVENTION EN CRIMINOLOGIE ET PRATIQUES ALTERNATIVES** (3cr.)
Examen des théories et des points d'ancre du traitement du justiciable dans notre société. Analyse des pratiques alternatives.

CRM6741 L'ENTRETIEN CLINIQUE EN CRIMINOLOGIE (3cr.)
Nature, analyse et portée de l'entretien clinique.

CRM6742 INTERVENTION COMMUNAUTAIRE (3cr.)
La méthode d'intervention communautaire; implications et limites; l'emploi des ressources communautaires; la participation dans le domaine correctionnel et au niveau de l'action sociale.

CRM6743 POLITIQUE SOCIALE ET CRIMINOLOGIE (3cr.)
Questions sous-jacentes aux politiques sociales en rapport aux crimes et au contrôle social; la création de politiques sociales; les aspects critiques et comparatifs.

CRM6745 SÉMINAIRE DE STAGE (3cr.)

CRM6750 THÉORIES CRIMINOLOGIQUES CONTEMPORAINES (3cr.)
Analyse de certains problèmes d'actualité dans le domaine de la pensée criminologique.

CRM6753 REPRÉSENTATIONS ET IDÉOLOGIES DE LA CRIMINALITÉ (3cr.)
Étude des représentations et idéologies sur la criminalité liées au contrôle social.

CRM6754 L’APPROCHE HISTORIQUE EN CRIMINOLOGIE (3cr.)
Les problèmes de recherche reliés à l'histoire des institutions pénales; analyse de cas ou situations choisies.

CRM6755 CRIMINOLOGIE COMPARÉE (3cr.)
Discussion des bases de l'analyse comparative en criminologie; analyse de situations spécifiques.

CRM6759 ÉVALUATION DES PROGRAMMES, DES POLITIQUES ET DES LOIS EN MATIÈRE DE JUSTICE CRIMINELLE (3cr.)
Principes, approches, modèles et méthodes d'évaluation; analyse des interventions et de leurs fondements théoriques, choix des questions évaluatives, préparation d'un projet et élaboration des outils de recherche évaluative.

CRM6760 PHILOSOPHIE DU DROIT PÉNAL (3cr.)
Examen critique des principales conceptions et idéologies concernant les finalités du droit pénal.

CRM6761 LA PRÉVENTION ET LA CRIMINOLOGIE (3cr.)
L'impact et les fonctions des études de prévention en criminologie; programmes de prévention; évaluation de ces programmes.

CRM6762 LA QUESTION DES VICTIMES ET LA JUSTICE PÉNALE (3cr.)
La place de la victime et la signification du mouvement pro-victime relativement au fonctionnement et au but de la justice pénale.

CRM6763 POLICE ET SOCIÉTÉ (3cr.)
La fonction et le fonctionnement des organismes policiers dans la société contemporaine; leurs rapports avec l'état et la société civile.

CRM6764 LA DÉTERMINATION DE LA PEINE (3cr.)
Analyse des objectifs et des enjeux propres à la détermination de la peine.

CRM6765 ANALYSE SOCIO-POLITIQUE DE L'EMPRISONNEMENT (3cr.)
Analyse des buts, des fonctions et des conséquences socio-politiques de l'incarcération. La politisation de la réforme; abolition; mouvements en faveur des droits des prisonniers et des prisonnières.

CRM6767 LA FEMME ET LA JUSTICE PÉNALE (3cr.)
La femme comme justiciable et victime; l'impact du fonctionnement de la justice pénale sur les femmes.

CRM6768 LE JEUNE ET LA JUSTICE PÉNALE (3cr.)
Analyse des différents aspects de la justice pour mineurs; leurs implications et les problèmes posés.

CRM6770 DÉLINQUANCE D'AFFAIRES (3cr.)
Analyse du traitement différentiel de diverses délinquances d'affaires.

CRM6771 CRIME POLITIQUE (3cr.)
Analyse des formes de criminalité politique et des différentes réactions à ce phénomène.
Doctor of Medicine and Doctor of Philosophy (Combined Program)

Introduction

This collaborative initiative with input from two faculties, Medicine and Science, aims to meet the country's emerging needs to educate future leaders in the areas of health care and academia.

The increasing pressure from societies around the globe to deliver better health care options is fueled by a rapidly expanding pool of knowledge in the fields of clinical medicine, basic sciences and biotechnology. There is a growing demand in Canadian society for well-prepared leaders in the health care profession and in its many allied sectors, who not only have learned the traditional craft of medicine, but who are also skilled in the pursuit of scientific discovery and knowledge translation. With the MD/PhD Program in Ottawa, we seek to actively participate in the education of future leaders of Canada’s health care and business communities.
The MD/PhD Program at the University of Ottawa seeks to attract and foster the small cadre of individuals that are described by the Canadian author Malcolm Gladwell as "Outliers"[^1]. Outliers can be found in many incoming medical and graduate school classes around the world; they represent the small number of talented students who are able to perform above the ordinary because of a unique constellation of circumstances, which include among others: an innate and well nurtured talent to process information from multiple domains; an early interest in and exposure to scientific exploration; a learned commitment or natural dedication to hard work; and emotional maturity to communicate well with others. These attributes are essential to turn creativity into meritorious performance.


Description of the combined program

The MD/PhD Program, combines the existing MD undergraduate curriculum with approved graduate programs to obtain a PhD in Biochemistry, or in Cellular and Molecular Medicine, or in Microbiology and Immunology, or in Human and Molecular Genetics, or in Neuroscience (all from the Faculty of Medicine), or in Biology from the Faculty of Science in such a way to reduce the length of time that is required to complete two programs sequentially, i.e., from a total of usually more than eight years to seven.

Operationally and administratively, the MD/PhD Program resides within the Faculty of Medicine. The program is governed by the regulations of the Faculty of Medicine for the MD, of the participating PhD programs, and of Faculty of Graduate and Postdoctoral Studies (FGPS). These regulations are outlined in the calendar of each Faculty.

Parameters and guiding principles of the new combined program

The following parameters and principles have guided the creation of the new combined program:

1. The new program will combine existing, already approved programs at the University of Ottawa in such a way that it will reduce the length of time that is heretofore required to complete two programs sequentially, i.e., from a total of usually more than eight years to seven or possibly less.
2. Years 1 and 2 (Preclerkship) of medical school and the three years of graduate school are thematically grouped together since they represent the preclinical and research portions of the MD/PhD program. The clerkship part of medical school is predominantly oriented toward the practical education of young physician apprentices who, upon graduation, go into residency training programs upon graduation. This is the main reason why the Clinical Rotations aspect of the program is scheduled at the tail end of most MD/PhD programs across North America.

Admission

A. Students first apply to the MD program as described on the web at http://www.intermed.med.uottawa.ca/Students/MD/ Admissions/eng/ (i.e. through OMSAS)

- At the time of application to the MD program students will have the opportunity to indicate their interest in the MD/PhD Program, which will prompt the initiation of the review process by the MD/PhD Program Committee.
- Students must also submit two letters of recommendation from previous science professors/supervisors, their curriculum vitae and a letter of intent directly to the MD/PhD Program Committee indicating their graduate program(s) and research topic(s) of interest to them.

B. Initial assessment of the application by the MD program

The application is first assessed by the admissions committee of the MD program at the Faculty of Medicine of the University of Ottawa.

Note: Students cannot be admitted to the MD/PhD Program if they have not first been admitted to the MD Program.

C. Assessment of the application by the MD/PhD Program Committee

- Graduate program representatives of the MD/PhD Program Committee review only applications to the combined program that have been selected and invited for an interview by the MD Program Admission’s Committee at the University of Ottawa.
- The Directors of the graduate programs assess the admissibility of the student to the PhD program of choice by examining the educational background of the students as per the specific requirements of their program.
- The Directors of the graduate programs inform the MD program which students are admissible to the MD/PhD program.
- The MD/PhD program applicants are interviewed along with other MD applicants. The combined program applicants will also meet separately with members of the MD/PhD Program Committee.

D. Final admission process

- Following completion of interviews, the MD/PhD Program Committee members rank the candidates and submit the list to the Faculty of Medicine’s office for the Assistant Dean (Admissions). The MD Program, jointly with the Faculty of Graduate and Postdoctoral Studies and the relevant Graduate Studies Secretariat, is responsible for sending the offer of admission to the combined program.
- The MD/PhD Program Committee assists the admitted students in finding a supervisor appropriate to their research interests. The graduate program and supervisor must be identified before starting Year 1 of the MD program.
- The qualifications of the students admitted to the program will fall into three categories: 1) students with a B.Sc. Honours; 2) students with a
completed MSc degree; and 3) students with a partially completed MSc. Upon admission or soon thereafter, the MD/PhD Program committee, in consultation with the PhD supervisor, will determine the number of graduate courses for each student depending on his/her background upon admission or soon thereafter.

- Students who are already registered in an MSc program have to seek consent from their supervisor before applying to the MD/PhD Program. Students who have completed the PhD requirements at the end of Year 4 of the combined program cannot expect to be automatically allowed to return to the MD program in Year 5 rather than Year 6. (Explanation: The required 3-year period of the core graduate program in our MD/PhD Program is linked to the forecasting needs of the Faculty of Medicine for all enrolled medical students at the University of Ottawa and for their clerkship rotations during their last two years of undergraduate medical education).

### E. Admission Requirements for the PhD Portion of MD/PhD Program

For the PhD programs in Biochemistry, Biology, Cellular and Molecular Medicine, Human and Molecular Genetics, Microbiology/Immunology, and Neuroscience:

1. BSc Honours degree or equivalent in one of the following disciplines (Note: The BSc Honours must include a research project course involving laboratory work.):
   - Biology
   - Biochemistry
   - Biopharmaceutical Sciences
   - Health Sciences
   - Human Kinetics
   - Microbiology
   - Neuroscience
   - Pharmacology
   - Physiology

2. Minimum grade point average: A-

**Note:** The MD/PhD Program Committee and – if already assembled - the Thesis Advisory Committee will reserve the right to require additional courses in the combined program if the background of the student is deemed insufficient for entering the chosen PhD program.

The tuition and scholarship guidelines will follow the current practice of the undergraduate curriculum for medicine and the individual graduate programs. Students will be subject to the tuition fees for the program in which they are enrolled during any given session of their 7-year study.

### Structure and timetable of the combined program

The typical MD/PhD curriculum sequence is outlined below.

**Fall to Spring**

**Year 1:** Start of the Undergraduate Curriculum in MD program. During the time normally allotted to elective(s) in the MD program, MD/PhD students will instead take one graduate program course that will count toward the PhD program, as approved by the program committee.

**Summer**

Transfer from the MD to the PhD program. Completion of mandatory summer laboratory research (minimum of 8 weeks) in PhD supervisor’s lab.

**Fall to Spring**

**Year 2:** Transfer back to the MD program for Year 2 in the Undergraduate Curriculum in Medicine. During the time normally allotted to an elective in the MD program, MD/PhD students who do not hold a Master’s degree will take a second graduate program course, as approved by the program committee, which will count toward the PhD program.

After completion of Year 2, transfer from the MD to the PhD program; beginning of summer laboratory work in supervisor’s lab.

**Note:** The successful completion of Year 2 in the medical school curriculum, the summer doctoral laboratory research and graduate course work will be judged equal to fulfilling the requirements of a Master’s degree for formal admission to the PhD program. The specific admission requirements of each participating graduate program remain unchanged. Students must successfully complete Years 1 and 2 of the undergraduate MD curriculum to be eligible for transfer into a PhD program.

**Summer**

Transfer from the MD to the PhD program. Students will now take a leave of absence from medical studies (MD). Under the guidance of their chosen supervisor, they concentrate on laboratory work in fulfillment of their PhD degree requirements.
Students present their research proposal to the “Thesis Advisory Committee” and obtain approval to proceed.

Fall to Summer

**Year 3**: Students complete the requirements of the PhD Seminar during Year 3.

The Comprehensive Examination must be successfully completed by the end of Year 3.

**Note**: Students who entered the MD/PhD Program without a Master’s degree have until the first session in Year 4 to complete the Comprehensive Exam. The Comprehensive Exam requirements are governed individually by each participating graduate program.

**Year 4**: Students have completed all course work and continue to work full-time in the laboratory on their thesis project.

**Year 5**: Students present their doctoral research results in the form of a seminar. With the approval of the “Thesis Advisory Committee”, students prepare and submit their thesis before the end of Year 5.

**Year 6**: Transfer back to the MD program. Students will formally leave the graduate program and return to medical school during the last two years of the clerkship undergraduate MD curriculum.

If the PhD thesis defense has not yet taken place, it may occur during the first session of re-entering the undergraduate medical school curriculum.

Following the successful completion of all PhD program requirements, students may request to have their degree conferred along with their graduate degree peers at the next convocation date. Alternatively, they may choose to defer the actual PhD award ceremony until the completion of their MD program.

Fall to Spring

**Year 7**: Students complete their final year of medical school.

May / June

Upon completion of Year 7: Graduation from the Faculty of Medicine with MD degree and - if not yet conferred – with the PhD degree.

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**Program Requirements**

**The MD Portion**

1. The course requirements (first two years) are completed as for the MD program alone. In addition, MD/PhD students will take one (or two) graduate course(s) during their elective time in their first two years in the MD program.
2. Years 3 and 4 of the medical school curriculum (i.e., Years 6 and 7 of the combined MD/PhD program) are completed following the three years in the PhD graduate program.

**The PhD Portion**

1. A total of eleven sessions on a full-time basis must be spent on a supervised research project: two summer sessions (after Years 1 and 2 of the MD program, for a 16 weeks total) and nine sessions (three years, i.e., Years 3-5).
2. Three (for students admitted with an MSc) or six (for students admitted with a BSc) credits of graduate course work must be completed (each graduate course equals 3 credits). Graduate courses will be taken within the first two years of the undergraduate medical school program during elective time. These will be coordinated with the office of the Associate Dean, Undergraduate Medical Education.
3. One seminar course is mandatory during the PhD program. Participation in and successful completion of seminar course requirements will be evaluated according to the rules of the individual participating graduate programs.
4. One research seminar must be delivered in the home PhD department prior to thesis submission.
5. The Thesis Advisory Committee assesses the initial research plan of the student during the first summer session in the PhD program (after Year 2 of the PhD); and monitors the student’s progress annually. The composition and the role of the Thesis Advisory Committee will be governed by the rules of the participating graduate programs with one exception: a member of the MD/PhD Program Committee will be part of the Thesis Advisory Committee.
6. The Comprehensive Examination should be passed by the end of Year 3 of the combined program. The scheduling of the comprehensive examination early in the PhD program is designed to assist students with the completion of their studies within the time allocated to the PhD program. The comprehensive examination will be governed by the rules of each participating graduate program. The successful completion of the comprehensive exam is a prerequisite to proceeding with the doctoral program.
7. The submission of a thesis based on the student’s doctoral research will be completed near the end of Year 5 of the PhD program or during the first session of re-entry into the MD program studies (in Year 6; see also outline of the typical curriculum).
8. If a student decides to withdraw from the graduate program prior to sitting for the comprehensive examination, he / she will not be eligible to obtain a PhD (or MSc) degree from the Faculty of Medicine. The student must then discuss and plan with the Associate Dean, Undergraduate Medical Education how soon the last two years of medical school can be completed.
9. In the event of failure to pass the comprehensive examination, after a second attempt within the permitted timeframe of one session, the student must withdraw from the PhD program. The student may have the option to complete an MSc degree based on successful completion of the graduate course work, the generation of research data appropriate for this degree, and the writing of an MSc thesis. The MD/MSc student will be assisted by the MD/PhD Program office to devise a plan with the Associate Dean, Undergraduate Medical Education as to how soon the last two years of medical school can be completed (given that his/her time spent in the graduate program is less than the scheduled three
years).

10. A student who has passed the comprehensive examination but fails to complete the research project and to submit the thesis during the first session of Year 6 must discuss with the PhD program director(s) the option to complete his/her graduate studies during the summer after completion of Year 6 in the combined program or after the final two years of the undergraduate medical school curriculum (i.e., after Year 7).

Alternatively, the student may seek to contact the Clinician Investigator Program ("CIP") at the University of Ottawa. The CIP is a Royal College of Physicians and Surgeons of Canada-approved program that offers MD graduates the opportunity to enter a program that fosters the completion of clinical residency training and the pursuit of graduate work (http://www.medicine.uottawa.ca/CIP/eng/index.html).

The combined MD/PhD curriculum

**Stage I - Multidisciplinary Blocks:**
MED1107 COMMUNITY WEEK
MED1108 PHYSICIAN SKILLS DEVELOPEMENT (PART 1)
MED1200 INTRODUCTION TO THE PROFESSION (PART 1)
MED1201 FOUNDATIONS UNIT
MED1202 UNIT I
MED2108 PHYSICIAN SKILLS DEVELOPMENT (PART 2)
MED2109 MANDATORY CLINICAL WEEK
MED2200 INTRODUCTION UNIT TO THE PROFESSION (PART 2)
MED2201 UNIT II
MED2203 INTEGRATION UNIT

(Note: PhD requirements to be completed before Stage II)

**Stage II - Clinical Rotations:**
CL13101 LINK PERIOD
CL13102 SURGERY
CL13103 INTERNAL MEDICINE
CL13104 MANDATORY SELECTIVES
CL13106 OBSTETRICS AND GYNAECOLOGY
CL13107 PAEDIATRICS
CL13108 PSYCHIATRY
CL13109 FAMILY MEDICINE
CL13110 ACUTE CARE MEDICINE
CL13111 OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE)
CL14104 ELECTIVES
CL14105 BACK TO BASICS
CL14106 SELECTIVES

**Biochemistry**

**PhD Degree Requirements**
The following are the requirements of the doctorate in biochemistry:

1. Six credits from the courses BCH8101 to BCH8109 or from other approved graduate courses in related disciplines;
2. Successful completion of the seminar course BCH8366 (3 cr);
3. Successful completion of a comprehensive examination (BCH 9998);
4. Presentation of a seminar based on original research (BCH 9997);
5. Presentation and successful defence of a thesis based on original publishable research carried out under the direct supervision of a faculty member of the Department.

All courses of study must be approved by the departmental graduate studies committee.

**Biology**

**PhD Degree Requirements**
The following requirements must be met:

1. Six credits of graduate courses at the 5000 level or above in biology or in related disciplines approved by the Department of Biology;
2. Successful completion of a comprehensive examination (BIO9998) within twelve months of the initial admission into the program;
3. Enrollment in the seminar course BIO8900, which involves the presentation of seminars and the regular attendance at the seminars presented by the Department;
4. Presentation and defense of a thesis (BIO9999) based on original research carried out under the direct supervision of a faculty member of the Department.

The Department may require students to take additional courses depending on their background.
**Cellular and Molecular Medicine**

**PhD Degree Requirements**

1. A minimum of six sessions (two years) on a full-time basis must be spent on a supervised research project;
2. Doctoral Seminar (CMM 8225, 3 credits);
3. Six credits of course work, at least 3 credits of which must be selected from CMM courses;
4. Comprehensive examination (CMM 9998), in the form of a defended CIHR-style grant application or an oral examination on selected topics within the field;
5. Presentation of the thesis research in the departmental seminar series;
6. Presentation and defence of a thesis based on original research (CMM 9999).

Students may be required to do additional courses to ensure that they have the knowledge and skills needed to pursue their program. The list of courses being offered in each field in any given year will be indicated on the program website. Regulations of the FGPS and departmental guidelines for graduate training will apply.

**Human and Molecular Genetics (collaborative)**

**PhD Degree Requirements**

1. Six credits of courses, three credits of which must be from the student’s primary program and three of which must be HMG credits;
2. Enrolment in the seminar course, presentation of one seminar and active participation in the seminar series in the student’s primary program;
3. Comprehensive examination as required by the primary program;
4. Presentation of one research seminar to the primary program prior to thesis submission;
5. Presentation and successful defence of a thesis based on original research carried out under the direct supervision of a member of the collaborative program.

Course selection is subject to the approval of the HMG program director.

**Microbiology and Immunology**

**PhD Degree Requirements**

All doctoral candidates will be required to carry out original research of high quality for a minimum of nine sessions from the honours BSc, MD or DVM degrees and a minimum of six sessions from the master’s degree, under the direct supervision of an approved member of the microbiology and immunology program.

The requirements for the doctorate are as follows:

1. successful completion of at least two advanced level courses at the 8000-level;
2. successful completion of the seminar course MIC 8266 (3 cr.);
3. successful completion of a comprehensive examination (MIC 9998) as per the microbiology and immunology graduate programs program regulations;
4. presentation of a pre-thesis seminar (MIC 9997) in the eight months preceding the submission of the PhD thesis;
5. a thesis based on original research (MIC 9999).

All courses must be approved by the microbiology and immunology program graduate studies committee. Students may have to take additional courses depending on their backgrounds.

**Neuroscience**

**PhD Degree Requirements**

1. a minimum of six sessions (2 years) full-time must be devoted to a supervised research project;
2. doctoral Seminar (NSC 8325, 3 credits);
3. six credits of course work, including NSC 5102 and NSC 5104 or equivalents;
4. comprehensive examination (NSC 9998), in the form of either a defended MRC-style grant application or an oral examination on selected topics within the field;
5. presentation of the thesis research in the departmental seminar series;
6. presentation and defence of a thesis based on original research (NSC 9999).

Students may be required to do additional course work that will ensure they have the knowledge and skills to pursue their graduate program. Regulations of the FGPS and departmental guidelines for graduate training will apply.

1. The degree requirements of the participating PhD programs remain the same. See each individual PhD program requirements, according to chosen discipline.
2. Doctoral program students must spend at least six sessions in residence. For the MD/PhD program, residence will be covered during the three years required to complete the PhD portion of the program.

Courses

MED1107 COMMUNITY WEEK
The community week offers students, early in the medical education, an opportunity to experience a typical community medical practice. Upon completion of the community week, the student will: understand the multifaceted role of the rural physician; appreciate and understand the role of all members of the health care team in the delivery of community health care; have an opportunity to work in a medical office and experience direct patient contact in a professional manner; better understand the lifestyle of the community physician both at work and in interaction with the community.

MED1108 PHYSICIAN SKILLS DEVELOPMENT (PART 1)
This longitudinal course introduces the student to interviewing skills with an emphasis on establishing good communication between the physician and the patient, effective history taking and physical examination. Small group sessions occur with tutors, and students have a first exposure to clinical settings.

MED1200 INTRODUCTION TO THE PROFESSION (PART 1)
A two week unit: introduces learning strategies, leadership, ethics, humanities, history of medicine, gender and health, aboriginal health, health advocacy, professionalism, interprofessionalism, wellness and physician health.

MED1201 FOUNDATIONS UNIT
A thirteen-week unit: includes basic principles of molecular and cellular biology, genetics, immunology, microbiology, blood cells, and neoplasia. Also includes embryology, structure of the human body with emphasis on the musculoskeletal system, and an introduction to pharmacology. The social context of health problems and medical practice are also considered.

MED1202 UNIT 1
A nineteen-week unit: includes the hemostatic control of body systems, oxygen transport, and hemostatis. The embryology, anatomy, histology, physiology and pathophysiology of the cardiovascular, respiratory and renal systems and disorders involving one or more of these systems are studied. Approaches to treatment, including pharmacotherapeutics, are discussed. Risk factors, prevention and the impact of health problems on individuals and populations are covered.

MED1507 SEMAINE EN MILIEU COMMUNAUTAIRE
La semaine en milieu communautaire fournit aux étudiants, dès le début de leurs études médicales, l'occasion de se familiariser avec la médecine telle qu'elle est habituellement pratiquée en milieu communautaire. À la fin de leur semaine en milieu communautaire, les étudiants seront en mesure de comprendre le rôle polyvalent que joue le médecin dans le cadre de sa pratique en milieu communautaire; de comprendre et d'apprécier le rôle de tous les membres de l'équipe de soins participant à la prestation des soins en milieu communautaire; de travailler dans un cabinet de médecin et d'être en contact direct avec les patients de façon professionnelle; de mieux comprendre le mode de vie d'un médecin œuvrant en milieu communautaire, tant dans le cadre de son travail que dans ses interactions au sein de la communauté.

MED1508 DÉVELOPPEMENT DES APTITUDES CLINIQUES (PARTIE 1)
Ce cours longitudinal initie les étudiants aux techniques d'entrevue, en mettant l'accent sur l'établissement d'une bonne communication entre le médecin et son patient ainsi que la consignation d'une amanénaise et l'exécution d'un examen médical efficaces. Séances en petits groupes animées par des tuteurs. Exposition à des conditions cliniques pour la première fois.

MED1600 UNITÉ D'INTRODUCTION À LA PROFESSION
Unité de deux semaines portant sur l'initiation aux stratégies d'apprentissage, au leadership, aux humanités, à l'histoire de la médecine, à l'équité en matière des sexes, à la santé des autochtones, à la promotion de la santé, à l'interprofessionnalisme, à l'interprofessions, au bien-être et à la santé des médecins.

MED1601 UNITÉ DES FONDEMENTS DE LA MÉDECINE
Unité de 13 semaines portant sur les principes de base de la biologie moléculaire et cellulaire, de la génétique, de l'immunologie, de la microbiologie, des globules sanguins et de la néoplasie. Porte également sur l'embryologie, la structure du corps humain, en mettant l'accent sur l'appareil locomoteur et une introduction à la pharmacologie. Étude du contexte social des problèmes de santé et de la pratique médicale.

MED1602 UNITÉ 1
Unité de 19 semaines portant sur le contrôle homéostatique des systèmes et appareils de l'organisme, du transfert de l'oxygène et de l'hémostase. Étude de l'embryologie, l'anatomie, l'histologie, la physiologie et la pathophysiologie des appareils cardiovasculaire, respiratoire et rénal, de même que des troubles qui touchent un ou plusieurs de ces appareils. Discussion des approches aux traitements, y compris des pharmacondrothérapies. Traitement des facteurs de risque, de la prévention et des répercussions des problèmes de santé sur les personnes et les populations.

MED2108 PHYSICIAN SKILLS DEVELOPMENT (PART 2)
Longitudinal course builds on interviewing skills including sensitive issues, effective history taking and physical examination. Tutor-led small group sessions continue, with further exposure to clinical settings.

**MED2109 MANDATORY CLINICAL WEEK**
This one-week placement provides students with an opportunity to enhance their clinical skills or explore clinical areas in order to facilitate decision-making regarding future training. The objectives for this placement will vary depending on the main goal to be achieved by the student.

**MED2200 INTRODUCTION UNIT TO THE PROFESSION (PART 2)**
A one-week unit: elaborates the topics introduced in the first year Introduction to the Profession (I) Unit

**MED2201 UNIT II**
A fifteen-week unit: includes the embryology, anatomy, histology, physiology and pathophysiology of the endocrine systems, of the male and female reproductive systems, and of the gastrointestinal and hepatobiliary systems and their common and important disorders. Also covers interpretation of tests and treatment of disorders, including pharmacotherapeutics. Risk factors, prevention, nutrition, and the impact of selected conditions on individuals and populations are discussed.

**MED2202 UNIT III**
A ten-week unit includes: the embryology, anatomy, histology, physiology and pathophysiology of the nervous system, including the eye and the ear, and their common and important disorders. The study of the mind and the common and important psychiatric conditions are included, the interpretation of tests and treatment of disorders, including pharmacotherapeutics. The epidemiology, prevention, and impact of neurological and mental conditions on individuals and populations are covered.

**MED2203 INTEGRATION UNIT**
A nine-week unit: integrates previously acquired knowledge with the use of more complex patient cases. Particular attention is given to the paediatric patient, the geriatric patient, the management of pain, palliative care, pharmacotherapeutics, international health, complementary and alternative medicine, occupational and environmental health, and health systems. Approaches to prevention, behaviour change and management of complex cases are covered.

**MED2508 DÉVELOPPEMENT DES APPTITUDES CLINIQUES (PARTIE 2)**
Cours longitudinal misant sur les techniques d'entrevue, y compris les sujets délicats, la consignation d'une anamnèse et l'exécution d'un examen médical efficaces. Poursuite de séances en petits groupes animées par des tuteurs et de l'exposition à des conditions cliniques.

**MED2509 SEMAINE OBLIGATOIRE DE STAGE CLINIQUE**
Placement d'une semaine permettant aux étudiants de perfectionner leurs compétences cliniques ou d'explorer des domaines cliniques dans le but de faciliter leur décision à l'égard de leur formation ultérieure. Les objectifs de ce placement varieront selon le but principal visé par chaque étudiant.

**MED2601 UNITÉ II**
Unité de 15 semaines portant sur l'embryologie, l'anatomie, l'histologie, la physiologie et la pathophysiologie de l'appareil endocrinien, du système reproducteur féminin et masculin, de l'appareil digestif, de la sphère hépato-biliaire ainsi que des troubles importants et fréquents qui y sont associés. Interprétation des analyses et traitement des troubles, y compris la pharmacothérapie. Discussion des facteurs de risque, de la prévention, de la nutrition et des répercussions de certains états sur les personnes et les populations.

**MED2602 UNITÉ III**
Unité de dix semaines portant sur l'embryologie, l'anatomie, l'histologie, la physiologie et la pathophysiologie du système nerveux, incluant l'oeil et l'oreille, de même que les troubles importants et fréquents qui y sont associés. L'étude du cerveau ainsi que des troubles psychiatriques importants et fréquents qui y sont associés, de même que l'interprétation des analyses et le traitement des troubles, incluant la pharmacothérapie. Discussion de l'épidémiologie, de la prévention et des troubles neurologiques et mentaux sur les personnes et les populations.

**MED2603 UNITÉ D'INTÉGRATION**
Unité de neuf semaines intégrant les connaissances déjà acquises en utilisant des cas plus complexes. Une attention particulière est accordée aux patients pédiatriques et gériatriques, à la gestion de la douleur, aux soins palliatifs, à la pharmacothérapie, à la santé internationale, à la médecine parallèle ou douce, à la santé environnementale et au travail ainsi qu'aux systèmes de santé. Discussion des approches en matière de prévention, de modification comportementale et de gestion de cas complexes.

**CLI3101 LINK PERIOD**
Three weeks at the start of the third year serve to introduce students to patient care in hospital and community settings. Each week focuses on different aspects of the physician's role: patient care, health care trends in the community, clinical decision making, medico-legal and ethical issues.

**CLI3102 SURGERY**
This six-week rotation is comprised of two mandatory weeks in General Surgery, two mandatory weeks in Orthopaedics and two weeks in one of the following specialties: General Surgery, Thoracic Surgery, Urology, Vascular Surgery, Paediatric Surgery. Seminars and lectures are also given to enhance learning.

**CLI3103 INTERNAL MEDICINE**
This six-week rotation provides students with an exposure to patients with a wide variety of medical conditions while on a clinical teaching unit or consultation team. Students participate in problem-assisted learning and clinical reasoning sessions.
CL13104 MANDATORY SELECTIVES
This six-week rotation includes one week of otolaryngology, one week of ophthalmology, two weeks of a selective pediatric placement, and a two week period of adult selective. Pediatric selective options include gastroenterology, endocrinology, respirology, nephrology, hematolology/oncology, endocrinology, cardiology, child and youth protection team, pediatric surgery and pediatric psychiatry. The adult selective options include dermatology, geriatrics, laboratory medicine, palliative care, radiology, and radiation oncology. A lecture series is included for all students, which covers topics such as palliative care, ophthalmology, radiation oncology, dermatology, pediatric surgery, public health and radiology.

CL13106 OBSTETRICS AND GYNAECOLOGY
This six-week rotation includes training in hospital and community settings. Students acquire the knowledge and skills necessary for the examination of the normal gynaecological patient, observe and assist at labour and delivery. As part of a clinical team, students admit, manage and follow obstetrical cases, participate in the admission and management of gynaecological patients and assist in the operating room. Tutorial sessions are complemented by a series of seminars.

CL13107 PAEDIATRICS
This six-week rotation is based at the Children's Hospital of Eastern Ontario. Students acquire the knowledge and skills necessary for the comprehensive evaluation of the paediatric patient from the neonate to the adolescent. The program offers a wide spectrum of clinical experiences and students are exposed to common and important paediatric principles including growth and development, preventative paediatrics and common and emergency problems in hospital, ambulatory and community settings. Learning is further supported by problem-assisted learning, basic seminars and lectures. The four-week primary care component may take place in a Northern, or Eastern rural/under-served location.

CL13108 PSYCHIATRY
This six-week rotation is spent in one or more of the following hospitals: the Royal Ottawa Hospital, the Ottawa Hospital, and the Children's Hospital of Eastern Ontario. Students acquire the skills necessary to take a proper psychiatric case history, examine the psychiatric patient and do a mental status evaluation. Students gain experience in the management of hospitalized patients as well as the care of patients in outpatient (ambulatory) clinics for children and adults. The program includes experience in various types of psychotherapy, psychopharmacologic therapy and consultation with medical and surgical patients who may also have psychiatric disorders. The four-week primary care component may be spent in an Eastern, Northern rural or under-served location.

CL13109 FAMILY MEDICINE
This six-week rotation offers experience in the primary care of patients in a family physician's office. The student will work one-on-one with a community physician either in Ottawa or an Eastern (ERMPEP), or Northern (NOSM), or Central (ROMP) regional medical program. There will be tutorials to emphasize common and important problems encountered in general practice. Evidence-based medicine will be incorporated into daily practice and in the tutorials.

CL13110 ACUTE CARE MEDICINE
This six-week rotation consists of four weeks of Adult Emergency Medicine, and two weeks of Anaesthesia. Students will participate in tutorials, clinical workshops and an advanced cardiac life support course. Students will be exposed to patients with a wide variety of acute care problems.

CL13111 OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE)
The Objective Structured Clinical Examination will be given as a formative teaching and testing examination midway through year 3 and as a summative comprehensive examination at the end of year 3.

CL13501 STAGE PRÉPARATOIRE
Trois semaines au début de la 3e année en vue de préparer les étudiants à la prestation de soins en milieu hospitalier et en service communautaire. Un rôle différent du médecin est mis en relief chaque semaine, soit: la prestation des soins au patient, les tendances dans le domaine des soins de la santé observées dans la communauté, le processus décisionnel clinique, les questions morales et médico-légales.

CL13502 CHIRURGIE
Ce stage de six semaines compte deux semaines obligatoires en chirurgie générale, deux semaines obligatoires en orthopédie et deux semaines dans l'une des spécialités suivantes: chirurgie générale, chirurgie thoracique, urologie, chirurgie vasculaire, chirurgie pédiatrique. Des séminaires et des cours magistraux sont également donnés pour rehausser l'apprentissage.

CL13503 MÉDECINE INTERNE
Ce stage de six semaines permet aux étudiants de se familiariser avec une vaste gamme de troubles médicaux en faisant partie d'une unité de formation clinique ou d'une équipe de consultation appelée à soigner des patients. Les étudiants participent à des séances d'apprentissage par raisonnement clinique et à des sessions de raisonnement clinique.

CL13504 STAGE OBLIGATOIRE AVEC OPTIONS
Ce stage de six semaines comprend une semaine en oto-rhino-laryngologie et une autre en ophthalmologie, suivies de deux semaines de stage à option auprès de patients pédiatiques et de deux semaines auprès de patients adultes. Les choix de stages à option auprès de patients pédiatiques comprennent la gastroentérologie, l'endocrinologie, la pneumologie, la néphrologie, l'hématologie/oncologie, l'endocrinologie, la cardiologie, l'équipe de protection de l'enfance et de la jeunesse ainsi que la chirurgie pédiatrique et la pédopsychiatrie. Les choix de stages à option auprès de patients adultes comprennent la dermatologie, la gériatrie, la médecine de laboratoire, les soins palliatifs, la radiologie et la radio-oncologie. Ce stage comprend une série d'exposés sur des sujets comme les soins palliatifs, l'ophthalmologie, l'oto-rhino-laryngologie, la radio-oncologie, la dermatologie, la chirurgie pédiatrique, la santé publique et la radiologie.
CL13506 OBSTÉTRIQUE ET GYNÉCOLOGIE
Ce stage de six semaines comprend une formation en milieu hospitalier et en service requises pour l'examen d'une patiente en consultation gynécologique normale, l'observation du déroulement du travail et de l'accouchement ainsi que d'aider. En tant que membres d'une équipe clinique, les étudiants admettront, géreront et assureront le suivi des cas obstétriques, participeront à l'admission des patientes en gynécologie, puis joueront un rôle dans la salle d'opérations. Une série de séminaires apportent un complément aux séances de travaux dirigés.

CL13507 PÉDIATRIE
Ce stage de six semaines est offert au Centre hospitalier pour enfants de l'est de l'Ontario. Les étudiants feront l'acquisition des connaissances et des compétences nécessaires pour effectuer l'évaluation complète d'un enfant en pédiatrie, du stade néonatal jusqu'à l'adolescence. Le programme procure une large gamme d'expériences cliniques, ce qui permet d'exposer les étudiants aux principes généraux et fondamentaux de la pédiatrie, notamment la croissance et le développement, la prévention, les problèmes courants et ceux qui requièrent une intervention d'urgence dans un milieu hospitalier, une unité de soins ambulatoires ou un service communautaire. L'apprentissage par résolution de problèmes, des séminaires d'introduction et des cours magistraux consolident la formation. L'étudiant peut faire son volet de soins primaires d'une durée de quatre semaines dans une communauté rurale ou insuffisamment desservie du Nord ou de l'Est.

CL13508 PSYCHIATRIE
Ce stage de six semaines se déroulera dans l'un ou plusieurs des hôpitaux suivants : Montfort et Pierre Janet. Les étudiants ont l'occasion d'acquérir les compétences requises pour prendre les antécédents psychiatriques d'un patient psychiatrique, l'examiner, puis effectuer un examen de son état mental. Les étudiants acquièrent des connaissances pratiques dans la gestion des patients hospitalisés, de même qu'autour des patients (enfants et adultes) de cliniques externes (soins ambulatoires). Leur apprentissage comprend une expérience dans divers types de psychothérapie, de psychopharmacothérapie et de consultation auprès de patients hospitalisés en médecine et en chirurgie qui peuvent également présenter des troubles mentaux. L'étudiant peut faire son volet de soins primaires d'une durée de quatre semaines dans une communauté rurale ou insuffisamment desservie du Nord ou de l'Est.

CL13509 MÉDECINE FAMILIALE

CL13510 SOINS AIGUS
Ce stage de six semaines comporte quatre semaines en médecine d'urgence auprès des adultes et deux semaines d'anesthésie. Les étudiants participeront à des séances de travaux dirigés, à des ateliers cliniques ainsi qu'à un cours de soins avancés en réanimation cardiaques (SARC). Ils seront aussi exposés à une grande variété de problèmes dans un contexte de soins aigus.

CL14104 ELECTIVES
Eighteen weeks of elective time give students the opportunity to acquire in-depth knowledge and experience in several clinical disciplines or a field of biomedical science. Electives may take place at any medical school accredited by the LCME/CACMS or at an approved Distributed or International site.

CL14105 BACK TO BASICS
Four week course devoted to a systematic preparation for the Licensure Examination of the Medical Council of Canada (LMCC); it includes mandatory sessions on Biomedical Ethics and the Law. Review sessions and workshops are offered in all major clinical areas along with practice questions and self-tests. Some sessions are designed to improve skills in interpreting X-Rays and ECGs. Sessions are provided to prepare students for their future responsibilities and challenges of residency, including how to maintain a healthy lifestyle and develop good coping mechanisms.

CL14106 SELECTIVES
Four-week placement including 2 mandatory weeks of Internal Medicine (e.g., endocrinology, cardiology, hematology, geriatrics, rheumatology, rehabilitation medicine, respirology, neurology, nephrology, palliative care, infectious diseases), and 2 mandatory weeks in adult or paediatric surgery subspeciality areas (e.g., orthopedics, urology, cardiac, thoracic, vascular, neurosurgery, plastic surgery). These placements must take place at University of Ottawa sites.

Earth Sciences (PhD)

Established in 1982, the Ottawa-Carleton Geoscience Centre (OCGC) combines the research strengths of the University of Ottawa and Carleton University. The Centre offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Earth sciences.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in the following main areas of research: environmental geoscience, geochemistry / petrology, geomathematics / geomatics, mineral resource studies, sedimentary systems, and tectonics / geophysics.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.
In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The Centre is one of the participating units in the collaborative program in chemical and environmental toxicology (at the master’s and doctoral levels).

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the General Regulations of the graduate faculty at each of the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

**Admission**

Admission to the graduate program in Earth Sciences is governed by the "General Regulations" of the Ottawa–Carleton Geoscience Centre (OCGC) and by the "General Regulations" of the Faculty of Graduate and Postdoctoral Studies (FGPS).

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the "Admission" section of the "General Regulations" of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a master’s degree in earth sciences (or equivalent) with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

**Transfer from the MSc to the PhD program**

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Achievement of an A- average in the last two years of undergraduate studies;
2. Completion of two graduate courses (six credits) with a grade of A- or better in each;
3. Satisfactory progress in the research program;
4. Written recommendation by the supervisor and the advisory committee;
5. Approval by the graduate studies committee;

The transfer must take place within sixteen months of initial registration in the master’s. Following the transfer, all of the requirements of the doctoral program must be met: six credits of course work in addition to the six already completed, the comprehensive exam (to be completed within 12 months of transfer), participation in the geoscience seminar series and the thesis.

**Collaborative Program**

The Centre is a participating unit in the collaborative program in Chemical and Environmental Toxicology. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, see the description of the program posted on the FGPS website.

**Program Requirements**

**PhD Degree Requirements**

The following requirements must be met:

1. Six credits of graduate courses at the 5000 level or above in earth sciences or in related disciplines approved by the Department of Earth Sciences;
2. Successful completion of a comprehensive examination (GEO9998) within twelve months of the initial admission into the program;
3. Presentation and defense of a thesis (GEO9999) based on original research carried out under the direct supervision of a faculty member of the Department.

The Department may require students to take additional courses depending on their backgrounds.

**Residence**

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

**Minimum Standards**

The passing grade in all courses is 70% (B). Students who fail two courses (equivalent to 6 credits), or the thesis proposal, or the comprehensive exam, or whose progress is deemed unsatisfactory must withdraw from the program.

**Duration of the program**

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

**Courses**

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d'Ottawa correspond à 0.5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

**GEO5114 (ERTH 5104) MINERALOGY** (3cr.)

An advanced course covering selected topics in mineralogy, such as crystallography, crystal chemistry, crystal structure, mineralogy of rock-forming mineral groups, and instrumental methods in mineralogical research, such as use of electronic optical instruments, spectroscopy, and X-ray crystallography; seminar presentations and practical exercises included.

**GEO5122 (ERTH 5202) ADVANCED IGNEOUS PETROLOGY** (3cr.)

The course focuses on particular aspects of the discipline and integrates physical and chemical processes with the dynamics of magmatic systems to understand igneous processes.

**GEO5124 (ERTH 5204) GEOLOGY AND GEOCHEMISTRY OF ORE DEPOSITS** (3cr.)

An advanced course in ore deposits examining aspects of their geology, geochemistry, and exploration. Topics will be selected from a range of different deposit types, including hydrothermal and magmatic ore deposits, as well as laboratory and field examination of different ores and their host rocks.

**GEO5131 (ERTH 5301) SILICICLASTIC SEDIMENTOLOGY** (3cr.)

Origin and significance of physical and sedimentary processes and structures. Analysis of ancient siliciclastic depositional environments in a facies model and sequence stratigraphic framework. Course involves lectures, seminars and field excursions.

**GEO5135 (ERTH 5305) CARBONATE SEDIMENTOLOGY** (3cr.)

Lectures and seminars will cover aspects of modern depositional systems, dynamic facies models, sequence stratigraphy, mineralogy, and diagenesis of carbonate sediments. Practical part of the course will consist of a field-laboratory project that intergrates various techniques in carbonate sedimentology (mapping, petrography, staining, cathodoluminescence, fluorescence, SEM).

**GEO5136 (ERTH 5306) PALEOBIOLGY** (3cr.)

Selected topics in paleobiology of micro- and macro-invertebrates and vertebrates. Topics include extinctions, micro- and macro-evolutionary processes, long-term trends and cycles in the Phanerozoic, and functional morphology, as well as application of invertebrates to biostratigraphy, paleoceanography and
paleolimnology.

**GEO5139 (GEOL 5309) GLACIAL AND PERIGLACIAL GEOLOGY (3cr.)**
An examination of various sedimentary environments associated with glacial and periglacial processes and their significance for mineral exploration and environmental geochemistry. Study of cold climate non-glacial conditions and the development of permafrost and permafrost-related features, including the effect of groundwater flow on permafrost distribution.

**GEO5142 (GEOL 5402) ENVIRONMENTAL GEOSCIENCE (3cr.)**
A study-seminar course in which students will examine, in depth, certain environmental problems, including geological hazards, mineral and energy consumption and environmental degradation. The relation between development and the environment will be considered. Students will prepare a report and present a seminar on a subject of their choice, and will participate in a research project centered in the Ottawa area.

**GEO5143 (GEOL 5403) ENVIRONMENTAL ISOTOPES AND GROUNDWATER GEOCHEMISTRY (3cr.)**
Stable environmental isotopes (18O, 2H, 13C, 34S, 15N) in studies of groundwater origin and flow, and geothermal studies. Groundwater dating techniques involving tritium and radiocarbon, and exotic radioisotopes (e.g. 36Cl, 39Ar, 85Kr). Low temperature aqueous geochemistry and mineral solubility with emphasis on the carbonate system. Some applications to paleoclimatology will be discussed. Prerequisite: Four-year Hydrogeology (67.420 or GEO 4342) or equivalent.

**GEO5146 (ERTH 5406) TECHNIQUES OF GROUNDWATER RESOURCES EVALUATION (3cr.)**
Governing groundwater flow equations, initial and boundary conditions; simple numerical solutions (spreadsheets); complex numerical solutions (commercial software); and analytical solutions. Applications: aquifer response test analysis, capture zone analysis, groundwater flow modeling, water budgeting, and aquifer vulnerability assessment. Prerequisite: undergraduate hydrogeology.

**GEO5147 (ERHT 5407) GEOCHEMISTRY OF NATURAL WATERS (3cr.)**
Aqueous speciation, solubility of metals, minerals and gas, reaction kinetics and equilibria. Chemistry and dynamics of groundwaters and hydrothermal fluids.

**GEO5148 (ERHT 5408) THEORY OF FLOW AND CONTAMINANT TRANSPORT IN GEOLOGICAL MATERIALS (3cr.)**
Development of governing groundwater flow equations and solute transport equations from first principles, and application of principles in case studies. Topics: Forces and potentials, fluids, geological materials, contaminants, case studies. Prerequisite: undergraduate hydrogeology.

**GEO5151 (ERHT 5501) PRECAMBRIAN GEOLOGY (3cr.)**
Geology and tectonic history of the Canadian Shield, emphasizing modern four-dimensional interpretations (map, depth, time); comparison and correlation with other Precambrian shields; global Precambrian tectonic evolution through review of continental reconstructions; Precambrian mineral deposits; field trips and research projects.

**GEO5153 (ERHT 5503) COMPUTER TECHNIQUES IN THE EARTH SCIENCES (3cr.)**
A practical course in the application of computer techniques in the acquisition and interpretation of geoscientific data. Topics will be selected from the following: remote sensing and geographic information systems; geostatistical analysis techniques; analysis and modelling of geoscientific data. Prerequisite: Permission of the Institute.

**GEO5157 (ERHT 5507) TECTONIC PROCESSES EMPHASIZING GEOCHRONOLOGY AND METAMORPHISM (3cr.)**
Applications of empirical, analytical and quantitative techniques to problems in regional geology and crustal tectonics; orogenic processes; heat and metamorphism; isotopic geochronology as applied to thermal history.

**GEO5160 (ERHT 5600) CHEMISTRY OF THE EARTH (3cr.)**
Examine the composition of the mantle and crust in selected tectonic settings, such as subduction zones and hot spots. Topics may include how geochemical data constrain geodynamic settings of study area.

**GEO5163 (ERHT 5603) STABLE ISOTOPE GEOCHEMISTRY (3cr.)**

**GEO5169 (ERHT 5609) RADIOISOTOPE GEOCHEMISTRY (3cr.)**
Nucleosynthesis; chemical differentiation of the Earth. Evolution of large-scale reservoirs. Isotopic tracers (143Nd/144Nd, 87Sr/86Sr, common Pb). Geochronology: fundamentals and application of Sm/Nd, Rb/Sr, U/Pb, K/Ar and Lu/Hf methods. Evolution of the solid Earth from the isotopic perspective.

**GEO5171 (ERHT 5701) PHYSICS OF THE EARTH (3cr.)**
The physics and dynamics of the solid Earth: seismology; gravitational and magnetic fields; thermal state. Geophysical constraints on the structure and composition of the interior. Geodynamic processes.

**GEO5173 (ERHT 5703) STRUCTURAL GEOLOGY (3cr.)**
Deformation processes and the analysis of geological structures at all scales.
GEO5174 (ERTH 5704) TECTONICS (3cr.)
Dynamical and geological aspects of plate tectonics throughout Earth history.

GEO5177 (ERTH 5707) ENGINEERING SEISMOLOGY (3cr.)

GEO5178 (ERTH 5708) GEOPHYSICAL SIGNAL PROCESSING (3cr.)
Practical aspects of earthquake and other geophysical signal processsing; focus on application of Fourier analysis, digital filters, instrument response.

GEO5193 (ERTH 5903) FIELD STUDIES (3cr.)
Systematic investigations of geological problems, based on a minimum of 15 days field work plus related library research and laboratory projects. Written report required.

GEO5301 (ERTH 5001) SEMINARS IN EARTH SCIENCES I (3cr.)
One-session modular course covering a spectrum of Earth science topics and current research problems, ranging from the geology and geophysics of the solid Earth, to its surface environment and crustal resources. A minimum of 4 modules is offered per session; 3 must be completed to obtain credit for a course. Students may not normally obtain credit for modules that are offered by their supervisors. The choice of modules must be approved by the Director of the Geoscience Centre or a designate. This course complements GEO 5302 (ERTH 5002).

GEO5302 (ERTH 5002) SEMINARS IN EARTH SCIENCES II (3cr.)
One-session modular course covering a spectrum of Earth science topics and current research problems, ranging from the geology and geophysics of the solid Earth, to its surface environment and crustal resources. A minimum of 4 modules is offered per session; 3 must be completed to obtain credit for a course. Students may not normally obtain credit for modules that are offered by their supervisors. The choice of modules must be approved by the Director of the Geoscience Centre or a designate. This course complements GEO 5301 (ERTH 5001).

GEO7999 (ERTH 5909) THÈSE DE MAÎTRISE / MSc THESIS

GEO9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAM (PhD)

GEO9999 (ERTH 6909) THÈSE DE DOCTORAT / PhD THESIS

Les cours suivants font partie du programme du Centre :

The following courses are included in the centre's program:

Department of Geography, Carleton University

Geography GEOG 5300 SOIL THERMAL AND HYDROLOGIC REGIMES
Characteristics of soil regimes, particularly in freezing soils, role of soil properties; analytical and numerical methods, including computer simulation.

Geography GEOG 5302 SOIL THERMAL AND HYDROLOGIC PROPERTIES
Instrumental techniques for investigation of hydrological and thermal processes near the Earth's surface; laboratory instrumentation and analysis of laboratory and field procedures in geotechnical science.

Geography GEOG 5303 PERIGLACIAL GEOCRYOLOGY
Permafrost, its distribution and significance, seasonal ground freezing, ground thermal regime, physical, thermodynamic, and geotechnical properties of freezing and thawing soils, terrain features ascribable to frost action, and solifluxion and patterned ground.

Geography GEOG 5304 ASPECTS OF CLAY MINERALOGY AND SOIL CHEMISTRY
The role of clay minerals in soils will be considered from a geotechnical or biological perspective.

Geography GEOG 5803 REMOTE SENSING AND IMAGE ANALYSIS
Radiometric, geometric and resolution characteristics of remotely sensed data, image processing algorithms, analysis of spectral, textural, and contextual image information, applications to vegetation mapping and environmental analysis.

Département de géographie, Université d'Ottawa / Department of Geography, University of Ottawa

GEG5301 COLD REGIONS HYDROLOGY AND GEOMORPHOLOGY
Selected topics in the hydrology and geomorphology of cold regions. Emphasis on glacialized, periglacial, or nival environments.
Institut de physique d'Ottawa-Carleton / Ottawa-Carleton Institute for Physics

PHYS130 (PHYJ 6001) EXPERIMENTAL CHARACTERIZATION TECHNIQUES IN MATERIALS SCIENCE, PHYSICS, CHEMISTRY, AND MINERALOGY (3cr.)
Survey of experimental techniques used in materials science, condensed matter physics, solid state chemistry, and mineralogy to characterize materials and solid substances. Diffraction (X-ray diffraction, neutron diffraction...). Spectroscopy (infra-red spectroscopy, Raman spectroscopy, nuclear magnetic resonance, Mössbauer spectroscopy, electron spin resonance...). Microscopy and imaging (scanning electron microscopy, transmission electron microscopy, optical microscopy, magnetic resonance imaging...). Other analytic techniques (thermal analysis, wet chemistry, bulk thermodynamic properties, linear response and dc susceptibility...).

Economics (PhD)

The PhD program is offered jointly with Carleton University. In addition to this, the Department is one of the participating units in the collaborative program in Canadian Studies at the PhD level offered at the University of Ottawa. For further details on the collaborative program, please consult the Canadian Studies brochure.

The program operates within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the general regulations of the graduate faculty at each of the two universities.

Ottawa-Carleton Joint Doctoral Program in Economics

The joint doctoral program in Canadian economic policy and economic development is offered by the departments of economics at the University of Ottawa and Carleton University.

The PhD program stresses the application of economic theory to the analysis of Canadian economic policy and economic development. It offers specialization for intensive study and thesis research in:

Public Economics - the allocative, redistributive and stabilization impact of governments;

Industrial Organization - the effects of regulation, fiscal measures, government production, marketing boards and competition policy on the structure and performance of Canadian industries;

Monetary Economics - the impact of money in general and on the Canadian economy in particular;

International Economics - the interrelationships between the Canadian and world economies;

Economic Development - the process of economic and structural change within Canada and in the developing countries.

Economics and the Environment - an economic analysis of the environment including natural resources.

Administration

Further information about the Joint doctoral program in Economics is available from the Director of Doctoral Studies in economics at either University:

Department of Economics
Faculty of Social Sciences
University of Ottawa
Desmarais Hall
55 East Laurier Street, Room 10101
Ottawa ON K1N 6N5
CANADA

or

Department of Economics
Carleton University
1125 Colonel By Drive
Ottawa ON K1S 5B6
CANADA
Admission

Application Deadline

To find the application deadline, please check the “program-specific requirements” under Application Procedures and Information at the following address: www.grad.uottawa.ca/apply

Language of Instruction

The vast majority of PhD courses are taught in English, but students may write and defend their thesis in English or French. According to university regulations, students can write their papers and exams in the official language of their choice (either English or French).

Language Requirements

Proficiency in the English language is required for entry into the doctoral program.

International students who have not graduated from a French-speaking or an English-speaking university should score at least 213 on the computerized Test of English as a Foreign Language (TOEFL), or equivalent, before admission.

Students admitted to the Department of Economics must prove that they have an adequate knowledge of both English and French. If deficiencies are apparent in the second language, the appropriate language course offered by the University's Official Languages and Bilingualism Institute will be added to the program of studies. To determine their level of knowledge of the second language, students must normally take a test administered by the Official Languages and Bilingualism Institute.

Students who have achieved at least an average of "B+" (75%) at the MA or equivalent level may be admitted to the PhD program. A program can be initiated at the start of any session (September, January and May). Six sessions of full-time registration are required.

The program encompasses course requirements – a core of theory and applied economics subjects – complemented by workshops to encourage the cross-fertilization of ideas in one field with those in others, comprehensive examinations and a thesis.

Transfer from Master's to Doctoral Degree

Outstanding students in the MA program with good potential to do research are admissible to transfer to the PhD, without finishing their MA, if they have completed ECO 6120, ECO 6122 and ECO 5185, with an average of at least "A-" and with the approval of the Department. Such students must take a total of at least 10 courses (MA and PhD levels combined) and do not receive an MA. However, students who make such a transfer and do not complete the PhD can receive an MA degree by fulfilling all the requirements of the MA program.

Collaborative Program in Canadian Studies at the PhD Level

The Department of Economics is a participating unit in the collaborative program in Canadian Studies at the PhD level. This program has been established for students in economics wishing to enrich their training by including an interdisciplinary component in Canadian Studies. The Canadian Studies Seminar (CDN 6910) fits into the program course requirements and does not add to the number of courses required for the doctorate in economics.

For further details, please consult the Canadian studies Website of the Faculty of Graduate and Postdoctoral Studies calendar.

Program Requirements

PhD Degree Requirements

All courses are equivalent to three credits at the University of Ottawa except workshops and PhD tutorials, which are equivalent to six credits.

A. BASIC COURSES (9 credits)

ECO7922 (ECON 6020) THÉORIE ÉCONOMIQUE : MICROÉCONOMIE / ECONOMIC THEORY: MICROECONOMICS (3cr.)
and
ECO7923 (ECON 6021) THÉORIE ÉCONOMIQUE : MACROÉCONOMIE / ECONOMIC THEORY: MACROECONOMICS (3cr.)
and
ECO7126 (ECON 6027) ECONOMETRICS II (3cr.)

B. FIELD COURSES (6 credits)

Two three credit courses in each of the two fields of specialization to be selected.

1. Industrial Organization
ECO6140 (ECON 5301) INDUSTRIAL ORGANIZATION I (3cr.)
ECO6141 (ECON 5302) COMPETITION POLICY (3cr.)
ECO6142 (ECON 5303) INDUSTRIAL ORGANIZATION II (3cr.)

2. Public Economics
ECO6130 (ECON 5401) PUBLIC ECONOMICS: EXPENDITURE (3cr.)
ECO6131 (ECON 5402) PUBLIC ECONOMICS: TAXATION (3cr.)
ECO6133 (ECON 5403) TOPICS IN THEORY OF PUBLIC ECONOMICS (3cr.)

3. International Economics
ECO6160 (ECON 5601) INTERNATIONAL TRADE: THEORY AND POLICY (3cr.)
ECO6161 (ECON 5602) INTERNATIONAL MONETARY THEORY AND POLICY (3cr.)
ECO6162 (ECON 5603) TOPICS IN INTERNATIONAL ECONOMICS (3cr.)

4. Monetary Economics
ECO6180 (ECON 5606) FOUNDATIONS OF MONETARY THEORY (3cr.)
ECO6181 (ECON 5607) TOPICS IN MONETARY ECONOMICS (3cr.)
ECO6183 (ECON 5609) EXPLORATIONS IN MONETARY ECONOMICS (3cr.)

5. Economic Development
ECO6170 (ECON 5500) THEORY OF ECONOMIC DEVELOPMENT (3cr.)
ECO6171 (ECON 5504) ECONOMIC DEVELOPMENT: DOMESTIC ASPECTS (3cr.)
ECO6172 (ECON 5505) ECONOMIC DEVELOPMENT: INTERNATIONAL ASPECTS (3cr.)

6. Economics of the Environment
ECO6143 (ECON 5803) ECONOMICS OF NATURAL RESOURCES (3cr.)
ECO6151 (ECON 5804) ECONOMICS OF THE ENVIRONMENT (3cr.)
ECO6173 (ECON 5507) ENVIRONMENTAL ASPECTS OF ECONOMIC DEVELOPMENT (3cr.)

C. COMPREHENSIVE EXAMINATIONS

a) Theory
There are two theory examinations, one in microeconomics (ECO 7990 / ECON 6990) and one in macroeconomics (ECO 7991 / ECON 6901), to be successfully completed within twelve months of beginning full-time study. The examining committee may ask the candidate to take an oral examination following the written examination.

b) Fields
Students choose two fields: a primary field and a secondary field. Students will be required to take a comprehensive examination in the primary field (ECO 9990). This examination must be successfully completed within two years of beginning full-time study. A student who fails on the first attempt can take the exam once more. A second failure leads to mandatory withdrawal from the program.

D. THESIS AND WORKSHOPS

In preparing the thesis, the student is required to give two workshops. In the first (ECO 7002/ECON 6101), a research proposal for the thesis will be presented for evaluation by faculty members. In the second (ECO 7004/ECON 6101), a substantial portion of the research for the thesis will have been completed and will be presented and evaluated as above. The workshops are requirements for graduation. Students must have completed the courses ECO 7922, ECO 7923, ECO 7126, the four field courses, as well as the comprehensive examinations (ECO 7990, ECO 7991 and ECO 9990) before registering for the workshops.

Residence
All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

Minimum standards
The passing grade in all courses is 70% (B). Students who fail 6 credits, the thesis proposal, the comprehensive exam, the thesis, or whose progress is deemed unsatisfactory must withdraw from the program.

Duration of the program
The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Courses
ECO5106 COMPARATIVE ECONOMIC SYSTEMS (3cr.)
Analysis of the socialist economic system, collective appropriation of the means of production, fundamental economic role of the State: firms and socialist profit. Planning, capital accumulation and growth; measure of investment efficiency; price determination and the Marxist theory of value; income distribution; money and State banks. International economic relations of the socialist countries within the Comecon, with the other socialist economies, the Third World and the Western countries. Study of selected issues on the Soviet, Chinese or East-European economies. Achievements and future prospects.

ECO5114 ECONOMIC GROWTH (3cr.)
Analyses of capital accumulation and income distribution; measures of technical progress, general equilibrium theory, and labour markets; growth and institutions: the State, firms, financial markets; multisectorial growth.

ECO5116 POST-KEYNESIAN THEORY: VALUE AND PRODUCTION (3cr.)

ECO5129 CANADIAN ECONOMIC HISTORY (3cr.)
The experience of economic growth: case studies in Canadian economic history. The main focus of the course will consist in trying to build bridges between economic theory and the Canadian historical experience of economic growth. To this effect, references will be made to "classics" in general economic history as well as in Canadian economic historiography.

ECO5185 (ECON 5005) ECONOMETRICS I (3cr.)

ECO5506 SYSTÈMES ÉCONOMIQUES COMPARÉS (3cr.)
Analyse du système économique socialiste : appropriation collective des moyens de production, rôle économique fondamental de l'État, entreprises et profits socialistes. Planification, accumulation et croissance; calcul d'efficacité de l'investissement; formation des prix et théorie marxiste de la valeur; détermination des revenus; monnaie et banques d'État. Relations économiques internationales des pays socialistes dans le Comecon et avec les autres économies socialistes, le Tiers Monde, les pays occidentaux. Étude d'exemples choisis dans les économies soviétique, chinoise ou d'Europe de l'Est. Bilan des résultats et perspectives d'avenir.

ECO5514 CROISSANCE ÉCONOMIQUE (3cr.)
Analyses de la croissance et de la répartition; mesures du progrès technique, théorie de l'équilibre général, marchés du travail; croissance et institutions : l'État, les entreprises, le marché financier; croissance multisectorielle.

ECO5516 THÉORIE POST-KEYNÉSIENNE : VALEUR ET PRODUCTION (3cr.)
Historique de la théorie du surplus. Caractéristiques de la méthode post-keynésienne. La contribution de Sraffa. La théorie de la valeur et des prix. La théorie de la production et du capital. La rente. La plus-value. La production jointe. Analyses de la traverse. Applications et implications politiques: commerce international et finances publiques.

ECO5529 HISTOIRE ÉCONOMIQUE CANADIENNE (3cr.)
L'expérience de la croissance économique : étude de cas en histoire économique canadienne. Rapport entre théorie et histoire économique en se basant sur l'étude de «classiques» en histoire économique et en historiographie économique canadienne.

ECO5585 ÉCONOMÉTRIE I (3cr.)

ECO6100 MATHEMATICAL AND STATISTICAL TOOLS FOR ECONOMISTS (3cr.)
Mathematical and statistical tools needed for graduate work in economics: matrix algebra, static and dynamic optimization, probability distributions, point and interval estimation, hypothesis testing.

ECO6106 (ECON 5209) HISTORY OF ECONOMIC THOUGHT AND METHODOLOGY (3cr.)
Evolution of economic thought, from the economic doctrines of antiquity to present times; critique and appraisal of scientific methods in economics.

ECO6108 ECONOMIC SYSTEM DESIGN (3cr.)
Deterministic dynamic optimization methods: economic and managerial applications of the maximum principle of Pontryagin and of dynamic programming. Discrete time stochastic dynamic optimization methods: Bayesian and Markovian decision theory, measures of risk-aversion and risk, portfolio theory, elements of search theory, applications of discrete time stochastic control to economics.
ECO6110 INTRODUCTION TO APPLIED GENERAL EQUILIBRIUM MODELLING (3cr.)
Computable general equilibrium (CGE) modelling: impacts of economic shocks; theoretical foundations; model specification, numerical solutions. Understanding model assumptions and interpretation of results.

ECO6120 MACROECONOMIC THEORY IV (3cr.)
Interaction among economic agents, sectors and markets in macroeconomic models, including models of disequilibrium; aggregation problems in macroeconomic models. A detailed study of the components of aggregate demand. Inventory investment as a generator of cycles; theory of capital accumulation and growth; inflation and unemployment. Macroeconometric applications. Latest developments in macroeconomic theory. The approach stresses the study of the original articles in the field.

ECO6122 MICROECONOMIC THEORY IV (3cr.)

ECO6130 (ECON 5401) PUBLIC ECONOMICS: EXPENDITURE (3cr.)
A discussion of the role of government expenditure both in theory and with reference to the Canadian economy.

ECO6131 (ECON 5402) PUBLIC ECONOMICS: TAXATION (3cr.)
An analysis of the effects of various forms of taxation on economic performance.

ECO6133 (ECON 5403) TOPICS IN THEORY OF PUBLIC ECONOMICS (3cr.)
This course explores a variety of topics in further depth than permitted in basic courses in public finance. These topics include tax incidence in general equilibrium, the theory and practice of tax reform, normative approaches to income redistribution, and the theory of non-market decision-making.

ECO6140 (ECON 5301) FIRMS AND MARKETS (3cr.)
An examination of theories pertaining to industrial organization and their application to particular industries in Canada and elsewhere by way of empirical studies.

ECO6141 (ECON 5302) COMPETITION POLICY (3cr.)
An examination of the rationale and application of competition policy with particular attention to the Canadian economy.

ECO6142 (ECON 5303) REGULATION AND PUBLIC ENTERPRISE (3cr.)
An examination of regulation and public enterprise as alternative approaches for influencing industry conduct and performance.

ECO6143 (ECON 5803) ECONOMICS OF NATURAL RESOURCES (3cr.)

ECO6151 (ECON 5804) ECONOMICS OF THE ENVIRONMENT (3cr.)
The environment as natural capital; environmental valuation techniques; elements of environmental income accounting; sustainable development theories and practice; institutional questions and policy issues.

ECO6160 (ECON 5601) INTERNATIONAL TRADE: THEORY AND POLICY (3cr.)
International trade theory and its implications for economic policy, with emphasis on topics such as determinants of trade and specialization, gains from trade and commercial policy, international factor mobility, growth, and development.

ECO6161 (ECON 5602) INTERNATIONAL MONETARY THEORY AND POLICY (3cr.)
International monetary theory and policy, with emphasis on topics such as sources of equilibrium and disequilibrium in the balance of payments, balance-of-payments adjustment under fixed versus flexible exchange rates, international capital movements, and recent issues in the international monetary system.

ECO6162 (ECON 5603) TOPICS IN INTERNATIONAL ECONOMICS (3cr.)
An examination of key topics in international economics, including theoretical analysis, quantitative methods and policy formulation, implementation and evaluation.

ECO6170 (ECON 5500) THEORY OF ECONOMIC DEVELOPMENT (3cr.)
Review of theoretical approaches in the economic development literature in relation to the historical, economic, environmental, social and political dimensions of the development process.

ECO6171 (ECON 5504) ECONOMIC DEVELOPMENT: INTERNAL ASPECTS (3cr.)
Analysis of major domestic problems of economic development. Topics to include employment, income distribution, choice of technology, sectoral allocation of resources, human resources development, and domestic environment issues.
ECO6172 (ECON 5505) ECONOMIC DEVELOPMENT: INTERNATIONAL ASPECTS (3cr.)
Analysis of key problems of international economic development such as trade in primary commodities and manufactures, financial flow and debt, the role of multinational corporations, the transfer of technology, and the international dimensions of environmental issues as they relate to the developing countries.

ECO6173 (ECON 5507) ENVIRONMENTAL ASPECTS OF ECONOMIC DEVELOPMENT (3cr.)
Policy aspects of sustainable economic development and environmental quality in developing countries. Topics to include energy use, deforestation, drought and desertification, depletion of natural resources, debt, environment and poverty, sustainable industrial and agricultural development, conservation policies, pollution control and global environmental issues.

ECO6175 (ECON 5712) MICRO ECONOMETRICS (3cr.)
Analysis of the concepts and tools used in micro econometrics. Topics may include discrete choice models, limited dependent variables, panel data, duration models, and program evaluation, together with relevant economic applications. The focus is on empirical applicability with solid econometric foundations. Prerequisite: ECO 5185.

ECO6176 (ECON 5713) TIME SERIES ECONOMETRICS (3cr.)
Analysis of the concepts and tools used in time series econometrics. Topics may include cointegration analysis, error correction models, VAR models, volatility analysis, and non linear time series models, together with relevant economic applications. The focus is on empirical applicability with solid econometric foundations. Prerequisite: ECO 5185.

ECO6177 (ECON 5714) ADVANCED TOPICS IN ECONOMETRICS (3cr.)
Coverage of one or more areas of current econometric research. Prerequisite: ECO 7126.

ECO6180 (ECON 5606) MICROECONOMIC ASPECTS OF MONETARY THEORY (3cr.)
Microeconomic foundations of monetary theory. Alternative theories for the existence of money. Commodity, private and fiat money systems. The integration of monetary theory with the theory of value.

ECO6181 (ECON 5607) MACROECONOMIC ASPECTS OF MONETARY THEORY (3cr.)
A course in monetary theory that deals with the macroeconomic interactions of money. Issues will include such topics as: inflation, money and wealth; the optimum quantity of money; the welfare aspects of monetary economies; the supply of money and its composition; stabilization policy; money, capital and growth.

ECO6182 (ECON 5608) ASPECTS OF FINANCIAL INTERMEDIATION (3cr.)
The evolution of the financial system with special emphasis on the theory of financial institutions and its inter-relationship with the money supply process and the central bank. Contemporary monetary and finance theory applied to institutional problems in both historical and contemporary settings.

ECO6183 (ECON 5609) EXPLORATIONS IN MONETARY ECONOMICS (3cr.)
A course in which explorations in theory, policy recommendations and empirical study are undertaken. The material challenges traditional approaches by examining such topics as the endogeneity of money, the role of credit, the finance motive, the circuit approach, flow of funds analysis and austerity policies.

ECO6191 (ECON 5361) LABOUR ECONOMICS I (3cr.)
The application of microeconomic and macroeconomic theory to the labour market. Topics include labour supply and labour demand, wage determination, human capital and the economics of education, and unemployment.

ECO6192 (ECON 5362) LABOUR ECONOMICS II (3cr.)
Personnel economics and contract theory. Topics include the economics of unions, discrimination, the economics of the household, gender and fertility, and labour mobility.

ECO6193 (ECON 5363) ADVANCED TOPICS IN LABOUR ECONOMICS (3cr.)
Topics may include program evaluation, inequality, labour markets and health, labour markets and crime, and the structural estimation of labour market models.

ECO6304 SELECTED TOPICS IN APPLIED ECONOMICS (3cr.)
Study of selected topics in applied economics; contents may change from year to year.

ECO6500 OUTILS MATHÉMATIQUES ET STATISTIQUES POUR ÉCONOMISTES (3cr.)
Outils mathématiques et statistiques requis pour des études supérieures en science économique : algèbre matricielle, optimisation statique et dynamique, lois de probabilité, estimation de point et d'intervalle, tests d'hypothèses.

ECO6506 HISTOIRE DE LA PENSÉE ÉCONOMIQUE ET DE LA MÉTHODOLOGIE (3cr.)
Évolution de la pensée économique des doctrines économiques de l'antiquité jusqu'à aujourd'hui; critique et évaluation des méthodes scientifiques en science économique.

ECO6508 ANALYSE ET CONTRÔLE DES SYSTÈMES ÉCONOMIQUES DYNAMIQUES (3cr.)
Méthodes déterministes d'optimisation dynamique : applications économiques et managériales du principe du maximum de Pontryagin et de la programmation dynamique. Méthodes stochastiques d'optimisation dynamique en temps discret : théorie de la décision Bayesienne et Markovienne, mesures de l'aversion au
risque et du risque, théorie des portefeuilles, éléments de théorie de fouinage, applications économiques de la théorie du contrôle stochastique en temps discret.

**ECO6510 MODÉLISATION EN ÉQUILIBRE GÉNÉRAL CALCULABLE (3cr.)**
La modélisation en équilibre général calculable (MEGC) : effets distributifs des chocs et politiques économiques; fondements théoriques des modèles d'équilibre général, les étapes requises pour la spécification de ces modèles et leur résolution numérique. Compréhension des hypothèses de ces modèles et interprétation des résultats.

**ECO6520 THÉORIE MACROÉCONOMIQUE IV (3cr.)**
Interaction entre les agents économiques, les secteurs et les marchés dans les modèles macroéconomiques, y compris les modèles de déséquilibre; les problèmes de l'agrégation dans les modèles macroéconomiques. Étude détaillée des composantes de la demande globale. L'investissement dans les stocks comme générateur de cycles économiques; théorie de l'accumulation du capital et de la croissance économique; l'inflation et le chômage. Applications macroéconomiques. Développements récents en théorie macroéconomique. L'approche met l'accent sur l'étude des œuvres originales du domaine concerné.

**ECO6522 THÉORIE MICROÉCONOMIQUE IV (3cr.)**

**ECO6530 ÉCONOMIE PUBLIQUE: LES DÉPENSES (3cr.)**
Une discussion du rôle des dépenses gouvernementales en théorie et en rapport avec l'économie canadienne.

**ECO6531 ÉCONOMIE PUBLIQUE: L'IMPOSITION (3cr.)**
Une analyse des effets de différents types de fiscalité sur la performance économique.

**ECO6533 THÉMES CHOISIS EN ÉCONOMIE PUBLIQUE (3cr.)**
Ce cours explore une variété de sujets de manière plus approfondie que dans les cours de base de finances publiques. Ces questions incluent l'incidence fiscale en équilibre général, la théorie et la pratique de la réforme fiscale, les approches normatives à la redistribution du revenu, et la théorie de la décision non marchandable.

**ECO6540 LES ENTREPRISES ET LES MARCHÉS (3cr.)**
Un examen des théories pertinentes à l'organisation industrielle et leur application à des industries particulières au Canada et ailleurs au moyen d'études empiriques.

**ECO6541 POLITIQUE DE LA CONCURRENCE (3cr.)**
Un examen des justifications et de l'application des politiques de concurrence avec une attention particulière consacrée à l'économie canadienne.

**ECO6542 RÉGLEMENTATION ET ENTREPRISES PUBLIQUES (3cr.)**
Un examen de la réglementation et de l'entreprise publique en tant que formes alternatives d'influence gouvernementale sur le marché de l'industrie et sa performance.

**ECO6543 ÉCONOMIE DES RESSOURCES NATURELLES (3cr.)**

**ECO6551 ÉCONOMIE DE L'ENVIRONNEMENT (3cr.)**
L'environnement comme capital naturel; techniques d'évaluation environnementale; comptabilité environnementale; théorie et pratique de développement durable; questions institutionnelles et problèmes de politique publique.

**ECO6560 THÉORIE ET POLITIQUE : COMMERCE INTERNATIONAL (3cr.)**
La théorie du commerce international et ses implications pour la politique économique sont examinées en mettant l'accent sur des sujets tels que les déterminants du commerce et de la spécialisation interne, les gains du commerce international et de la politique commerciale, la mobilité internationale des facteurs de production, croissance et développement.

**ECO6561 ÉCONOMIE MONÉTAIRE INTERNATIONALE: THÉORIE ET POLITIQUE (3cr.)**
La théorie monétaire internationale, en mettant l'accent sur des sujets tels que les sources d'équilibre et de déséquilibre dans la balance des paiements, l'ajustement de la balance des paiements aux conditions de taux de change fixes et fluctuants, mouvements internationaux des capitaux et problèmes récents du système monétaire international.

**ECO6562 THÉMES CHOISIS EN ÉCONOMIE INTERNATIONALE (3cr.)**
Un examen des sujets fondamentaux en commerce international, incluant l'analyse théorique, les méthodes quantitatives et la formulation, la mise en œuvre et l'évaluation des politiques.
ECO6570 THÉORIE DU DÉVELOPPEMENT ÉCONOMIQUE (3cr.)
Revue des approches théoriques du développement économique dans la littérature en relation avec les dimensions historiques, économiques, environnementales, sociales et politiques du processus de développement.

ECO6571 ASPECTS INTERNES DU DÉVELOPPEMENT ÉCONOMIQUE (3cr.)
Analyse des problèmes majeurs du développement économique interne dont le chômage, la distribution des revenus, le choix des techniques, l'allocation sectorielle des ressources, le développement des ressources humaines et les questions environnementales domestiques.

ECO6572 LE DÉVELOPPEMENT ÉCONOMIQUE: ASPECTS INTERNATIONAUX (3cr.)
Analyse des problèmes fondamentaux du développement économique international tels que le commerce en ressources primaires et biens manufacturés, les flux financiers et la dette, le rôle des entreprises multinationales, le transfert de technologie et les dimensions internationales des questions environnementales en relation avec les pays en voie de développement.

ECO6573 ASPECTS ENVIRONNEMENTAUX DU DÉVELOPPEMENT ÉCONOMIQUE (3cr.)
Politiques du développement durable et de la qualité de l'environnement dans les pays en voie de développement. Thèmes étudiés : l'utilisation de l'énergie, la déforestation, la sécheresse et la désertification, l'épuisement des ressources naturelles, la dette, l'environnement et la pauvreté, le développement durable dans l'industrie et l'agriculture, les politiques de conservation, le contrôle de la pollution et les problèmes de l'environnement global.

ECO6575 MICRO-ÉCONOMÉTRIE (3cr.)
Analyse des concepts et outils utilisés en micro-économétrie. Les thèmes pourraient inclure les modèles de choix discrets, les variables dépendantes limitées, les données de panel, les modèles de durée et l’évaluation de programmes, ainsi que des applications économiques pertinentes. L’accent est mis sur l’application empirique avec de solides fondements économétriques. Préalable: ECO5585.

ECO6576 ÉCONOMÉTRIE DES SÉRIES CHRONOLOGIQUES (3cr.)
Analyse des concepts et outils utilisés en économétrie des séries chronologiques. Les thèmes pourraient inclure l’analyse de cointégration, les modèles à correction d’erreur, les modèles VAR, l’analyse de volatilité et les modèles de séries chronologiques non-linéaires, ainsi que des applications économiques pertinentes. L’accent est mis sur l’application empirique avec de solides fondements économétriques. Préalable: ECO5585.

ECO6577 THÈMES CHOISIS EN ÉCONOMÉTRIE (3cr.)
Étude d’un ou plusieurs domaines de recherche courante en économétrie. Préalable: ECO7126.

ECO6580 ASPECTS MICROÉCONOMIQUES DE LA THÉORIE MONÉTAIRE (3cr.)

ECO6581 ASPECTS MACROÉCONOMIQUES DE LA THÉORIE MONÉTAIRE (3cr.)
Interactions macroéconomiques de la monnaie : inflation, monnaie et richesse; quantité optimale de monnaie; aspects de bien-être des économies monétaires; offre de monnaie et ses composantes; politique de stabilisation; monnaie, capital et croissance.

ECO6582 INTERMÉDIAIRES FINANCIERS (3cr.)
Évolution du système financier en insistant sur la théorie des institutions financières et ses interrelations avec le processus d'offre de monnaie et avec la banque centrale. Théorie monétaire et financière contemporaine appliquée à l'analyse des problèmes institutionnels dans un contexte à la fois historique et contemporain.

ECO6583 EXPLORATIONS EN ÉCONOMIE MONÉTAIRE (3cr.)
Explorations des aspects théoriques, des recommandations politiques et des études empiriques de la théorie monétaire. Remise en question des approches traditionnelles à travers l'examen de thèmes tels l'endogénéité de la monnaie, le rôle du crédit, le motif financier, l'approche du circuit, l'analyse du flux de fonds et les politiques d'austérité.

ECO6591 ÉCONOMIE DU TRAVAIL I (3cr.)
Application de la théorie microéconomique et macroéconomique au marché du travail. Les thèmes abordés incluent l’offre et la demande de travail, la détermination des salaires, le capital humain et l’économie de l’éducation, et le chômage.

ECO6592 ÉCONOMIE DU TRAVAIL II (3cr.)

ECO6593 THÈMES CHOISIS EN ÉCONOMIE DU TRAVAIL (3cr.)
Les thèmes pourraient inclure l’évaluation de programmes, les inégalités, le marché du travail et la santé, le marché du travail et la criminalité, et les estimations structurelles de modèles du marché du travail.

ECO6704 THÈMES CHOISIS EN ÉCONOMIQUE APPLIQUÉE (3cr.)
Étude de thèmes choisis en économie appliquée; contenu variable selon l'année.
ECO6900 THÈMES CHOISIS EN THÉORIE ÉCONOMIQUE / SELECTED TOPICS IN ECONOMIC THEORY (3cr.)
Étude de thèmes choisis en théorie économique; contenu variable selon l'année. / Study of selected topics in economic theory; contents may change from year to year.

ECO6904 THÈMES CHOISIS EN ÉCONOMIE APPLIQUÉE / SELECTED TOPICS IN APPLIED ECONOMICS (3cr.)
Étude de thèmes choisis en économie appliquée; contenu variable selon l'année. / Study of selected topics in applied economics; contents may change from year to year.

ECO6906 THÈMES CHOISIS EN POLITIQUE ÉCONOMIQUE / SELECTED TOPICS IN ECONOMIC POLICY (3cr.)
Étude de thèmes choisis en politique économique; contenu variable selon l'année / Study of selected topics in economic policy; contents may change from year to year.

ECO7002 (ECON 6907) PREMIER ATELIER / FIRST WORKSHOP (6cr.)
ECO7004 (ECON 6908) DEUXIÈME ATELIER / FIRST WORKSHOP (6cr.)

ECO7125 (ECON 5010) MATHEMATICAL ECONOMICS (3cr.)
General equilibrium; dynamic optimization; game-theory.

ECO7126 (ECON 6027) ECONOMETRICS II (3cr.)
Selected topics from estimating and testing the regression and simultaneous equation models. Topics include maximum likelihood estimation, statistical analysis of residuals, auto-regressive and other time-series models, multivariate regression model, and elements of asymptotic statistical theory within the context of the simultaneous equation model.

ECO7525 ÉCONOMIE MATHÉMATIQUE (3cr.)
Équilibre général; optimisation dynamique; théorie des jeux.

ECO7526 (ECON 6027) ÉCONOMÉTRIE II (3cr.)
Thèmes choisis concernant l'estimation et les tests de modèles de régression et d'équations simultanées : estimateur du maximum de vraisemblance, analyse statistique des résidus, modèles autorégressifs et autres modèles de séries chronologiques, modèles de régressions multivariées, théorie asymptotique dans le contexte de modèles à équations simultanées.

ECO7922 (ECON 6020) THÉORIE ÉCONOMIQUE : MICROÉCONOMIE / ECONOMIC THEORY: MICROECONOMICS (3cr.)
Examen de certains aspects cruciaux de la théorie microéconomique tirés de l'analyse récente du comportement du consommateur, des coûts et de la production, des coûts de transaction, de l'incertitude et de l'organisation de l'activité économique. Préalable : ECO 6522. / An examination of critical aspects of microeconomic theory drawn from recent analysis of consumer behaviour, costs and production, transaction costs, uncertainty and the organization of economic activity. Prerequisite: ECO 6122.

ECO7923 (ECON 6021) THÉORIE ÉCONOMIQUE : MACROÉCONOMIE / ECONOMIC THEORY: MACROECONOMICS (3cr.)
Examen des aspects cruciaux de la théorie macroéconomique tirés de l'analyse récente des fondements microéconomiques de la macroéconomie, concepts d'équilibre macroéconomique et impact des chocs monétaires et fiscaux. Divers sujets reliés à la politique macroéconomique sont également examinés. Préalable : 6520. / An examination of critical aspects of macroeconomic theory drawn from recent analysis of the microeconomic foundations of macroeconomics, concepts of macroeconomic equilibrium and the impact of monetary and fiscal disturbances. Attention is also devoted to a variety of topics related to the conduct of macroeconomic policy. Prerequisite: ECO 6120.

ECO7980 (ECON 6904) LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)

ECO7990 (ECON 6990) EXAMEN DE SYNTHÈSE EN MICROÉCONOMIE / PhD COMPREHENSIVE EXAM IN MICROECONOMICS
ECO7991 (ECON 6902) EXAMEN DE SYNTHÈSE EN MACROÉCONOMIE / PhD COMPREHENSIVE EXAM IN MACROECONOMICS

ECO7997 MÉMOIRE / MAJOR PAPER (12cr.)

ECO7999 RECHERCHE ET THÈSE DE MAÎTRISE / MA THESIS RESEARCH

ECO9990 (ECON 6905) EXAMEN DE SPÉCIALISATION I / FIELD EXAM I

ECO9999 (ECON 6909) THÈSE DE DOCTORAT / PhD THESIS

Education (PhD)
In addition to consulting the information given below, students registered for a graduate degree in education should refer to the general regulations published by the Faculty of Graduate and Postdoctoral Studies (FGPS) for the current year. These regulations apply to all master’s and doctoral students at the University of Ottawa and contain additional information on program requirements, registration, supervision of students, examinations and grading, time limits, thesis regulations and fees.

The PhD program is offered in the following six concentrations:

1. Organizational Studies in Education;
2. Teaching, Learning and Evaluation;
3. Second Language Education;
4. Society, Culture and Literacies;
5. Educational Counselling;
6. Health Professions Education.

The PhD program in education is one of the units participating in the collaborative program in Canadian studies. For information, consult the Canadian studies program.

Admission

To be admitted to the PhD program candidates must fulfill the following requirements:

1. An academic record indicating a minimum average of 75 per cent (B+), or equivalent, calculated in accordance with Faculty of Graduate and Postdoctoral Studies guidelines;
2. A master’s degree with thesis, a professional medical or graduate degree, or the equivalent;
3. Courses recognized by the admissions committee as courses in education.

Exceptional students registered in the master’s may be permitted to transfer to the PhD without completing all the requirements of the master’s program; details are outlined in the relevant section of the Grad Calendar.

N.B. Admission to the Educational Counselling concentration requires a master’s degree in counselling with thesis or its equivalent and which included an internship component. Applicants must also have completed graduate-level courses in theories of counselling, theories of career development, and micro-counselling.

To find the application deadline, please check the program-specific requirements under "Application Procedures and Information" at the following address: www.grad.uOttawa.ca/apply. Requests for admission are examined by an admissions committee. Application kits are available on the Faculty of Education Web site at www.education.uOttawa.ca.

Admission Procedure

Please visit the website www.grad.uOttawa.ca for most current information.

Application Procedure

All completed files for admission to graduate studies will be examined by the admissions committee concerned.

To find the application deadline, please check the program-specific requirements under "Application Procedures and Information" at the following address: www.grad.uOttawa.ca/apply.

The Faculty of Education as well as the Faculty of Graduate and Postdoctoral Studies cannot give assurance that a candidate whose application and supporting documents are received after the closing dates will be able to register for the session requested.

Candidates who wish to be admitted to a graduate program in Education must complete the application for admission on-line, print and send a copy to the academic secretariat of the Faculty of Education. Supporting documents not attached to the application form must be sent to the same office.

Documents Required for Admission

a) The application should be duly filled on-line and include payment of application fee;
b) Official transcripts of the applicant’s academic record, including proof of degree, covering all previous university studies;
c) A teaching certificate if the candidate does not hold a bachelor’s degree with honours in education;
d) A narrative statement (three to four pages) stating the candidate’s interest in the Faculty’s program of study, research interests, professional goals and expectations, and a summary of the MA(Ed) thesis;
e) At least two confidential letters of recommendation supplied by professors or employers who have known the applicant and are familiar with the applicant’s work. In the case of the PhD, these should discuss the applicant’s ability to carry out research;
A request for equivalence or advanced standing, if applicable (see the section "Equivalence and Advanced Standing" under each program).

**Evaluation of Applications**

When an admission dossier is completed, it will be evaluated by the admissions committee. All candidates will be informed of their status in writing.

Candidates for the MEd in Educational Counselling are selected according to the criteria listed below based on all relevant information in the admission file. These criteria are ranked in order of the weight they are given in selection decisions:

1. academic achievement
2. preparation for the MEd program in Educational Counselling
3. personal suitability for a career in counselling

In exceptional cases, an applicant may be asked to attend a selection interview at the Faculty.

**Registration Requirements**

For further information, please consult the general regulations of the Faculty of Graduate and Postdoctoral Studies (see section C Registration).

**Change of Program**

Students may enrol only in the program for which they have been formally accepted.

A student who wishes to progress from one level of studies to a higher level (master’s to doctoral) must make a new application to the faculty and may enrol in the new program only upon receipt of a new offer of admission.

**Language Requirements**

All applicants must be able to understand, speak, and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other.

**Equivalence and Advanced Standing**

1. Upon presentation of an official transcript and the course description, the program director may grant equivalence for doctoral work done in another university or as special student in the Faculty of Education. A maximum of two courses (six credits) may be granted.
2. Since course content and course level vary from one institution to another, the program director may require the candidate to take a qualifying examination.
3. No credit will be granted for the following cases:
   a) courses or work completed six years or more before the candidate’s admission to the faculty;
   b) work where a final grade is less than "B";
   c) certificates issued by a provincial ministry of education;
   d) courses that have already been credited towards another degree.

**Assistantships**

Each year, the Faculty allocates assistantships (research and teaching) to a number of students.

**Scholarships**

Information on scholarships other than those mentioned below can be obtained by consulting the brochure "Scholarships and Financial Assistance for Students Registered in Full-Time Graduate Studies" or reference books available at the FGPS Awards Office. Information is also available on the Internet at www.grad.uOttawa.ca/awards/index.html

**PDK Educational Research Scholarship**

A $500 scholarship awarded annually in the Fall by the University of Ottawa Chapter (PDK) "based for the most part on a written description prepared by each applicant showing:
(1) how the research project will help fill a pressing, current and practical educational need; and
(2) how the award will enrich the quality of the research to be undertaken". Applications are available from the academic secretariat of the Faculty of Education.

**Fonds commémoratif Marie-Jeanne Rossier (née Roulet)**

This fund serves as a scholarship of $1000 awarded to a Francophone who wishes to study or specialize in the field of learning disabilities. Applications are available from the academic secretariat of the Faculty of Education. Requests should be returned by December 1 to the
Collaborative Program in Canadian Studies at the Doctoral Level

The doctoral program in educational studies participates in the collaborative program in Canadian Studies at the doctoral level. This program has been established for students wishing to enrich their training in educational studies by including an interdisciplinary component in Canadian Studies. The Canadian Studies Seminar (CDN 6910) fits into the program course requirements and does not add to the number of courses required for the doctorate in educational studies.

For further details, please consult the Canadian Studies Website of the Faculty of Graduate and Postdoctoral Studies.

Residence

All full-time students must complete a minimum of six sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the initial registration in the program.

Language of Instruction

The Faculty offers courses in English, French and some in both languages. Attention is given to offering a balanced selection of courses each year.

Program Requirements

Degree Requirements

The program for each candidate is planned with the student on an individual basis by an interim adviser appointed by the program director. Because the faculty believes that the student's course work and research should be integrated in the overall program, the decision on specific courses depends to some extent on the student's research topic. For this reason, the student will be encouraged to begin exploration and urged to make tentative decisions regarding a research topic early in the program so that course work and research can be interrelated.

1. All candidates for the doctoral program must normally take a minimum of six courses (18 credits). The program of a student who has completed a masters degree in Education (MA/MEd) and who has been admitted to the PhD program may be reduced to five courses (15 credits) with the approval of the Admissions committee and with the agreement of the thesis supervisor.

a) Three courses are compulsory:
EDU8105 CONTEMPORARY ISSUES IN EDUCATION (3cr.)
EDU8106 EPISTEMOLOGY OF EDUCATIONAL RESEARCH (3cr.)

and one of the following four:
EDU7395 SELECTED TOPICS IN QUANTITATIVE RESEARCH (3cr.)
EDU7396 TECHNIQUES OF DOCUMENT ANALYSIS IN EDUCATIONAL RESEARCH (3cr.)
EDU7397 DATA COLLECTION INSTRUMENTS (3cr.)
EDU8190 QUALITATIVE RESEARCH II (3cr.)

b) Three additional courses of which two must be in the concentration. (Two additional courses in the concentration for a student who has completed a Masters degree in Education (MA/MEd) with the approval of the Admission committee and the agreement of the thesis supervisor).

c) An additional course in research methodology (i.e., one of EDU 7395, EDU 7396, EDU 7397 or EDU 8190) may also be taken in place of one of the concentration courses.

2. Written and oral comprehensive examination (EDU 9998).
3. Presentation of a thesis proposal which must be approved by a committee of professors (EDU 9997).
4. Presentation of a seminar following approval of the thesis proposal.
5. Presentation and defence of a thesis EDU 9999.
6. PhD candidates in Educational Counselling are required to complete 600 hours of supervised internship (EDU 8908).

Any course not taken in the Faculty of Education must be approved by the program director at least one month before it begins; at least four courses must be taken at the Faculty of Education.

Taking into account the student's previous studies, the faculty reserves the right to add to the program of studies any courses which are deemed necessary. Normally the additional requirements are specified at the beginning of the program.

The individual program of studies is prepared by the thesis director and approved by the program director.

Concentrations

EDU 8002, EDU 8105 and EDU 8106 are reserved strictly for PhD students.
### Organizational Studies in Education

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<tr>
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<td>EDU6204</td>
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<td>EDU6259</td>
<td>RESEARCH AND CONTEMPORARY ISSUES IN TEACHING MODELS AND PRACTICES (3cr.)</td>
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<td>EDU6487</td>
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<td>EDU5244</td>
<td>BILINGUAL, MULTILINGUAL AND MINORITY CONTEXTS OF LANGUAGE EDUCATION (3cr.)</td>
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<td>EDU6146</td>
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### Society, Culture and Literacies

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<td>EDU5222</td>
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<td>EDU5386</td>
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<tr>
<td>EDU5463</td>
<td>CULTURAL STUDIES AND EDUCATION: THEORY AND PRAxis (3cr.)</td>
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<td>EDU5465</td>
<td>GLOBALIZATION AND COMPARATIVE EDUCATION (3cr.)</td>
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<td>EDU5466</td>
<td>RACISM AND ANTIRACISM IN EDUCATION (3cr.)</td>
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<td>EDU6373</td>
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<td>EDU6421</td>
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<tr>
<td>EDU7133</td>
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### Educational Counselling

Courses and thesis research in the Educational Counselling concentration are focused on issues related to the education and supervision of counsellors.

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<td>EDU6470</td>
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EDU6472 SEMINAR AND PRACTICUM IN GROUP COUNSELLING (3cr.)
EDU8107 SEMINAR IN COUNSELLING AND SUPERVISION (3cr.)
EDU8908 INTERNAT EN COUNSELLING ET EN SUPERVISION / INTERNSHIP IN COUNSELLING AND SUPERVISION

Common Courses
EDU7395 SELECTED TOPICS IN QUANTITATIVE RESEARCH (3cr.)
EDU7396 TECHNIQUES OF DOCUMENT ANALYSIS IN EDUCATIONAL RESEARCH (3cr.)
EDU7397 DATA COLLECTION INSTRUMENTS (3cr.)
EDU8105 CONTEMPORARY ISSUES IN EDUCATION (3cr.)
EDU8106 EPISODES OF EDUCATIONAL RESEARCH (3cr.)
EDU8190 QUALITATIVE RESEARCH II (3cr.)

Health Professions Education
EDU5105 INTER-PROFESSIONAL EDUCATION IN THE HEALTH PROFESSIONS (3cr.)
EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5204 FOUNDATIONS OF ADULT EDUCATION (3cr.)
EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRACTICE (3cr.)
EDU5466 RACISM AND ANTIRACISM IN EDUCATION (3cr.)
EDU6101 SEMINAR IN HEALTH PROFESSIONS EDUCATION (3cr.)
EDU6200 THE ADULT EDUCATOR: ROLES AND BEHAVIOUR (3cr.)
EDU7101 SELECTED TOPICS IN HEALTH PROFESSIONS EDUCATION (3cr.)

Registration of Thesis Topic
Students must register their thesis topic by the end of the third session of studies.

Thesis Supervision and Thesis Submission
The program director ensures that all procedures for thesis supervision and thesis submission specified by the Faculty of Graduate and Postdoctoral Studies and the program council of the faculty are followed.

At the time of admission, the Faculty of Education designates a thesis adviser in consultation with the professor concerned.

Comprehensive Examination
The overall purpose of the comprehensive exam (EDU 9998) is to examine the candidate's mastery of his field of study. More specifically, the purpose is to examine the candidates' integrative breadth and depth of knowledge within the context of his domains of study and professional/scientific perspective. The examination is conducted according to a format approved by the program council. It comprises the preparation, submission, evaluation and oral defence of a written text (the Comprehensive Document).

Duration of the program
The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program.

Courses

EDU5105 INTER-PROFESSIONAL EDUCATION IN THE HEALTH PROFESSIONS (3cr.)
Examination of educational research, theory and practice related to the professional interdependence of work in the health concentration; study of the impact of interdisciplinary professional principles on teaching and learning strategies, curricular design, and evaluation strategies.

EDU5146 SOCIAL, POLITICAL AND CULTURAL ISSUES IN SECOND LANGUAGE EDUCATION (3cr.)
Examination of the social, political and cultural dimensions of learning and teaching an additional language; influences on learners, on opportunities for learning a language and on curriculum, pedagogical materials, and assessment.

EDU5160 MATHEMATICAL THINKING ACROSS THE MATHEMATICS CURRICULUM (3cr.)
Examination of the development of mathematical thinking with respect to a variety of concepts that appear in school mathematics curricula.

EDU5188 INTEGRATION OF TECHNOLOGY IN EDUCATION (3cr.)
Examination of the implications on teaching practice and learning outcomes in the integration of technology studies across the curriculum.
EDU5190 INTRODUCTION TO RESEARCH IN EDUCATION (3cr.)
Introduces students to understanding and applying research in education: researching a topic, critical reading, overview of various types of applied research.

EDU5191 METHODS AND INTERPRETATION IN QUANTITATIVE RESEARCH I (3cr.)
Introduction to the planning and interpretation of quantitative research. Data analysis of inferential statistics.

EDU5199 SYNTHESIS SEMINAR (3cr.)
A practicum in applied educational research leading to a written report demonstrating an integration of theoretical and practical knowledge and making a contribution to educational practice.

EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
Exploration of the concepts and strategies, methods of instruction in health education; examination of how instruction supports student learning.

EDU5203 SOCIAL CONTEXTS OF TEACHING AND LEARNING (3cr.)
Study of teaching and learning in differing social contexts with an emphasis on Canada; study of inclusive educational practices in response to the diversity of learners and communities.

EDU5204 FOUNDATIONS OF ADULT EDUCATION (3cr.)
Examination of foundational concepts in adult education; study of the extension of adult education to new social groups, the theoretically oriented research on participation, the phenomenon of self-directed learning and other contemporary trends in the field.

EDU5206 PROGRAM PLANNING IN ADULT EDUCATION (3cr.)
Exploration of the fundamental concepts necessary to understand program development in adult education; review of conceptual frameworks for planning, recruitment, evaluation and research on program implementation and program building, procedures for making programs more meaningful to adult learners.

EDU5210 PHILOSOPHICAL PERSPECTIVES ON EDUCATION: FROM THE PRE-SOCRATICS TO THE POSTMODERNISTS (3cr.)
Inquiry into selected philosophical perspectives and their effects on contemporary educational thought and practice.

EDU5221 HISTORICAL NARRATIVES AND EDUCATION (3cr.)
Critical examination of educational issues in historical perspective: exploration of the roles of race, class, ethnicity, religion and gender in education; historical narratives and their implications.

EDU5222 ETHOGRAPHIES IN EDUCATION (3cr.)
Ethnographic perspectives on schools and school cultures, and on the relations between education and broader social-cultural forces.

EDU5230 LEADERSHIP IN EDUCATIONAL ORGANIZATIONS (3cr.)
Examination of selected approaches to leadership theory, training, and practice pertinent to the challenges of administration in contemporary educational organizations.

EDU5231 THE STRUCTURE OF EDUCATIONAL ORGANIZATIONS (3cr.)
Overview and critical examination of theories of organization from diverse traditional and contemporary perspectives; relations between institutional structures and educational practices.

EDU5232 HUMAN RELATIONS IN EDUCATIONAL ADMINISTRATION (3cr.)
Examination of the working functions of administration in relation to people within and otherwise associated with educational organizations; study of motivation and decision-making within static and dynamic situations and of conflict within organizations.

EDU5234 SUPERVISION AND PERFORMANCE MANAGEMENT IN EDUCATIONAL ORGANIZATIONS (3cr.)
Critical examination of approaches to the evaluation and supervision of personnel and their implications for policy and practice in educational organizations.

EDU5236 EDUCATION FINANCE (3cr.)
Critical study of current issues in government policy on educational finance; implications for elementary, secondary and post-secondary education.

EDU5242 TRENDS IN SECOND LANGUAGE TEACHING (3cr.)
Study of conceptual frameworks and models of second language teaching; historical overview of major developments and current trends; critical analysis of theoretical foundations, methods and practices.

EDU5244 BILINGUAL, MULTILINGUAL AND MINORITY CONTEXTS OF LANGUAGE EDUCATION (3cr.)
Examination of models of bilingual and multilingual education in diverse contexts with an emphasis on Canada; analysis of issues related to the educational success of immigrants and members of minority groups and their integration into schools and society.

EDU5245 TEACHING ORAL COMMUNICATION AND LITERACY IN A SECOND LANGUAGE (3cr.)
Critical examination of practices for the teaching and assessment of oral communication and literacy in a second language; instructional practices relating to
EDU5253 THEORIES OF LEARNING APPLIED TO TEACHING (3cr.)
Critical survey of theories of learning in historical and contemporary perspectives and their pedagogical implications for classroom practices.

EDU5258 LEARNING DIFFERENCES IN EDUCATION (3cr.)
Examination and critical analysis of research and practice related to the teaching and learning of people with learning differences; diverse educational contexts and perspectives; social construction of exceptionalities.

EDU5260 INTRODUCTION TO CURRICULUM STUDIES (3cr.)
Overview of recurring curriculum issues in historical and contemporary perspectives; introduction to the practices of curriculum theorizing; investigation of the effects of shifting paradigms within the field of curriculum studies.

EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION (3cr.)
Examination of theory for current practices related to curriculum design in health professions.

EDU5262 CURRICULUM, CULTURE, AND TECHNOLOGIES (3cr.)
Exploration of the theoretical and practical issues of curriculum and program design in relation to culture and technology; examination of the relationships between curriculum, information culture, and E-learning; investigation of the impact of cyber curriculum on cultural identities of teachers and learners.

EDU5263 INTRODUCTION TO EDUCATIONAL ADMINISTRATION (3cr.)
Survey of the theories, research, and practices that have shaped the field of educational administration as both an applied profession and as an area of scholarly inquiry; implications for people, educational structures, and institutional purposes.

EDU5265 INTERNATIONALIZATION OF CURRICULUM STUDIES (3cr.)
Investigation of contemporary issues in curriculum studies within an international context: analysis of curriculum reform initiatives in other countries; examination of current trends in international and transnational curriculum movements; exploration of alternative curricular arrangements within global, national, and local contexts.

EDU5270 ETHICAL AND LEGAL DIMENSIONS OF COUNSELLING (3cr.)
Examination of professional ethical standards and codes of conduct for counsellors; legal and legislative context of counselling; application of ethical decision making; ethical dimensions of professional relationships.

EDU5271 COUNSELLING; THEORIES AND PRACTICES I (3cr.)
Critical examination of major personality and counselling theories.

EDU5274 TESTS AND MEASUREMENT IN EDUCATIONAL COUNSELLING (3cr.)
Examination of common tests and inventories used in guidance and counselling; selection, administration, scoring and interpretation of tests in educational settings.

EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION (3cr.)
Study of the impact of computer technology on communication and instructional techniques for health professions education; exploration of distance education, on-line learning, and low and high fidelity simulation.

EDU5287 EMERGING TECHNOLOGIES AND LEARNING (3cr.)
Research, theory and practice concerning the use of emerging technologies to facilitate learning; the impact of new media on teaching and learning strategies, on curriculum change, on learner attitudes and motivation, and on higher order learning.

EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
Exploration of the assessment formats used to evaluate the domains of clinical competence in health care professional training at both the undergraduate and postgraduate levels; analysis of written and oral examinations, oral and performance-based testing.

EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE (3cr.)
Exploration of principles of effective program evaluation methods; planning; instrument development; data collection, processing and analysis; reporting and follow-up; survey of diverse models of evaluation.

EDU5301 PRINCIPLES OF EDUCATIONAL PLANNING FOR THE HEALTH PROFESSIONS - Part I (3cr.)
Exploration of practical approaches to planning, implementing, and evaluating programs in health professions education, examination of learning needs, learning objectives, learning methods and program evaluation.

EDU5302 PRINCIPLES OF EDUCATIONAL PLANNING FOR THE HEALTH PROFESSIONS – PART II (3cr.)
Exploration of concepts related to curricular reform, implementation of changes in education, selection of approaches to enable learning, and development of valid methods for evaluation of learning and programs of studies in the health professions. Prerequisite: EDU 5301
EDU5357 CURRENT ISSUES IN MATHEMATICS EDUCATION (3cr.)
Examination of current issues associated with mathematics education, such as educational equity, inquiry-based learning, classroom diversity, and the role of technology.

EDU5358 TEACHING AND LEARNING IN THE ARTS (3cr.)
Examination of the theoretical foundations of arts-based instruction and arts integration; investigation of the current methods of teaching, learning and evaluation in, about, with and through the arts in a variety of program areas.

EDU5371 SELECTED TOPICS IN EDUCATIONAL COUNSELLING (3cr.)
An examination of current issues in guidance and counselling.

EDU5372 MODELS OF CONSULTATION AND CASE MANAGEMENT IN EDUCATIONAL COUNSELLING (3cr.)
Analysis of roles of counsellor as leader, team member, and integral resource in developing, mobilizing, and/or utilizing school/community resources within a systems approach; personal development of the skills of co-ordination, collaboration, brokering, and consultation.

EDU5381 CREATIVITY AND THE LEARNING PROCESS (3cr.)
Analysis of the nature of creativity; concepts of creative thinking and creative behaviours in educational settings; exploration of applications of creativity designed for foster personal expressiveness; investigation of methods appropriate for assessing creative processes and products.

EDU5384 INTERGRATED APPROACHES TO LANGUAGE CURRICULUM (3cr.)
Theories and principles underlying the integrated approach to the teaching, learning and assessment of language and literacy (oral and written communication and media literacy); applications of language and literacy practices in specific contexts.

EDU5385 CRITICAL PERSPECTIVES ON CHILDREN'S LITERATURE AND LEARNING (3cr.)
Critical investigation of children's literature as a factor in social learning.

EDU5386 SEMINAR ON LITERACY (3cr.)
Theoretical perspectives in various areas of the field of literacy.

EDU5388 SELECTED TOPICS IN THE EDUCATION OF PEOPLE WITH EXCEPTIONALITIES (3cr.)
Topics of current interest will be selected for intensive study.

EDU5391 INTERACTION OF RESEARCH AND PRACTICE (3cr.)
Examination of the strengths, challenges, limitations and possibilities for enhancing research based practice and practitioner relevant research using quantitative and/or qualitative research.

EDU5399 DEVELOPMENT OF ASSESSMENT AND EVALUATION INSTRUMENTS (3cr.)
Skill and performance; assessment, strategies for developing assessment instruments; interpretation and communication of evaluation results

EDU5461 MANAGING CHANGE IN EDUCATIONAL ORGANIZATIONS (3cr.)
Critical examination of current literature on managing change in educational organizations; theories of change, restructuring, organizational reform and improvement.

EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRAxis (3cr.)
Introduction to the interdisciplinary study of contemporary popular culture including theories of representation, texts, social identities, and their implications for school practices.

EDU5465 GLOBALIZATION AND COMPARATIVE EDUCATION (3cr.)
Examination of the interaction between globalization and education; theories of mass education in developing and industrialized countries; comparative perspectives on issues of educational innovation and reform.

EDU5466 RACISM AND ANTRIRACISM IN EDUCATION (3cr.)
Theories of "race", racism and antiracism in education; exploration of the challenges of anti-racist education and change.

EDU5471 MICRO-COUNSELLING (3cr.)
Examination of counselling models, methods and skills; focus on developing personal resources in verbal and non-verbal communication within a counselling model.

EDU5473 THEORIES OF CAREER DEVELOPMENT (3cr.)
Analysis of career development theories with emphasis on issues in career decision making and transition.

EDU5474 MULTICULTURAL COUNSELLING (3cr.)
Exploration of practical and theoretical issues relevant to counselling individuals, groups, and families from diverse cultural backgrounds. Emphasis on development of attitudes, values, and skills that promote effective interpersonal relations and counselling.
EDU5487 SEMINAR ON ISSUES IN RESEARCH IN SPECIAL EDUCATION (3cr.)
Examination and critical analysis of current issues and research in special education; opportunities for individuals to concentrate on special interests.

EDU5499 CURRENT METHODS OF STUDENT ASSESSMENT IN TEACHING AND LEARNING (3cr.)
Essential principles, concepts, skills relative to the selection, construction, critique and use of current student assessment methods in education; emphasis on classroom practices; introduction to evaluation techniques external the classroom.

EDU5504 SÉMINAIRE D'INTÉGRATION EN ÉVALUATION DE PROGRAMMES (3cr.)
Intégration des théories, de la recherche et de la pratique en rapport avec l’évaluation de programmes. Production d’un rapport de recherche sur un thème lié à la théorie et/ou la pratique en évaluation de programmes. Préalables : a) EDU 5299 ou EDU 5699 ou PSY 7503 ou PSY 7103 ou CRM 6759 ou CRM 6359; b) EDU 6299 ou EDU 6699; c) PSY 7102 ou PSY 7502. Il est préférable que l’étudiant ait complété, en plus, un cours facultatif approuvé par la direction du certificat. Exclusion : PSY 5104.

EDU5505 FORMATION INTERPROFESSIONNELLE DANS LE DOMAINE DE LA SANTÉ (3cr.)

EDU5543 L’ENSEIGNEMENT DE LA COMMUNICATION ORALE ET DE LA LITTÉRATURE EN LANGUE SECONDE (3cr.)
Analyse critique des pratiques d'enseignement de la communication orale et de la littérature en langue seconde. Études des pratiques pédagogiques dans l'enseignement de la prononciation, du vocabulaire et de la grammaire.

EDU5546 ASPECTS SOCIAUX, POLITIQUES ET CULTURELS DE L'APPRENTISSAGE ET DE L'ENSEIGNEMENT D'UNE LANGUE SECONDE (3cr.)
Étude des dimensions sociales, politiques et culturelles dans l'apprentissage et l'enseignement d'une langue seconde. Examen de leur influence sur les apprenants, sur les conditions qui favorisent l'apprentissage d'une langue ainsi que sur le programme d'études, le matériel pédagogique et l'évaluation.

EDU5578 INFORMATION SCOLAIRE ET PROFESSIONNELLE (3cr.)
Aperçu de l'organisation et du fonctionnement des services d'orientation et d'information scolaires et professionnelles. Étude des différents systèmes provinciaux. Analyse, évaluation, classification et utilisation de différents types de documents. Initiation aux banques de données informatisées.

EDU5581 SCIENCES ET DIVERSITÉS (3cr.)
Analyse des conditions de production du savoir scientifique dans divers contextes socio-culturels. Identification et analyse des principales problématiques reliées à l'enseignement et à l'apprentissage des sciences.

EDU5582 MODÈLES MÉDIATISÉS D'ENSEIGNEMENT (3cr.)
Étude des modèles médiatisés d'enseignement et de leurs applications en présentiel et à distance. Analyse des facteurs individuels et structurels de la réussite de ces modèles.

EDU5583 CRÉATIVITÉ ET ÉDUCATION (3cr.)
Analyse des théories de la créativité. Identification de liens entre le processus créateur, l'enseignement et l'apprentissage auprès d'une diversité d'apprenants. Mise en perspective dans les champs disciplinaires.

EDU5584 DIMENSIONS, STRATÉGIES ET GESTION DES APPRENTISSAGES (3cr.)
Étude des dimensions entrant en jeu dans la gestion des apprentissages en milieu éducatif et scolaire. Conception et révision de modèles d'enseignement et de leurs liens avec la gestion des apprentissages.

EDU5585 ÉTUDE PSYCHOPÉDAGOGIQUE DE L'ENFANCE ET DE L'ADOLESCENCE (3cr.)
Étude du développement et de l'apprentissage des compétences physiques, émotives, sociales et cognitives d'enfants d'âges préscolaire et scolaire, incluant l'adolescent. Analyse de modèles d'intervention éducative adaptée et des modèles de prévention des difficultés.

EDU5590 INTRODUCTION À LA RECHERCHE EN ÉDUCATION (3cr.)
Initiation à la consultation et à l'utilisation de la recherche en éducation : documentation d'une problématique; lecture critique; initiation aux différents types de recherche appliquée.

EDU5591 MÉTHODES ET INTERPRÉTATION EN RECHERCHE DE TYPE QUANTITATIF (3cr.)
Introduction à la planification de la recherche de type quantitatif et à l'interprétation des observations qui en résultent. Analyse des données statistiques et fondements de la statistique inférentielle.

EDU5592 ÉVALUATION DES APPRENTISSAGES: THÈMES CHOISIS (3cr.)
Thèmes variés choisis pour une étude approfondie.

EDU5599 SÉMINAIRE DE SYNTHÈSE (3cr.)
Démarche vers une intégration des savoirs théoriques et pratiques qui doit contribuer à la pratique éducative.

**EDU5600 L'APPRENTISSAGE À L'ÂGE ADULTE** (3cr.)
Examen des théories de l'apprentissage appliquées à l'éducation de l'apprenant adulte. Analyse critique des modèles de mises en pratique de ces théories en situation d'apprentissage.

**EDU5602 STRATÉGIES D'ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ** (3cr.)
Études des concepts, des stratégies et des enjeux de la formation des professionnels de la santé. Examen de la manière dont les pratiques d'enseignement favorisent l'apprentissage des étudiants.

**EDU5611 ÉTHIQUE PROFESSIONNELLE EN ÉDUCATION** (3cr.)
Étude des concepts et principes du jugement éclairé dans la résolution de dilemmes éthiques. Analyse des enjeux d'une éthique professionnelle.

**EDU5616 PRINCIPALES PROBLÉMATIQUES EN ÉDUCATION** (3cr.)
Étude des problématiques de l'éducation reliées aux approches philosophiques, aux buts, aux programmes d'études, aux méthodes, aux structures et aux personnels en éducation.

**EDU5618 ÉDUCATION COMPARÉE** (3cr.)
Analyse comparative des systèmes éducatifs au Canada et sur le plan international. Analyse des différentes réformes en cours. Étude des tendances en éducation.

**EDU5630 LEADERSHIP EN MILIEU ÉDUCAITIF** (3cr.)
Étude des thèmes et concepts de base en comportement organisationnel appliquées à l'environnement scolaire. Examen des principaux modèles, rôles et pratiques du leadership.

**EDU5631 COMPORTEMENT ORGANISATIONNEL** (3cr.)
Étude des interactions entre la structure organisationnelle des entités scolaires et les comportements des acteurs.

**EDU5635 LA POLITIQUE ET L'ÉDUCATION** (3cr.)

**EDU5638 PRINCIPES D'ÉLABORATION ET DE GESTION DE PROJETS ÉDUCATIFS** (3cr.)
Étude des processus de conception et d'opérationnalisation de projets éducatifs propres à un établissement scolaire.

**EDU5642 COURANTS EN DIDACTIQUE DES LANGUES SECONDES** (3cr.)

**EDU5653 THÉORIES ET MODÈLES DE L'APPRENTISSAGE** (3cr.)
Analyse des principales théories de l'apprentissage. Étude des applications de ces théories aux pratiques éducatives.

**EDU5655 LE DÉVELOPPEMENT DE LA PERSONNALITÉ EN MILIEU ÉDUCAITIF** (3cr.)
Examen des théories de la personnalité et leurs applications en milieu éducatif. Analyse des liens interpersonnels dans la relation éducative selon la personnalité de l'élève et celle de son enseignante ou enseignant et de l'interaction enseignant-étudiant.

**EDU5658 ÉDUCATION DIFFÉRENCIÉE** (3cr.)
Description et analyse critique d'études et de pratiques de différenciation auprès de l'apprenant en difficulté. Dimensions sociales et politiques de la différenciation. La construction sociale de la différence. La prise en charge de l'apprenant en difficulté dans une construction de compétences.

**EDU5660 THÉORIE ET PRATIQUE DES PROGRAMMES D'ÉTUDES** (3cr.)
Étude des théories des programmes d'études explicites et implicites. Analyse des étapes de la mise en œuvre.

**EDU5661 CONCEPTION DE PROGRAMMES EN ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ** (3cr.)
Étude des fondements et des pratiques en matière de conception de programmes d'études pour les professionnels de la santé.

**EDU5670 DIMENSIONS DÉONTOLOGIQUES ET JURIDIQUES DU COUNSELLING** (3cr.)

**EDU5671 LE COUNSELLING : THÉORIES ET PRATIQUES I** (3cr.)
Étude des théories de la personnalité et du counselling et de leur impact sur la pratique du counselling éducatif.

**EDU5672 COUNSELLING ET ORIENTATION APRÈS DES GROUPES MINORITAIRES** (3cr.)
Études des caractéristiques des groupes minoritaires tels que les femmes, les gais et les lesbiennes, les handicapés, les minorités linguistiques et (ou) ethniques, etc., selon la perspective du counselling et de l’orientation de carrière.

EDU5674 TESTING ÉDUCATIONNEL ET PROFESSIONNEL (3cr.)
Initiation à la sélection, à l'administration et à l'interprétation des principaux tests associés au counselling éducationnel et professionnel (planification de carrière, intérêts, aptitudes, attitudes, valeurs). Accent sur l'utilisation et l'interprétation quantitative et qualitative des tests utilisés.

EDU5686 TECHNOLOGIE EN ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ (3cr.)
Étude de l'impact de la technologie de l'information sur la communication et des stratégies d'enseignement dans la formation des professionnels de la santé. Exploration de l'apprentissage à distance, de l'apprentissage en ligne ainsi que des simulations à basse et haute-fidélité.

EDU5687 MODÈLES D'INTÉGRATION DES TECHNOLOGIES DE L'INFORMATION ÉDUCATIFS (3cr.)
Examen des mécanismes d'exploitation des technologies de l'information et de la communication (TIC) et de leurs liens avec les théories d'apprentissage. Analyse des pratiques exemplaires et des modèles émergents.

EDU5698 STRATÉGIES D'ÉVALUATION DES APPRENTISSAGES DANS LE DOMAINE DE LA SANTÉ (3cr.)
Étude des modèles utilisés pour évaluer les domaines de compétence clinique au cours de la formation des professionnels de la santé, tant au niveau des études de premier cycle que des études supérieures. Analyse des examens écrits et oraux et d'épreuves portant sur l'accomplissement de tâches.

EDU5699 ÉVALUATION DE PROGRAMMES (3cr.)

EDU5701 PRINCIPES DE PLANIFICATION SYSTÉMATIQUE EN ENSEIGNEMENT AUX PROFESSIONNELS DE LA SANTÉ, PARTIE I (3cr.)
Exploration d'une démarche méthodique de planification, de mise sur pied et d'évaluation de programmes éducatifs pour les professionnels de la santé; réflexion sur l’analyse des besoins, les objectifs, les stratégies d’enseignement et d’évaluation des apprentissages et de programmes.

EDU5702 PRINCIPES DE PLANIFICATION SYSTÉMATIQUE EN ENSEIGNEMENT AUX PROFESSIONNELS DE LA SANTÉ, PARTIE II (3cr.)
Exploration des concepts rattachés à la mise en œuvre d’un changement dans un milieu éducatif, au choix des méthodes qui favorisent les apprentissages et au développement d'outils valides pour évaluer les apprentissages et les programmes d’études en santé. Préalable : EDU 5701

EDU5752 ENSEIGNEMENT EN MILIEU MINORITAIRE FRANÇOPHONE (3cr.)
Examen des enjeux reliés à l'apprentissage et l'enseignement en milieu minoritaire francophone permettant de préciser les démarches éducatives pertinentes.

EDU5757 ENJEUX ACTUELS EN ENSEIGNEMENT ET APPRENTISSAGE DES MATHÉMATIQUES (3cr.)
Étude des problématiques actuelles en éducation mathématique telles que l'équité, l'apprentissage par investigation, la diversité en salle de classe et le rôle de la technologie.

EDU5760 COMPRÉHENSION ET RAISONNEMENT MATHÉMATIQUES EN MILIEU SCOLAIRE (3cr.)
Étude du développement de la pensée mathématique associée à différents concepts présents dans les programmes de mathématiques en milieu scolaire.

EDU5793 COURANTS EN ÉVALUATION DES APPRENTISSAGES (1cr.)

EDU5794 ÉVALUATION DES APPRENTISSAGES : PRINCIPES D'ÉQUITÉ (1cr.)

EDU5795 RESPONSABILITÉ DE L'APPRENTANT ET DU SYSTÈME À L'ÉGARD DES APPRENTISSAGES (1cr.)

EDU5796 ÉVALUATION DES COMPÉTENCES (1cr.)
Étude du concept de compétence. Comparaison des divers types d'évaluation de l'apprentissage selon les dimensions visées. Identification d'instrumentation appropriée.

EDU5797 STRATÉGIES D'ÉVALUATION DES APPRENTISSAGES (1cr.)
EDU5798 INTERPRÉTATION ET DIFFUSION DES RÉSULTATS D'ÉVALUATION (1cr.)
Comparaison de divers schémas d'interprétation. Étude de divers types de bulletin scolaire. Analyse du processus de prise de décision, du suivi et de la rétroaction.

EDU5799 ÉLABORATION D'INSTRUMENTS D'ÉVALUATION (3cr.)
Évaluation des compétences polyvalentes. Étude des stratégies d'élaboration d'instruments de mesure. Interprétation et diffusion des résultats d'évaluation.

EDU5830 Séminaire en administration éducationnelle (3cr.)
Application des théories et principes en administration éducationnelle à partir de problèmes identifiés par les participants.

EDU5832 Développement des relations avec la communauté scolaire (3cr.)
Examen de l'importance des relations avec la communauté scolaire. Approfondissement du concept de partenariat, des modèles de répartition des pouvoirs, des techniques de communication efficace, du marketing des produits éducatifs et du concept de client et d'usager.

EDU5833 Éducation et changement social (3cr.)

EDU5835 Modèle d'organisation et de gestion appliqués à l'éducation (3cr.)
Étude des théories et pratiques d'organisation en gestion scolaire : élaboration de politiques, traitement et diffusion de l'information, résolution de problèmes, gestion du temps.

EDU5871 Microcounselling (3cr.)
Développement des ressources du conseiller. Exploitation de la communication verbale et non verbale dans une situation de microcounselling.

EDU5873 Théories du choix de carrière (3cr.)
Une analyse du développement professionnel avec insistance sur les problèmes du choix de carrière et d'adaptation.

EDU5881 Tendances de la recherche en éducation inclusive (3cr.)
Fondements théoriques et enjeux actuels de l'approche inclusive à l'éducation. Perspectives des élèves, du personnel scolaire, des intervenant/nes communautaires et associatif/ves et des parents.

EDU5899 Enjeux actuels en évaluation des apprentissages (3cr.)

EDU6101 Séminaire en santé professions éducation (3cr.)
Critical examination of selected topics in health professions education based on research and disciplinary issues. (Open to MEd Students with permission of the program director.)

EDU6146 Théories de deuxième langue learning applied to instructional contexts (3cr.)
Study of theories of second language learning from linguistics, cognitive, social and pedagogical perspectives.

EDU6191 Méthodes et interprétation de recherches quantitatives II (3cr.)
Planning, analysis and interpretation of quantitative research within experimental and quasi-experimental frameworks; application of analysis of variance, analysis of covariance and techniques of linear regression (explanation, prediction) to educational contexts. Prerequisite: EDU 5191 or equivalent.

EDU6193 Fondations de la mesure et évaluation en éducation (3cr.)
Standardization and normalization of test scores; item types for specific kinds of tests; classical test theory; composite variables; reliability; validity; applications to norm-referenced and criterion-referenced tests.

EDU6200 The adult educator: roles and behaviour (3cr.)
Study of functions and tasks, and the various roles of adult educators as volunteers, as trainers, as teachers of adults, as researchers; examination of the pre service and on going training of adult educators and professionalization in adult education.

EDU6203 Learning and literacies (3cr.)
Examination of literacy in relation to the construction of ethnicity, gender, social class and racialized difference; exploration of literacy theories from historical, psychological, political and educational perspectives; study of school, family, workplace and community literacy practices.

EDU6204 Learning in adulthood (3cr.)
Examination of theories and stages of adulthood with emphasis on adult psychological development and implications for education. Critical study of adult characteristics, motivation, gender roles and other concepts related to development.

EDU6241 Second language program development and evaluation (3cr.)
Study of second language program design and implementation; needs analysis, setting goals and objectives, syllabus design, materials development and classroom implementation; learning assessment, program evaluation and revision.

**EDU6259 RESEARCH AND CONTEMPORARY ISSUES IN TEACHING MODELS AND PRACTICES (3cr.)**
Analysis of current pedagogical models and practices, and of their underlying theoretical constructs; critical examination of traditional and recent perspectives on the context and process of teaching.

**EDU6271 COUNSELLING: THEORIES AND PRACTICE II (3cr.)**
Extension of advanced counselling theories and practice. Prerequisite: EDU 5271 or its equivalent.

**EDU6290 RESEARCH IN EDUCATION (3cr.)**
Critical review of approaches, methods and processes in educational research; examination of complementarity of different types of research methodology.

**EDU6293 FORMATIVE EVALUATION OF LEARNING (3cr.)**
An examination of the nature and role of formative evaluation in instructional settings; design of formative assessment instruments.

**EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES (3cr.)**
Critical exploration of theoretical orientations to program evaluation and in-depth examination of selected contemporary issues confronting evaluators. Prerequisite: EDU 5299 or PSY 7103 or PSY 7503 or CRM 6359 or CRM 6759 (Certificate in Program Evaluation).

**EDU6371 SELECTED TOPICS IN EDUCATIONAL COUNSELLING (3cr.)**
An examination of current issues in guidance and counselling.

**EDU6372 MODELS OF CONSULTATION AND CASE MANAGEMENT IN EDUCATIONAL COUNSELLING (3cr.)**
Analysis of roles of counsellor as leader, team member, and integral resource in developing, mobilizing, and/or utilizing school/community resources within a systems approach; personal development of the skills of co-ordination, collaboration, brokering, and consultation.

**EDU6373 EDUCATION OF MARGINALIZED YOUTH (3cr.)**
Examination of the social ecology and educational problems and needs of diverse groups of marginalized youth in different contexts in Canada and in other countries; related socio-political issues, policy implications, and intervention strategies.

**EDU6421 PUBLIC MEMORY, LIVED HISTORIES AND EDUCATION (3cr.)**
Critical examination of the social construction of public memory through schooling; relations between public memory, peoples' lived histories and the making of communities; the roles of public memory in shaping social identities of race, nation and gender.

**EDU6422 EDUCATION AND DEMOCRATIC COMMUNITIES (3cr.)**
Inquiry into the democratic purposes of schooling and the theory and practices of democratic education; implications for civic engagement, curriculum, school organizations and leadership.

**EDU6423 POLITICS AND POLICY IN EDUCATION (3cr.)**
Critical study of the political organization of education; the role of government and bureaucratic controls in shaping education; relations between educational policy and power, authority, influence and conflict in education.

**EDU6424 ETHICS AND DIVERSITY IN EDUCATIONAL ORGANIZATIONS (3cr.)**
Exploration of the moral and ethical implications of administrative work; the role played by personal and professional values in establishing meaning in organizations.

**EDU6425 MORAL REGULATION AND EDUCATION (3cr.)**
Critical study, with a Canadian emphasis, of the historical role of education in inculcating moral values in children; exploration of notions of health, civic responsibility, personal duty and ethical behaviour; examination of the social construction and experience of deviance.

**EDU6426 CITIZENSHIP AND EDUCATION (3cr.)**
Historical and contemporary perspectives on citizenship and citizenship education in Canada; exploration of theories of citizenship, identity and nation; social and pedagogical responses to particular views of citizenship.

**EDU6427 EDUCATION AND SEXUALITY (3cr.)**
Implications of sexualities for education in relation to sex and gender, ethnicity, age, class, disability and sexual orientation; exploration of how bodies are understood differentially over time and space in formal and informal educational settings.

**EDU6428 SOCIAL CONTEXTS OF EDUCATION (3cr.)**
Examination of education and its role as part of the fabric of society; exploration of changing norms of schooling, school organization, and social environments; the effects of schooling on social stratification, the relationships between schools and other social institutions, and the paradoxes of education in pluralistic societies; inquiry into issues of authority, power, socialization and culture.
Students may also satisfy the language requirement by passing six credits of second-year university-level language courses. These courses are additional to the 18 credits required in Program Requirements.

EDU6429 PEDAGOGIES OF DIFFERENCE (3cr.)
Exploration of diversity and education from cultural, economic, historical and political perspectives including critical pedagogy and pedagogies of transformation.

EDU6433 PROGRAM IMPLEMENTATION IN EDUCATIONAL ORGANIZATIONS (3cr.)
Exploration of principles of effective program implementation in educational settings.

EDU6460 CURRICULUM, CULTURE, AND LANGUAGE (3cr.)
Examination of the ways in which curriculum works to reproduce and/or suppress certain identities; interdisciplinary inquiries into how current curricular language is situated in relation to identity formations; deconstruction of the marginalization of identities across various curricular contexts.

EDU6470 MULTICULTURAL COUNSELLING (3cr.)
Exploration of practical and theoretical issues relevant to counselling individuals, groups, and families from diverse cultural backgrounds. Emphasis on development of attitudes, values, and skills that promote effective interpersonal relations and counselling.

EDU6472 SEMINAR AND PRACTICUM IN GROUP COUNSELLING (3cr.)
Examination of group counselling theory and technique; emphasis on dynamics of group behaviour, social-psychological interactions in small groups, and practice in developing and providing group counselling services. Prerequisite: EDU 5271 and EDU 5471.

EDU6473 INTERNSHIP IN COUNSELLING I (3cr.)
Seminar and minimum of 200 hours of supervised on-site experiences in an approved counselling setting: examination of organizational issues in the delivery of guidance and counselling services: development of professional competence. Prerequisite: EDU 5271 and EDU 5471.

EDU6474 INTERNSHIP IN COUNSELLING II (3cr.)
Seminar and minimum of 200 hours of supervised on-site experiences in an approved counselling setting: critical examination of selected helping techniques; critical examination of ethical and legal issues in counselling. Prerequisite: EDU 6473.

EDU6501 SÉMINAIRE EN ENSEIGNEMENT AUX PROFESSIONNELS DE LA SANTÉ (3cr.)
Examen critique des thémes reliés à l’enseignement aux professionnels de la santé et inspirés de la recherche et des enjeux disciplinaires. (Ouvert aux étudiants et étudiantes du M. Éd. avec la permission du directeur des études supérieures.)

EDU6529 SÉMINAIRE EN LITTÉRATIES MULTIPLES (3cr.)
Perspectives théoriques issues des différents champs des littératures.

EDU6546 THÉORIES DE L’APPRENTISSAGE D’UNE LANGUE SECONDE APPLIQUÉES À UN CONTEXTE INSTITUTIONNEL (3cr.)
Étude des théories d'apprentissage d'une langue seconde dans les perspectives linguistique, cognitive, sociale et pédagogique.

EDU6571 SÉMINAIRE EN DÉVELOPPEMENT PROFESSIONNEL ET EN PLANIFICATION DE CARRIÈRE (3cr.)
Approfondissement de certains aspects conceptuels du counselling et de la recherche appliquée au domaine du développement professionnel et de la planification de carrière.

EDU6573 SANTÉ MENTALE, TRAVAIL ET ORIENTATION (3cr.)
Analyse des problèmes de santé mentale provoqués par le travail ou l'absence de travail : perte d'estime de soi, d'identité, de motivation, humiliation, culpabilité, épuisement professionnel, mise en chômage technique, etc. Nature et diagnostic. Mise en contexte de ces troubles dans divers courants de pensée. Étude des effets thérapeutiques du travail.

EDU6591 MÉTHODES ET INTERPRÉTATION EN RECHERCHE DE TYPE QUANTITATIF II (3cr.)
Planification, analyse et interprétation de recherches de type quantitatif dans le cadre des plans expérimentaux et quasi-expérimentaux. Application des procédures d'analyse de la variance, d'analyse de la covariance et de la régression linéaire multiple à des problèmes typiques en éducation. Préalable : EDU 5591 ou l'équivalent.

EDU6593 FONDEMENTS DE LA MESURE ET DE L’ÉVALUATION EN ÉDUCATION (3cr.)
Études des procédures de transformation des scores. Analyse de la nature des tests et différentes catégories d'items. Examen de la théorie classique des tests : fidélité et validité. Étude de scores composites. Applications des notions précédentes dans le contexte d'une évaluation normative et d'une évaluation centrée sur un critère.

EDU6600 FORMATEURS D'ADULTES ET CONTEXTES DE FORMATION (3cr.)

EDU6604 DÉVELOPPEMENT DE L’ADULTE (3cr.)

EDU6634 GESTION DE LA QUALITÉ EN ÉDUCATION (3cr.)
EDU6637 GESTION ET SUPERVISION DES RESSOURCES PROFESSIONNELLES EN ÉDUCATION (3cr.)
Étude des modèles de gestion des ressources humaines dans les systèmes scolaires à partir de paramètres comme les conventions collectives, l'équité, la supervision, l'évaluation du rendement, le développement professionnel.

EDU6641 ÉLABORATION DE PROGRAMMES ET ÉVALUATION EN LANGUE SECONDE (3cr.)
Étude de la conception, de l'élaboration et de la mise en œuvre de programmes. Analyse des besoins, établissement de buts, d'objectifs et de contenus et élaboration de syllabus et de matériel pédagogique. Étude de l'évaluation des apprentissages et de la révision de programmes.

EDU6646 CONTEXTES MAJORITAIRES, MINORITAIRES ET PLURIETHNIQUES DE L'ENSEIGNEMENT ET DE L'APPRENTISSAGE D'UNE LANGUE (3cr.)
Examen des particularités de l'enseignement et de l'apprentissage du français comme langue d'usage et langue seconde milieux pluriethniques, majoritaires et minoritaires au Canada. Analyse des conditions qui favorisent le développement de la langue et de la littérature.

EDU6651 ÉDUCATION À LA CITOYENNETÉ DANS UNE PERSPECTIVE PLANÉTAIRE (3cr.)

EDU6652 LITTÉRATIE ET DIFFÉRENCES (3cr.)
Examen des divers concepts de littératie et de leurs liens avec la construction de l'identité ethnique, raciale, sexuelle et sociale. Étude du processus d'apprentissage continu tel que supporté par la littératie.

EDU6670 COUNSELLING ET ORIENTATION AUPRÈS DES GROUPES MINORITAIRES (3cr.)
Études des caractéristiques des groupes minoritaires tels que les femmes, les gais et les lesbiennes, les handicapés, les minorités linguistiques et (ou) ethniques, etc., selon la perspective du counselling et de l'orientation de carrière.

EDU6671 LE COUNSELLING : THÉORIES ET PRATIQUE II (3cr.)
Théories et techniques portant sur le développement des habiletés, des attitudes et des savoir-faire en counselling. Préalable : EDU 5671.

EDU6672 MODÈLES ET STRATÉGIES D'INTERVENTION EN CONTEXTE DE COUNSELLING SCOLAIRE (3cr.)
Différents modèles d'intervention associés au développement d'habiletés interpersonnelles et sociales des élèves. Stratégies de solution de problèmes, de gestion de classe, de résolution de conflits et de gestion du temps.

EDU6690 MÉTHODOLOGIE DE LA RECHERCHE (3cr.)
Étude des approches, méthodes et étapes de la recherche en éducation. Examen de la complémentarité de divers types de recherche.

EDU6693 ÉVALUATION FORMATIVE DES APPRENTISSAGES SCOLAIRES (3cr.)
Place de l'évaluation formative dans le cycle d'évaluation et d'enseignement. Nature et rôle de l'évaluation formative des apprentissages scolaires. Instrumentation.

EDU6699 ÉVALUATION DE PROGRAMMES : THÉORIE ET PROBLÈMES ACTUELS (3cr.)
Analyse critique des aspects théoriques et techniques des différentes approches en évaluation de programmes. Préalable : EDU 5699 ou PSY 7103 ou PSY 7503 ou CRM 6359 ou CRM 6759 (Certificat en Évaluation de programmes).

EDU6871 STAGE EN COUNSELLING I (3cr.)
Stage clinique supervisé de 200 heures dans un centre offrant des services de counselling éducationnel, personnel et (ou) de carrière. Préalables : EDU 5671, EDU 5871.

EDU6872 SÉMINAIRE ET PRACTICUM EN COUNSELLING DE GROUPE (3cr.)
Application des techniques de groupes à divers milieux d'éducation : la communauté, les institutions et organisations, le milieu scolaire. Dynamique du comportement de groupes. Interactions psychologiques et sociales des groupes restreints et leur application aux milieux d'éducation.

EDU6873 STAGE EN COUNSELLING II (3cr.)
Stage clinique supervisé de 200 heures dans un centre offrant des services de counselling éducationnel, personnel et (ou) de carrière. Approfondissement de la pratique du counselling. Préalable : EDU 6871.

EDU6874 STAGE EN COUNSELLING III (3cr.)
Stage clinique supervisé de 200 heures dans un centre offrant des services de counselling éducationnel, personnel et (ou) de carrière. Consolidation théorique et pratique des apprentissages et des stages en counselling I et II. Utilisation systématique des principaux tests psychométriques requis par les associations et ordres professionnels. Préalable : EDU 6873.

EDU6997 PROPOSITION DE THÈSE DE MAÎTRISE / MASTER'S THESIS PROPOSAL.
ENG7321 CANADIAN LITERATURE II
ENG7302 MODERN LITERATURE III

In keeping with the bilingual character of the University, the program has French language requirement. Students may satisfy this requirement by passing the

Preparation of students for the professional study of English. Introduction to professional concerns and activities: writing and publishing scholarly articles,

Preparation of students for the professional study of English. Review and analysis of the expanding number of electronic and print research tools and methods.

Courses

council's highest rating.

ELG9999 THÈSE DE DOCTORAT / PhD THESIS

Pour les étudiants et les étudiantes d'un programme coopératif de maîtrise qui font leur première session de travail. / For students in a cooperative master's

ELG6359 (ELEC 5509) INTERGRATED CIRCUIT TECHNOLOGY

ELG5107 (EACJ 5001) SEMICONDUCTOR OPTICAL LOGIC

more complex circuits. Noise in analog and sampled analog circuits, including calculation of dynamic range and signal-to-noise ratio.

of nonideal operational amplifier behaviour in filter performance. Basic sampled data concepts, detailed Z transform analysis of switched capacitor filters and

ELG6383 (ELEC 5803) BEHAVIOURAL SYNTHESIS OF ICs

and conditional; power gain of conjugate and mismatched two-port amplifiers. Amplifier gain sensitivity. Stability, inherent and conditional; power gain of

their applications in high-level design and optimization in wired and wireless electronic systems.

Review of electromagnetic and potential theory. Formulation of static and electrodynamic problems. Introduction to numerical and field-theoretical modelling

ELG6176 (SYSC 5706) ANALYTICAL PERFORMANCE MODELS OF COMPUTER SYSTEMS

undergraduate preparation in computer system engineering (or the equivalent).

ELG6176 (SYSC 5706) ANALYTICAL PERFORMANCE MODELS OF COMPUTER SYSTEMS

Special topic in ELG 7178 (EACJ 5606).

ELG5170 (EACJ 5501) INFORMATION THEORY

SPMC, delta modulation, speech compression by parameter extraction; predictive encoding; image coding by transformation and block quantization. Fourier

ELG5119 (EACJ 5109) STOCHASTIC PROCESSES

COMP 5001 or permission from the Department.

EDU9997 PROPOSITION DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL

Thèmes variables choisis pour une étude approfondie.

EDU7501 THÈMES CHOISIS EN ENSEIGNEMENT AUX PROFESSIONNELS DE LA SANTÉ (3cr.)
Études critiques de thèmes choisis et les implications dans l'éducation aux professionnels de la santé (réservé aux étudiants du Ph.D ; ouvert aux étudiantes et étudiants du M. Ed. et du M.A. avec la permission du directeur de programme.)

EDU7509 TENDANCES EN SOCIÉTÉ, CULTURE ET LITTÉRATIES (3cr.)
Études des cadres conceptuels et théoriques ainsi que des pratiques inspirées de la recherche dans ces domaines.

EDU7531 SÉMINAIRE SUR LES RECHERCHES EN ADMINISTRATION ÉDUCATIONNELLE (3cr.)

EDU7534 THÈMES CHOISIS : ADMINISTRATION, CURRICULUM ET FONDEMENTS (3cr.)
Thèmes variés choisis pour une étude approfondie.

EDU7541 RECHERCHES EN ENSEIGNEMENT ET APPRENTISSAGE DES LANGUES SECONDES (3cr.)
Examen de recherches courantes effectuées en fonction de divers cadres conceptuels sur l'apprentissage et l'enseignement des langues secondes.

EDU7550 SÉMINAIRE EN ENSEIGNEMENT ET APPRENTISSAGE (3cr.)
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EDU8507 SÉMINAIRE EN COUNSELLING ET SUPERVISION (3cr.)
Étude critique des approches théoriques en counselling et supervision; implications pour les pratiques de counselling et de supervision.

EDU8510 THÉMES CHOISIS EN SOCIÉTÉ, CULTURE ET LITTÉRATIES (3cr.)
Thèmes variés choisis pour une étude approfondie.

EDU8590 RECHERCHE QUALITATIVE II (3cr.)
Examen des questions méthodologiques, organisationnelles, déontologiques et politiques reliées à la recherche qualitative.

EDU8647 THÉMES CHOISIS EN ENSEIGNEMENT ET APPRENTISSAGE DES LANGUES SECONDES (3cr.)
Thèmes variés choisis pour une étude approfondie.

EDU8653 PROCESSUS COGNITIFS DANS DIVERS CONTEXTES ÉDUCATIFS (3cr.)
Analyse de processus cognitifs essentiels à partir de diverses perspectives théoriques; mise en application de théories d'apprentissage dans divers contextes.

EDU8696 SÉMINAIRE EN MESURE ET ÉVALUATION (3cr.)

EDU8908 INTERNAT EN COUNSELLING ET EN SUPERVISION / INTERNSHIP IN COUNSELLING AND SUPERVISION
Internat de 600 heures en counselling et en supervision dans un centre approuvé par la direction du programme; développement des compétences en supervision et application des normes éthiques relatives à la pratique et à la supervision en counselling. Noté S (satisfaisant) / NS (non satisfaisant). / Internship of 600 hours of counselling and counsellor supervision in approved settings; development of advanced counselling and supervisory competence; application of ethical principles to counselling and supervisory practice. Graded S (Satisfactory) / NS (Not satisfactory).

EDU9997 PROPOSITION DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL

EDU9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / PhD COMPREHENSIVE EXAMINATION

EDU9999 THÈSE DE DOCTORAT / PhD THESIS

**Electrical and Computer Engineering (PhD)**

**Ottawa-Carleton Joint Program**

Established in 1983, Ottawa-Carleton Institute for Electrical and Computer Engineering (OCIECE) combines the research strengths of the School of Information Technology and Engineering (SITE) at the University of Ottawa and the departments of Electronics and of Systems and Computer Engineering at Carleton University.

The Institute offers graduate programs leading to the degrees of Master of Applied Science (MASc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Electrical and Computer Engineering.

Members of the Institute are involved in ten main research fields: computer communications, multimedia and distributed systems; computer-aided design for electronic circuits; computer and software engineering; digital and wireless communications; microwave and electromagnetics; signal, speech and image processing; integrated circuits and devices; systems and machine intelligence; photonics systems; and, biomedical engineering. Further information is posted on the departmental websites.

Most of the courses in the graduate programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

**Admission**

Admission to the graduate program in Electrical and Computer Engineering is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:
1. Hold a master’s degree in computer and electrical engineering or in a related discipline with a minimum average of 80% (A-);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The Department may require students to take additional courses depending on their backgrounds.

**Transfer from master’s to PhD program**

Students enrolled in the MASc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Completion of all graduate courses with a minimum average of A- (80%);
2. Satisfactory progress in the research program;
3. Written recommendation by the supervisor and by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master's. Following the transfer, all of the requirements of the doctoral program must be met.

**Program Requirements**

**PhD Degree Requirements**

The requirements of this program are as follows:

1. Successful completion of a minimum of 9 course credits;
2. Successful completion of a thesis proposal (ELG9997) and a comprehensive examination (ELG9998);
3. Presentation and defense of a thesis (ELG9999) based on original research carried out under the direct supervision of a research faculty member in the Department.

**Residence**

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

**Minimum Standards**

The passing grade in all courses is 70% (B). Students who fail 6 credits, the thesis proposal, the comprehensive exam, the thesis, or whose progress is deemed unsatisfactory must withdraw from the program.

**Duration of the program**

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

**Courses**

Quel que soit le programme, avec l'approbation du directeur ou de la directrice de recherche, de la personne chargée de la coordination du programme ou du Comité consultatif, on peut choisir des cours du programme des études supérieures de l'une ou l'autre université. Les cours de niveau supérieur sont numérotés ci-dessous et sont regroupés par domaines. Les descriptions de cours figurent dans les sections relatives aux départements concernés dans les annuaires appropriés.

Tous les cours durent une session. Pour identifier le département qui offre les cours, il suffit de se référer aux préfixes selon le code donné ci-dessous.
In all programs, the student may choose graduate courses from either university with the approval of the adviser/graduate program co-ordinator or Advisory Committee. The available graduate courses are listed below, grouped by subject area. Course descriptions are to be found in the departmental section of the calendar concerned. All courses are of one session duration.

The Department offering the course is identified by the prefix of the number assigned to the course as follows:

**UNIVERSITÉ D'OTTAWA / UNIVERSITY OF OTTAWA:**

ELG / EACJ ÉITI (École d'ingénierie et de technologie de l'information)

SITE (School of Information Technoogy and Engineering)

**CARLETON UNIVERSITY:**

SYSC Department of Systems and Computer Engineering

ELEC Department of Electronics

Les cours énumérés ne sont pas offerts chaque année. Tous les cours durent une session et ont une valeur de trois crédits à l'Université d'Ottawa (0,5 crédit à Carleton University).

Only a selection of courses listed is given in a particular academic year. All courses extend over one session and are worth three credits at the University of Ottawa (0.5 credit at Carleton University).

**Génie informatique, génie logiciel / Computer & Software Engineering**

- **ELG5100 (EACJ 5200) SOFTWARE ENGINEERING PROJECT MANAGEMENT (3cr.)**
  Software system engineering and organization methods; work breakdown structure and task determination; effort, duration and cost estimation; scheduling and planning. Monitoring and control; analysis of options; management of risks, change, and expectations. Process and product metrics, post-performance analysis, process improvement and maturity. Management of Agile Programming methodologies such as Extreme Programming. Case studies.

- **ELG5124 (EACJ 5204) VIRTUAL ENVIRONMENTS (3cr.)**

- **ELG5125 (EACJ 5205) QUALITY OF SERVICE MANAGEMENT FOR MULTIMEDIA APPLICATIONS (3cr.)**
  Design principles: layering, protocols, interface; models for open distributed processing; real-time requirement; request-response and stream processing, real-time scheduling, design for performance and scalability; other quality of services issues; user perspective versus system performance parameters, cost/performance trade-off, negotiations; adaptive and mobile applications; examples of multimedia applications and protocols. **Prerequisite: ELG 5374 (EACJ 5607) or SYSC 5201 (ELG 6121) or equivalent.**

- **ELG5191 (EACJ 5203) DESIGN OF DISTRIBUTED SYSTEM SOFTWARE (3cr.)**
  Distributed systems design and programming issues; distributed computing. Basics of object oriented technology for distributed computing. Distributed objects technologies. Object oriented models for distributed programming. Distributed computing architecture design. Component based distributed software design. Scalability, interoperability, portability and distributed services. Distributed applications design. **Prerequisites: an undergraduate degree in Computer Engineering, or Computer Science, or practical experience in system software design.**

- **ELG5194 (EACJ 5703) DESIGN AND TESTING OF RELIABLE DIGITAL SYSTEMS (3cr.)**

- **ELG5195 (EACJ 5705) DIGITAL LOGIC DESIGN: PRINCIPLES AND PRACTICES (3cr.)**

- **ELG5197 (EACJ 5102) INTRODUCTION TO EMBEDDED SYSTEMS (3cr.)**
  Embedded systems' general characteristics, niche, and design alternatives. Simple embedded systems: sequential event response systems and cyclic executives. Prototype based designs, multitasking and multiaactivity paradigms. Multitasking system design: elements of real-time operating systems and harmony. Multiaactivity system design: process activity language (PAL) and PAL-based design tools. **Prerequisite: ELG 4161 or the equivalent.**
ELG5198 (EACJ 5103) PARALLEL PROCESSING WITH VLSI (3cr.)

ELG5199 (EACJ 5104) DESIGN OF MULTIMEDIA DISTRIBUTED DATABASE SYSTEMS (3cr.)
Database concepts and architectures. Data modelling. Relational technology and distributed databases. Examples of the new generation of databases for advanced multimedia applications such as multimedia information retrieval, VOD and the limitations of the conventional models for managing multimedia information (graphics, text, image, audio and video).

ELG6103 (SYSC 5003) DISCRETE STOCHASTIC MODELS (3cr.)

ELG6106 (SYSC 5006) DESIGN OF REAL-TIME AND DISTRIBUTED SYSTEMS (3cr.)
Characteristics of real-time and distributed systems. Modern middleware systems, such as CORBA, DCE, RMI for building distributed applications: advantages and disadvantages. Analyzing designs for robustness, modularity, extensibility, portability and performance. Implementation issues. Major course project. Prerequisites: Engineering SYSC 3303 and SYSC 5708 or similar experience.

ELG6111 (SYSC 5101) DESIGN OF HIGH-PERFORMANCE SOFTWARE (3cr.)
Designing software to demanding performance specifications. Design analysis using models of computation, workload, and performance. Principles to govern design improvement for sequential, concurrent and parallel execution, based on resource architecture and quantitative analysis. Prerequisites: Engineering SYSC 3704 and a course in software engineering; or the equivalent.

ELG6112 (SYSC 5102) PERFORMANCE MEASUREMENT AND MODELLING OF DISTRIBUTED APPLICATIONS (3cr.)
Performance measurements, metrics and models of middleware based systems and applications. Benchmarks, workload characterization, and methods for capacity planning and system sizing. Performance monitoring infrastructures for operating systems and applications. Introduction to the design and analysis of experiments and the interpretation of measurements. Prerequisites: SYSC 5101 or the equivalent.

ELG6114 (SYSC 5104) METHODOLOGIES FOR DISCRETE-EVENT MODELLING AND SIMULATION (3cr.)

ELG6118 (SYSC 5108) TOPICS IN INFORMATION SYSTEMS (3cr.)
Recent and advanced topics in the field of Information Systems and its related areas.

ELG6130 (SYSC 5402) HEALTH CARE ENGINEERING (3cr.)
Overview of health care system/participants; biophysical measurements for diagnosis/monitoring; biomedical sensors/technology; telemedicine and applications; safety considerations; managing medical technologies/funding models for clinical engineering departments; considerations for developing countries. Precludes additional credit for ELG 5123. Prerequisite: permission of the program director.

ELG6131 (EACJ 5127 / SYSC 5301) ADVANCED TOPICS IN BIOMEDICAL ENGINEERING (3cr.)
Topics vary from year to year. Prerequisite: Permission of the Institute.

ELG6158 (SYSC 5508) DIGITAL SYSTEMS ARCHITECTURE (3cr.)
New architectural concepts are introduced. Discussion of programmable architectures (micro-controllers, DSPs, GP) and FPGAs. Memory interfacing. Scalable, superscalar, RISC, CISC, and VLIW concepts. Parallel structures: SIMD, MIND, and MIMD. Fault tolerant systems and DSP architectures. Examples of current systems are used for discussions. Prerequisite: SYSC 4507 or the equivalent.

ELG6171 (SYSC 5701) OPERATING SYSTEM METHODS FOR REAL-TIME APPLICATIONS (3cr.)
Principles and methods for operating system design with application to real-time, embedded systems. Concurrent programming: mechanisms and languages; design approaches and issues; run-time support (kernel). Methods for hard real-time applications. Methods for distributed systems; I/O handling. Prerequisites: Engineering SYSC 3303 or SYSC 5704 or equivalent and/or experience. Programming experience in high level and assembly languages.

ELG6173 (SYSC 5703) INTEGRATED DATABASE SYSTEMS
Database definitions, applications, and architectures. Conceptual design based on the entity-relationship and object-oriented models. Relational data model: relational algebra and calculus, normal forms, data definition and manipulation languages. Database management systems: transaction management, recovery and concurrency control. Current trends: object-oriented, knowledge-based, multimedia and distributed databases. Prerequisite: SYSC 5704 (ELG 6174) or the equivalent.
ELG6174 (SYSC 5704) ELEMENTS OF COMPUTER SYSTEMS (3cr.)
Concepts in basic computer architecture, assembly languages, high level languages including object orientation, compilers and operating system concepts (including concurrency mechanisms such as processes and threads and computer communication). Designed for graduate students without extensive undergraduate preparation in computer system engineering (or the equivalent experience).

ELG6176 (SYSC 5706) ANALYTICAL PERFORMANCE MODELS OF COMPUTER SYSTEMS (3cr.)
Analytical modelling techniques for performance analysis of computing systems. Theoretical techniques covered include single and multiple class queueing network models, together with a treatment of computational techniques, approximations, and limitations. Applications include scheduling, memory management, peripheral devices, databases, multiprocessing, and distributed computing. Prerequisites: one of SYSC 5003, SYSC 5503, or ELG 5119, or the equivalent.

ELG6178 (SYSC 5708) DEVELOPMENT OF REAL-TIME AND DISTRIBUTED SOFTWARE WITH REUSABLE COMPONENTS (3cr.)
Advanced object-oriented design and programming of real-time and distributed systems using C++ and/or Java. Object-oriented features; inheritance, polymorphism, templates, exception handling. Concurrency issues. Design patterns and frameworks for distributed systems, with examples from communication applications. Design issues for reusable software. Prerequisites: Knowledge of C++ and/or Java, of operating system concepts, and permission of the Department.

ELG6179 (SYSC 5709) ADVANCED TOPICS IN SOFTWARE ENGINEERING (3cr.)

ELG6186 (SYSC 5806) OBJECT ORIENTED DESIGN OF REAL-TIME AND DISTRIBUTED SYSTEMS (3cr.)
Advanced course in software design dealing with design issues at a high level of abstraction. Design models: use case maps for high-level behaviour description; UML for traditional object-oriented concerns. Design patterns. Forward, reverse, and re-engineering. Substantial course project on applications chosen by students. Prerequisite: Permission of the Department.

ELG6187 (SYSC 5807) ADVANCED TOPICS IN COMPUTER SYSTEMS (3cr.)

ELG7186 (EACJ 5807) TOPICS IN COMPUTERS I: FORMAL METHODS FOR THE DEVELOPMENT OF REAL-TIME SYSTEM APPLICATIONS (3cr.)

ELG7187 (EACJ 5807) TOPICS IN COMPUTERS II (3cr.)

ELG7573 (EACJ 5900) SUJETS CHOISIS SUR LES ORDINATEURS (3cr.)

Systèmes et intelligence machine / Systems and Machine Intelligence

ELG5113 (EACJ 5106) STOCHASTIC SYSTEMS (3cr.)

ELG5123 (EACJ 5303) HEALTH CARE ENGINEERING (3cr.)
Overview of health care system/participants: biophysical measurements for diagnosis/monitoring; biomedical sensors/technology; telemedicine and applications; safety considerations; managing medical technologies/funding models for clinical engineering departments; considerations for developing countries. Precludes credits for ELG6130. Prerequisites: Permission of the Department.

ELG5161 (EACJ 5207) ROBOTICS: CONTROL, SENSING AND INTELLIGENCE (3cr.)

ELG5162 (EACJ 5005) KNOWLEDGE-BASED SYSTEMS: PRINCIPLES AND DESIGN (3cr.)

ELG5163 (EACJ 5105) MACHINE VISION (3cr.)

ELG5196 (EACJ 5709) AUTOMATA AND NEURAL NETWORKS (3cr.)
ELG6101 (SYSC 5001) SIMULATION AND MODELLING

ELG6104 (SYSC 5004) OPTIMIZATION FOR ENGINEERING APPLICATIONS (3cr.)
Introduction to algorithms and computer methods for optimizing complex engineering systems. Includes linear programming, networks, nonlinear programming, integer and mixed-integer programming, genetic algorithms and search methods, and dynamic programming. Emphasizes practical algorithms and computer methods for engineering applications.

ELG6105 (SYSC 5005) OPTIMIZATION THEORY AND METHODS

ELG6107 (SYSC/COMP 5007) EXPERT SYSTEMS
Survey of some landmark expert systems; types of architecture and knowledge representation; inferencing techniques; approximate reasoning; truth maintenance; explanation facilities; knowledge acquisition. A project to implement a small expert system will be assigned. Prerequisite: COMP 4007 or COMP 5001 or permission from the Department.

ELG6141 (SYSC 5401) ADAPTIVE CONTROL (3cr.)

ELG6142 (SYSC 5402) ADVANCED DYNAMICS WITH APPLICATIONS TO ROBOTICS (3cr.)

ELG6152 (SYSC 5502) ADVANCED LINEAR SYSTEMS (3cr.)

ELG6182 (SYSC 5802) INTRODUCTION TO INFORMATION AND SYSTEMS SCIENCE (3cr.)
An introduction to the process of applying computers in problem solving. Emphasis is placed on the design and analysis of efficient computer algorithms for large, complex problems. Applications in a number of areas are presented: data manipulation, databases, computer networks, queueing systems, optimization.

ELG6183 (SYSC 5803) LOGIC PROGRAMMING (3cr.)
Review of relational databases, first order predicate calculus, semantics of first order models, deductive querying. Proof theory, unification and resolution strategies. Introduction to Prolog, and/or parallelism and Concurrent Prolog. Applications in knowledge representation and rule based expert systems.

ELG7113 (EACJ 5209) TOPICS IN SYSTEMS AND CONTROL I (3cr.)
Current topics in the field, including linear semigroup theory and optimal feedback control.

ELG7114 (EACJ 5300) TOPICS IN SYSTEMS AND CONTROL II (3cr.)
Current topics in the field, including linear and nonlinear filtering and optimal control of stochastic systems.

ELG7574 (EACJ 5301) SUJETS CHOISIS EN SYSTÈMES ET RÉGLAGE AUTOMATIQUE (3cr.)
Sujets d'intérêt courant dans le domaine.

Communications numériques et optiques / Digital and Optical Communications

ELG5103 OPTICAL COMMUNICATIONS SYSTEMS (3cr.)
Optical communication system concepts and basic characteristics. Optical Transmitters. Optical detection. Optical noise sources and their mathematical models. Non-coherent (direct) detection: system model, direct detection of intensity modulation, application of photo-multiplication, optimal post-detection processing, and subcarrier systems. Coherent detection: heterodyne receivers, the field matching problem and receiver performance. Optical binary digital system, single-mode binary and heterodyne binary systems. Block coded digital optical communication systems: PPM, PAM, PSK, and FSK signalling. Integration of device technology and system architecture. Selected topics in optical communications and networking. Prerequisites: ELG 5119, and ELG 5375 or the equivalents.
ELG5106 (EACJ 5003) FOURIER OPTICS (3cr.)

ELG5119 (EACJ 5109) STOCHASTIC PROCESSES (3cr.)

ELG5126 (EACJ 5206) SOURCE CODING AND DATA COMPRESSION (3cr.)
Discrete and continuous sources. Discrete sources: Huffman coding and run-length encoding. Continuous sources: waveform construction coding: PCM, SPM, delta modulation, speech compression by parameter extraction; predictive encoding; image coding by transformation and block quantization. Fourier and Walsh transform coding. Applications to speech, television, facsimile. Prerequisite: SYSC 5503 (ELG 6153) or ELG 5119 (EACJ 5109) or equivalent. Precludes credit for ELG 6167.

ELG5131 (EACJ5131) GRAPhICAL MOdELS (3cr.)
Bayesian networks, factor graphs, Markov random fields, maximum a posteriori probability (MAP) and maximum likelihood (ML) principles, elimination algorithm, sum-product code, decomposable and non-decomposable models, junction tree algorithm, completely observed models, iterative proportional fitting algorithm, expectation-maximization (EM) algorithm, iterative conditional modes algorithm, variational methods, applications. Precludes credit for ELG 7177C (EACJ 5605C) Prerequisite: Permission of the Institute.

ELG5132 (EACJ5132) SMART ANTEnNAS (3cr.)

ELG5133 (EACJ5133) INTRODUCTION TO MOBILE COMMUNICATIONS (3cr.)
Introduction to mobile and cellular systems. Radio channel characterization: signal strength prediction techniques and coverage; indoor/outdoor models; fading; delay spread; interference models and outage probabilities. Digital modulation and transmission system performance. Signal processing techniques, diversity and beamforming. Multiple-input multiple-output (MIMO) systems. New directions and recent results. Precludes additional credit for ELG 7178A (EACJ 5606A) Prerequisites: ELG 5119 (EACJ 5109) and ELG 5375 (EACJ 5506), or equivalent.

ELG5170 (EACJ 5501) INFORMATION THEORY (3cr.)
Measure of information: entropy, relative entropy, mutual information, asymptotic equipartition property, entropy rates for stochastic processes; Data compression: Huffman code, arithmetic coding; Channel capacity: random coding bound, reliability function, Blahut-Arimoto algorithm, Gaussian channels, colored Gaussian noise and “water-filling”; Rate distortion theory; Network information theory. Prerequisite: ELG 5119 (EACJ 5109) or SYSC 5503 (ELG 5119) or the equivalent.

ELG5179 (EACJ 5503) DETECTION AND ESTIMATION (3cr.)

ELG5180 (EACJ 5704) ADVANCED DIGITAL COMMUNICATIONS (3cr.)
Techniques and performance of digital signalling and equalization over linear bandlimited channels with additive Gaussian noise. Fading multipath channels: diversity concepts, modelling and error probability performance evaluation. Synchronization in digital communications. Spread spectrum in digital transmission over multipath fading channels. Precludes additional credit for SYSC 5605. Prerequisite: SYSC 5504 or ELG 5375 or the equivalent.

ELG5360 (EACJ5360) DIGITAL WATERMARKING (3cr.)
Overview of recent advances in watermarking of image, video, audio, and other media. Spatial, spectral, and temporal watermarking algorithms. Perceptual models. Use of cryptography in steganography and watermarking. Robustness, security, imperceptibility, and capacity of watermarking. Content authentication, copy control, intellectual property, and other applications. Prerequisite: ELG 4172 or CEG 4311 or equivalent.

ELG5369 (EACJ5369) INTERNETWORKING TECHNOLOGIES (3cr.)
IP Based Internet Technologies: Internet architecture and its protocols. Software/hardware requirements for quality of service (QoS), Integrated services. Scheduling. Fair queuing. Traffic and admission control algorithms. Differentiated services. Multiprotocol label switching (MPLS) and associated software/hardware design issues. Fast internet protocol (IP), asynchronous transfer mode (ATM), internet protocol (IP) over synchronous optical network (SONET), wavelength division multiplexing (WDM), satellite implementations. Precludes additional credit for ELG 7187B (EACJ 5808B) Prerequisite: CEG/ELG 4183.
ELG5371 (EACJ 5500) DIGITAL COMMUNICATION BY SATELLITE (3cr.)
Propagation and interference considerations. Link budget calculations. GEO, LEO, HEO systems. Transponders. Earth stations; modems (PSK, MSK, etc.),
low noise amplifiers, high power amplifiers. Error control. Access techniques; FDMA, TDMA, CDMA, random access. Switching, onboard processing.
Networking. ATM over satellites. Mobile satellite communications and IMT2000. Prerequisite: ELG 4171 or the equivalent.

ELG5372 (EACJ 5504) ERROR CONTROL CODING (3cr.)
decoding, and sequential decoding of convolutional codes. Burst-error correcting convolutional and block codes. Automatic repeat request. Trellis Coded
Modulation. Turbo codes and iterative decoding. Co-requisite: ELG 4171 or equivalent.

ELG5373 (EACJ 5105) DATA ENCRYPTION (3cr.)
Secure communications: encryption and decryption. Entropy, equivocation and unicity distance. Cryptanalysis and computational complexity. Substitution,
transposition and product ciphers. Data Encryption Standard (DES): block and stream cipher modes. Modular arithmetics. Public key cryptosystems: RSA,

ELG5375 (EACJ 5506) PRINCIPLES OF DIGITAL COMMUNICATION (3cr.)
Elements of communication theory and information theory applied to digital communications systems. Characterization of noise and channel models. Analysis of
digital data transmission techniques for additive Gaussian noise channels. Efficient modulation and coding for reliable transmission. Spread spectrum and line
coding techniques. Prerequisite: ELG 5119 or SYSC 5503, or the equivalent (may be taken concurrently).

ELG5380 (EACJ 5002) ADVANCED CHANNEL CODING (3cr.)
Channel coding theorem, channel capacity and cutoff rate. Trellis coded modulation; Multilevel codes. Spacetime coding. Product codes. Generalized code
concatenation. Turbo codes and iterative decoding techniques, interleavers for turbo codes, Turbo Trellis coded modulation. Low density parity check codes
Performance analysis of iteratively decoded codes. Prerequisites: ELG 5372 (SYSC 5504) or ELG 5375 (SYSC 5506).

ELG6110 (SYSC 5506) INFORMATION THEORY (3cr.)
Measure of information: entropy, relative entropy, mutual information, asymptotic equipartition property, entropy rates for stochastic processes; Data
compression: Huffman code, arithmetic coding; Channel capacity: random coding bound, reliability function, Blahut-Arimoto algorithm, Gaussian channels,
coloured Gaussian noise and "water-filling"; Rate distortion theory; Network information theory. Prerequisite: SYSC 5303 (ELG 6153) or ELG 5119 (ISYS
5109) or equivalent. Precludes credit for EACJ 5501 (ELG 5170).

ELG6120 (SYSC 5200) ALGEBRAIC CODING THEORY (3cr.)
Review of Algebra, Finite Fields, Linear Block Codes and their Properties, Hamming Codes, Cyclic codes; Hadamard Matrices and Hadamard Codes, Golay
Codes, Reed-Muller Codes, BCH and Reed-Solomon Codes, Decoding Algorithms, Coding Bounds. Precludes additional credit for SYSC 5507 (ELG
6157).

ELG6143 (SYSC 5403) NETWORK ACCESS TECHNIQUES (3cr.)
A range of access technologies with emphasis on broadband access. Physical channels and the state-of-the-art of coding, modulation, multiplexing strategies to
overcome physical impairments, including high-speed transmission over twisted pair, wireless, fibre and co-axial media. Prerequisites: ELG 6153 (SYSC
5503) and ELG 5375 (SYSC 5504).

ELG6153 (SYSC 5503) STOCHASTIC PROCESSES (3cr.)
Basic concepts of randomness, as applied to communications, signal processing, and queueing systems; probability theory, random variables, stochastic
processes; random signals in linear systems; introduction to decision and estimation; Markov chains and elements of queueing theory. Exclusion: ELG 5119.

ELG6154 (SYSC 5504) PRINCIPLES OF DIGITAL COMMUNICATION (3cr.)
Elements of communication theory and information theory applied to digital communications systems. Characterization of noise and channel models. Optimum
Receiver Theory. Modulation and coding for reliable transmission: MPSK, MQAM, M-ary orthogonal modulation. Channel coding, trellis coded modulation,
Spread spectrum and CDMA communications. Precludes additional credit for EACJ 5506 (ELG 5375). Prerequisite: SYSC 5503 or ELG 5119 or the
equivalent (may be taken concurrently).

ELG6165 (SYSC 5605) ADVANCED DIGITAL COMMUNICATIONS (3cr.)
Techniques and performance of digital signalling and equalization over linear bandlimited channels with additive Gaussian noise. Fading multipath channels:
diversity concepts, modelling and error probability performance evaluation. Synchronization in digital communications. Spread spectrum in digital transmission
over multipath fading channels. Precludes additional credit for EACJ 5704 (ELG 5780). Prerequisite: SYSC 5504 (ELG 6154).

ELG6166 (SYSC 5606) INTRODUCTION TO MOBILE COMMUNICATIONS (3cr.)
Mobile radio channel characterization: signal strength prediction techniques and statistical coverage; fading; delay spread; interference models and outage
Applications to TDMA and CDMA cellular systems. Co-requisite: Can be taken concurrently with SYSC 5503 and SYSC 5504.

ELG6167 (SYSC 5607) SOURCE CODING AND DATA COMPRESSION (3cr.)
Discrete and continuous sources. Discrete sources: Huffman coding and run length encoding. Continuous sources: waveform construction coding; PCM,
DPCM, delta modulation; speech compression by parameter extraction; predictive encoding; image coding by transformation and block quantization. Fourier
and Walsh transform coding. Applications to speech, television, facsimile. Prerequisite: SYSC 5503 or ELG 5119 or the equivalent.

ELG6168 (SYSC 5608) WIRELESS COMMUNICATIONS SYSTEMS ENGINEERING (3cr.)
Multituser cellular and personal radio communication systems; frequency reuse, traffic engineering, system capacity, mobility and channel resource allocation.
Multiple access principles, cellular radio systems, signalling and interworking. Security and authentication. Wireless ATM, satellite systems, mobile location,
wireless LANs, wireless local loops, broadband wireless etc. Corequisites: SYSC 5503 or ELG 5119, and SYSC 5504 or ELG 5375, or their equivalents.

ELG6169 (SYSC 5609) DIGITAL TELEVISION (3cr.)
Television standards: NTSC, PAL, SECAM, and HDTV. Sampling and quantization of television signals: rec 601-1. Digital video compression: inter and intra-
frame methods, spatial and transform/variable coding; H.261 and MPEG standards. Video conferencing systems and other digital video processing applications.

ELG6170 (SYSC 5700) SPREAD SPECTRUM SYSTEMS (3cr.)
Types of spread spectrum systems, FH and DS-SS, TH-SS using radio. Hybrid DS/FH-SS. Pseudo-noise generators: statistical properties of M sequences,
Galois field connections, Gold codes. OVSF codes. Code tracking loops, initial synchronization of receiver spreading code. Performance in interference
environments and fading channels. CDMA systems. SS applications in UWB communications and Imaging systems. Prerequisite: ELG 6154 (SYSC 5504) or
the equivalent.

ELG6184 (SYSC 5804) ADVANCED TOPICS IN COMMUNICATIONS SYSTEMS (3cr.)

ELG6365 (ELEC 5605) OPTICAL FIBRE COMMUNICATIONS (3cr.)
Transmission characteristics of and design considerations for multi-mode and single-mode optical fibre waveguides; materials, structures, and device properties
of laser light sources; properties and performance of p-i-n and avalanche photodiodes; types of optical fibre signal formats, preamplifier topologies and noise,
receiver sensitivity, transmitter design; link design for digital systems.

ELG6366 (ELEC 5606) PHASE-LOCKED LOOPS AND RECEIVER SYNCHRONIZERS (3cr.)
Phase-locked loops: components, fundamentals, stability, transient response, sinusoidal operation, noise performance, tracking, acquisition and optimization.
Receiver synchronizers: carrier synchronizers including squaring loop, Costas loop, and remodulator for BPSK, QPSK BER performance; clock synchronizers
including early late gate, inphase/midphase, and delay line multipliers; direct sequence spread spectrum code synchronizers including single dwell and multiple
dwell serial PN acquisition, matched filter PN acquisition, delay locked loop and Tau-Dither loop PN tracking; frequency hopped spread spectrum time and
frequency synchronization.

ELG7572 (EACJ 5702) SUJETS CHOISIS EN TÉLÉCOMMUNICATIONS ET EN TRAITEMENT DE SIGNAUX (3cr.)

Traitement des signaux, de la parole et des images / Signal, Speech and Image Processing
ELG5127 (EACJ 5304) MEDICAL IMAGE PROCESSING (3cr.)
Mathematical models of image formation based on the image modality and tissue properties. Linear models of image degradation and reconstruction. Inverse
problems and regularization for image reconstruction. Image formation in Radiology, Computed Tomography, Magnetic Resonance Imaging, Nuclear Medicine,
Ultrasound, Positron Emission Tomography, Electrical Impedance Tomography. Also offered as SYSC 5304. Precludes additional credit for EACJ 5601 (ELG
7173) if EACJ 5601 was taken as this topic. Prerequisites: ELG 4172, CEG 4311, SYSC 4405 or permission of the Institute.

ELG5370 (EACJ 5370) MULTITRACK SIGNAL DECOMPOSITION: ANALYSIS AND APPLICATIONS (3cr.)
Multirate signal processing: sampling rate conversion, polyphase representation. Bases, filter banks: series expansion of discrete-time signals, series expansion of
continuous-time signals, multiresolution concept and analysis, construction of wavelet, wavelet series. Complexity of multirate discrete-time processing, filter
banks, and wavelet series computation. Prerequisite: a basic course in Digital Signal Processing such as ELG 5376 or ELG 4172.

ELG5376 (EACJ 5507) DIGITAL SIGNAL PROCESSING (3cr.)
Review of discrete time signals and systems, A/D and D/A conversions, representation in time, frequency, and Z domain, DFT/FFT transforms, FIR/IIR filter
design, quantization effects. Correlation functions. Cepstrum analysis. Multi-rate signal processing. Power spectrum estimation. Introduction to joint time-
frequency analysis. DSP architecture: implementation approaches. Applications. Precludes additional credit for Engineering SYSC 5602 (ELG 6162).

ELG5377 (EACJ 5800) ADAPTIVE SIGNAL PROCESSING (3cr.)
Theory and techniques of adaptive filtering, including Wiener filters, gradient and LMS methods; adaptive transversal and lattice filters; recursive and fast
recursive least squares; convergence and tracking performance; implementation. Applications, such as adaptive prediction; channel equalization; echo
cancellation; source coding; antenna beamforming; spectral estimation. Precludes additional credit for Engineering ELG 6160. Prerequisite: SYSC 5003 or
ELG 5119, or the equivalent; SYSC 5602 or ELG 5376 or the equivalent.

ELG5378 (EACJ 5509) IMAGE PROCESSING AND IMAGE COMMUNICATIONS (3cr.)
Image acquisition, display and perception: sampling and reconstruction, quantization, human vision. Discrete image representations: color spaces, block,
subband and wavelet representations. Image transformations, enhancement and restoration. Image analysis: edge detection, motion estimation. Image and video
compression: lossless coding, predictive and transform coding, motion compensation. Prerequisite: ELG 5376 or SYSC 5602, or the equivalent.
ELG5385 (EACJ5385) MATRIX METHODS AND ALGORITHMS FOR SIGNAL PROCESSING (3cr.)
Representation and approximation in vector spaces, matrix factorization, pseudoinverses, application of eigen decomposition methods, Singular Values Decomposition, least squares problems, applications of special matrices, iterative algorithms, expectation maximization algorithm.

ELG5776 (EACJ 5508) TRAITEMENT NUMÉRIQUE DES SIGNAUX (3cr.)

ELG6160 (SYSC 5600) ADAPTIVE SIGNAL PROCESSING (3cr.)
Theory and techniques of adaptive filtering, including Wiener filters, gradient and LMS methods; adaptive transversal and lattice filters; recursive and fast recursive least squares; convergence and tracking performance; implementation. Applications, such as adaptive prediction; channel equalization; echo cancellation; source coding; antenna beamforming, spectral estimation. Prerequisites: SYSC 5503 or ELG 5119, or equivalent; SYSC 5602 or ELG 5376 or equivalent.

ELG6161 (SYSC 5601) NEURAL SIGNAL PROCESSING (3cr.)

ELG6162 (SYSC 5602) DIGITAL SIGNAL PROCESSING (3cr.)

ELG6163 (SYSC 5603) DIGITAL SIGNAL PROCESSING: MICROPROCESSORS, SOFTWARE AND APPLICATIONS (3cr.)
Characteristics of DSP algorithms and architectural features of current DSP chips: TMS320, DSP-56xxx, AD-21xx and SHARC. DSP multiprocessors and fault tolerant systems. Algorithms/software/hardware architecture interaction, program activity analysis, development cycle, and design tools. Case studies: LPC, codecs, FFT, echo cancellation, Viterbi decoding. Prerequisite: SYSC 5602 or ELG 5376 or the equivalent.

ELG6164 (SYSC 5604) ADVANCED TOPICS IN DIGITAL SIGNAL PROCESSING: SPEECH COMMUNICATIONS AND APPLICATIONS (3cr.)
Prerequisites: SYSC 5602 or ELG 5376, or the equivalent, and permission of the Department.

ELG6321 (EACJ 5302 / SYSC 5302) PRINCIPLES AND DESIGN OF ADVANCED BIOMEDICAL INSTRUMENTATION (3cr.)
Principles of physiological measurements and related instrumentation with particular applications to cardiology, lung function, cerebral and muscle signals, surgery and anaesthesiology, ultrasound measurements, and critical care for infants. Prerequisite: Permission of the Institute.

ELG7172 (EACJ 5600) TOPICS IN SIGNAL PROCESSING I (3cr.)

ELG7173 (EACJ 5601) TOPICS IN SIGNAL PROCESSING II (3cr.)

ELG7179 (EACJ 5603) TOPICS IN SIGNAL PROCESSING III (3cr.)

Réseau de communications informatiques, systèmes répartis et RNIS à large bande / Computer Communication Networks, Distributed Systems and BISDN

ELG5120 (EACJ 5200) QUEUEING SYSTEMS (3cr.)
Resource sharing issues: delay, throughput and queue length. Basic queueing theory, Markov chains, birth and death processes. M/M/m/k/n queues, bulk arrival/service systems. Little's Rule. Intermediate queueing theory: M/G/1, G/M/m queues. Advanced queueing theory: G/G/m queue, priority queue, network of queues, etc. Queueing applications. Precludes additional credit for SYSC 5107 (ELG 6117). Prerequisite: One of ELG 5119, SYSC 5003, SYSC 5503, or the equivalent.

ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

ELG5122 (EACJ 5202) MODELLING, ANALYSIS AND PERFORMANCE EVALUATION IN COMPUTER COMMUNICATIONS (3cr.)
Network performance issues and their mathematical analysis techniques. Intermittently available server model, probing and tree search, delay cycle, switch/network topology and reliability. Analysis of controlled and random access methods, routing allocation/ control, topological design. Selected topics from
current literature on various network applications. Precludes additional credit for ELG 7186 (EACJ 5606). Prerequisites: ELG 5120 (EACJ 5200), ELG 5374 (EACJ 5607), or SYSC 5201 (ELG 6121), or the equivalents.

ELG5374 (EACJ 5607) COMPUTER COMMUNICATION NETWORKS (3cr.)
Network applications, structures and their design issues. Resource sharing/access methods. Network transmission and switching techniques. OSI model. Error control, flow control and various issues related to the physical, data link and network layers. Local area networks. Performance issues of delay-throughput in various protocols. Precludes additional credit for SYSC 5201. Prerequisites: an undergraduate course in probability and statistics such as MAT 2377.

ELG5381 (EACJ 5004) PHOTONICS NETWORKS (3cr.)

ELG5382 (EACJ 5108) SWITCHING AND TRAFFIC THEORY FOR INTEGRATED BROADBAND NETWORKS (3cr.)
Principles of switching theory. Asynchronous Transfer Mode switching architectures. Principle of tele traffic engineering. Queueing theory and performance evaluation techniques as applied to the study of computer network architectures. Current topics in computer network modelling analysis and traffic control for high-speed multimedia networks. Prerequisite: ELG 5374 (EACJ 5607) or ELG 6121 (SYSC 5201), or the equivalent. Co-requisite: ELG 5119 (EACJ 5109) or ELG 6153 (SYSC 5503) or ELG 6103 (SYSC 5003), or the equivalent.

ELG5383 (EACJ 5009) SURVIVABLE OPTICAL NETWORKS (3cr.)
Optical networks design with emphasis on network survivability. Wavelength division multiplexing (WDM), wavelength conversion, optical switch architectures, routing and wavelength assignment algorithms, IP over WDM, optical network protocols, optical network control architectures, protection and restoration, spare capacity allocation, survivable routing, design and performance evaluation. Prerequisites: ELG 5374 or its equivalent.

ELG5386 (EACJ5386) NEURAL NETWORKS AND FUZZY SYSTEMS (3cr.)

ELG6119 (SYSC 5109) TELETRAFFIC ENGINEERING (3cr.)
Congestion phenomena in telephone systems, and related telecommunications networks and systems, with an emphasis on the problems, notation, terminology, and typical switching systems and networks of the operating telephone companies. Analytical queueing models and applications to these systems. Prerequisite: Engineering SYSC 5503 or ELG 5119, or the equivalent.

ELG6121 (SYSC 5201) COMPUTER COMMUNICATION (3cr.)

ELG6127 (SYSC 5207) DISTRIBUTED SYSTEMS ENGINEERING (3cr.)

ELG6180 (SYSC 5800) NETWORK COMPUTING (3cr.)
Design and Java implementation of distributed applications that use telecommunication networks as their computing platform. Basics of networking; Java networking facilities. Introduction to open distributed processing: CORBA, JavaDL, JavaRMI, CGI/HTTP, DCOM, Componentware; Enterprise JavaBeans, ActiveX. Agents: Java code mobility facilities. Security issues; Java security model.

ELG6181 (SYSC 5801) ADVANCED TOPICS IN COMPUTER COMMUNICATIONS (3cr.)

ELG6188 (SYSC 5808) COMMUNICATIONS NETWORK MANAGEMENT (3cr.)
Network management issues, WANS and LANs. The Internet and ISO models of network management. Network management protocols SNMP, CMIP, CMOT, etc. Events, Managed Objects and MIBs. Fault management techniques. Current diagnostic theory and its limitations. AI and Machine learning approaches. Monitoring and fault management tools. Prerequisites: SYSC 5201 or ELG 5374, or the equivalent.

ELG7177 (EACJ 5605) TOPICS IN COMMUNICATIONS I (3cr.)
Current topics in the field.

ELG7178 TOPICS IN COMMUNICATION II (3cr.)
Conception assistée par ordinateur pour les circuits électroniques / Computer-Aided Design for Electronic Circuits

**ELG6353 (ELEC 5503) RADIO FREQUENCY INTEGRATED CIRCUIT DESIGN** (3cr.)
Integrated radio front-end component design, with emphasis on a bipolar process. Overview of radio systems, discussion of frequency response, gain, noise, linearity, intermodulation, image rejection, impedance matching, stability, and power dissipation. Detailed design of low-noise amplifiers, mixers, oscillators and power amplifiers. Design alternatives through the use of one-chip inductors and baluns. The impact of process variations, parasitics, and packaging. Simulation issues and techniques.

**ELG6354 (ELEC 5504) ANALYSIS OF HIGH-SPEED ELECTRONIC PACKAGES AND INTERCONNECTS** (3cr.)
Introduction to techniques of modelling, simulation and optimization in designing high-speed VLSI packages and systems; models for IC packages, interconnects and ground/power planes; lumped element models, distributed models and EM-based models for high-speed VLSI interconnects; delay, crosstalk and switching noise analysis; simulation of multiconductor transmission line networks; asymptotic waveform evaluation (AWE) and moment matching techniques; concurrent thermal and electrical analysis of IC packages and boards; optimization of signal integrity in IC packages and printed circuit boards; macromodelling of linear and non-linear components and circuits.

**ELG6356 (ELEC 5506) SIMULATION AND OPTIMIZATION OF ELECTRONIC CIRCUITS** (3cr.)
Time and frequency-domain formulations for simulation, sensitivity analysis and optimization. Optimization techniques for performance, cost and yield-driven analysis of electronic circuits. Optimization approaches to modelling and parameter extraction of active and passive elements. Advanced techniques include statistical modelling, tolerance and reliability optimization, computer-aided tuning and analog diagnosis, and large-scale optimizations. Examples and case studies include FET modelling, optimization of amplifiers, filters, multiplexers, mixers, high-speed VLSI packages/interconnects, signal-integrity in high-speed ICs, printed circuit boards and multichip modules.

**ELG6358 (ELEC 5508) COMPUTER METHODS FOR ANALYSIS AND DESIGN OF VLSI AND COMMUNICATION CIRCUITS** (3cr.)

**ELG6381 (ELEC5801) HIGH-SPEED AND LOW-POWER VLSI** (3cr.)
High-Speed and Low-Power CMOS VLSI Circuit techniques covering the low and high levels of abstraction, including Transistor, Switch, Logic-Gate, Module, and System Levels. At each level students learn the state-of-the-art techniques to optimize the performance and energy consumption of a circuit. They also use one or more of these techniques in a design project. Prerequisites: ELEC 4708 or ELEC 5804 (VLSI Design) or Equivalent (Permission of the Director).

**ELG6383 (ELEC 5803) BEHAVIOURAL SYNTHESIS OF ICs** (3cr.)
Various topics related to computer analysis and synthesis of VLSI circuits including: logic synthesis, finite state machine synthesis, design methodologies, design for reuse, testing, common VLSI functions, a review of Verilog. Prerequisite: some IC design knowledge such as given in 4708.

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**Micro-ondes et électromagnétismes / Microwaves and Electromagnetics**

**ELG5104 (EACJ 5401) ELECTROMAGNETIC WAVES: THEORY AND APPLICATIONS** (3cr.)

**ELG5108 (EACJ 5305) ELECTROMAGNETIC COMPATIBILITY AND INTERFERENCE** (3cr.)

**ELG5379 (EACJ 5402) NUMERICAL METHODS IN ELECTROMAGNETIC ENGINEERING** (3cr.)
Review of electromagnetic and potential theory. Formulation of static and electrodynamic problems. Introduction to numerical and field-theoretical modelling techniques. Numerical methods considered: FD, MoL, SDA, TLM and BPM. Examples of commonly encountered electromagnetic problems at microwave, millimeterwave and optical frequencies. Prerequisite: ELG 4103 or the equivalent.

**ELG5504 (EACJ 5403) ONDES ÉLECTROMAINTIQUES : THÉORIE ET APPLICATIONS** (3cr.)

**ELG5779 (EACJ 5406) MÉTHODES NUMÉRIQUES EN GÉNIE ÉLECTROMAINTIQUES** (3cr.)
Une introduction aux méthodes modernes de résolution numérique des problèmes électromagnétiques. Le cours couvre des problèmes déterministes et aux valeurs propres. Les méthodes suivantes seront présentées : différences finies, éléments finis, analyse dans le domaine spectral, analyse par modes hybrides,
ELG6344 (ELEC 5404) NEURAL NETWORKS FOR HIGH-SPEED / HIGH-FREQUENCY CIRCUIT DESIGN (3cr.)
Neural network methodologies for computer-aided design of high-speed/high-frequency circuits, including modeling of passive and active devices/circuits, and their applications in high-level design and optimization in wired and wireless electronic systems.

ELG6349 (ELEC 5409) MICROWAVE AND MILLIMETERWAVE INTEGRATED CIRCUITS (3cr.)

ELG6351 (ELEC 5501) PASSIVE MICROWAVE CIRCUITS (3cr.)

ELG6355 (ELEC 5505) PASSIVE CIRCUIT THEORY (3cr.)

ELG6357 (ELEC 5507) ACTIVE CIRCUIT THEORY (3cr.)
Characterization of negative-resistance one-port networks, signal general and amplification. Active two-ports; y, z, h, k, chain and scattering parameters. Measurement of two-port parameters. Activity and passivity; reciprocity, non-reciprocity, and anti-reciprocity. Gyrorot as a circuit element. Stability, inherent and conditional; power gain of conjugate and mismatched two-port amplifiers. Amplifier gain sensitivity. Stability, inherent and conditional; power gain of conjugate and mismatched two-port amplifiers. Active filter design; gyrator, negative immittance converter (NIC) and operational amplifier used as functional elements. Practical realization of gyrators and NICs. Active network synthesis. Prerequisite: ELEC 5505 or the equivalent.

ELG6362 (ELEC 5602) MICROWAVE SEMICONDUCTOR DEVICES AND APPLICATIONS (3cr.)
Theory of operation for microwave diodes (varactor, p-i-n, Gunn, IMPATT) and transistors (BJT, MESFET, HBT, HEMT). Small-signal, large-signal, and noise models for CAD. Diode oscillators and reflection amplifiers. Design of transistor oscillators and amplifiers. Discussion of technology/fabrication issues and MMIC applications.

ELG6363 (ELEC 5603) ELECTROMAGNETIC WAVE PROPAGATION (3cr.)
Review of groundwave, skywave and transionospheric propagation modes relevant to radar, communications and other systems operating in the medium to extra-high frequency bands. The occurrence and magnitude of various types of electromagnetic noise: physical principles involved, modelling and prediction techniques, and limitations of such techniques in practical situations.

ELG6364 (ELEC 5604) RADAR SYSTEMS (3cr.)

ELG6367 (ELEC 5607) ANTENNAS AND ARRAYS (3cr.)

ELG6368 (ELEC 5608) FOURIER OPTICS (3cr.)

ELG8000 (TRAVAIL COOPÉRATIF) (1cr.)
Recent and advanced topics in Very Large Scale Integration (VLSI). The subject material will vary from year to year according to research interests in the field. Applications include design, quantization effects. Correlation functions. Cepstrum analysis. Multi-rate signal processing. Power spectrum estimation. Introduction to joint time-frequency analysis; simulation of multiconductor transmission line networks; asymptotic waveform evaluation (AWE) and moment matching techniques; concurrent simulation of large digital systems.

ELG6356 (ELEC 5506) SIMULATION AND OPTIMIZATION OF ELECTRONIC CIRCUITS (3cr.)
Introduction to the principles of simulation and optimization of electronic circuits. Topics include: random number generation, Monte Carlo simulation, Markov models, reward models, optimization techniques such as simulated annealing, downhill simplex search. Neural Networks: adaptive networks; bidirectional associative memories; supervised and unsupervised learning.

ELG6127 (SYSC 5207) DISTRIBUTED SYSTEMS ENGINEERING (3cr.)
Computer network types, introductory queueing theory and performance analysis. OSI layering and BISDN layering modifications. Data link layer. Local area networks (LANs) and wide area networks (WANs). Internet and ISO models of network management. Network management protocols: SNMP, CMIP, TCP, IP, UDP. Advanced topics include ATM over satellites, Mobile satellite communications and IMT2000.

ELG6163 (SYSC 5603) DIGITAL SIGNAL PROCESSING: MICROPROCESSORS, SOFTWARE AND APPLICATIONS (3cr.)
Principles of digital signal processing, including digital filter design, quantization effects. Correlation functions. Cepstrum analysis. Multi-rate signal processing. Power spectrum estimation. Introduction to joint time-frequency analysis; simulation of multiconductor transmission line networks; asymptotic waveform evaluation (AWE) and moment matching techniques; concurrent simulation of large digital systems.

ELG6160 (SYSC 5604) MODERN DIGITAL COMMUNICATIONS (3cr.)

ELG7172 (EACJ 5600) TOPICS IN SIGNAL PROCESSING I (3cr.)
Traitement des signaux, de la parole et des images / Signal, Speech and Image Processing. Introduction to signal processing: correlation functions. Cepstrum analysis. Multi-rate signal processing. Power spectrum estimation. Introduction to joint time-frequency analysis; simulation of multiconductor transmission line networks; asymptotic waveform evaluation (AWE) and moment matching techniques; concurrent simulation of large digital systems.

ELG6105 (SYSC 5005) OPTIMIZATION THEORY AND METHODS (3cr.)
Theory of optimization, including linear and nonlinear programming, convex optimization, duality, sensitivity analysis, and applications. Optimization algorithms, including gradient methods, Newton's method, and conjugate gradient methods. Applications of optimization in engineering and economics.

ELG6101 (SYSC 5001) SIMULATION AND MODELLING (3cr.)
Analytical modelling techniques for performance analysis of computing systems. Theoretical techniques covered include single and multiple class queueing models, Markov processes, and stochastic Petri nets. Applications to real-world systems such as computer networks, manufacturing systems, and communication networks.

ELG7187 (EACJ 5807) TOPICS IN COMPUTERS II (3cr.)
Perspectives théoriques issues des différents champs des littératures. Études des cadres conceptuels et théoriques ainsi que des pratiques inspirées de la recherche dans ces domaines. Préparations pour la dissertation et la recherche en tant que méthodes de travail. Traitement des signaux, de la parole et des images / Signal, Speech and Image Processing. Introduction to signal processing: correlation functions. Cepstrum analysis. Multi-rate signal processing. Power spectrum estimation. Introduction to joint time-frequency analysis; simulation of multiconductor transmission line networks; asymptotic waveform evaluation (AWE) and moment matching techniques; concurrent simulation of large digital systems.
ELG6369 (ELEC 5609) NONLINEAR MICROWAVE DEVICES AND EFFECTS (3cr.)
The physical basis and mathematical modelling of a variety of microwave/millimetre-wave devices, (some of which exhibit the most extreme nonlinear behaviour known), how they can be exploited in practical circuits and systems, and how the resulting device/circuit interactions can be analyzed. Devices include two-terminal nonlinear-resistance elements (varistors) and two two-terminal nonlinear-reactance devices (varactors) based on classical, heterostructure and superconducting technologies: pn and Schottky-barrier diodes, tunnel and resonant-tunneling diodes, BIN and BNN varactor diodes, single-barrier-varactor diodes, high-electron-mobility varactor diodes, Josephson-junction diodes, and SIS quasiparticle tunneling junctions. Three-terminal nonlinear devices include MESFETs, HBTs, and HEMTs and RHETS. Circuit applications encompass direct radiation detectors; frequency mixers; resistive, reactive, and active frequency multipliers; as well as reactive and regenerative frequency dividers. Emphasis will be placed on analytical approaches that provide global insight into the nonlinear phenomena.

ELG6372 (ELEC 5702) OPTICAL ELECTRONICS (3cr.)
Generation, manipulation, and transmission of optical radiation, with emphasis on fundamental principles. Applications in optical sensing, optical communications, and optical computing. Electromagnetic wave propagation in crystals; review of geometric optics; Gaussian beam propagation; optical fibres; dielectric waveguides for optical integrated circuits; optical resonators; optical properties of materials; theory of laser oscillation; specific laser systems; electro-optic modulators; photorefractive materials and applications; holography; optical interconnects.

ELG6379 (ELEC 5709) ADVANCED TOPICS IN ELECTROMAGNETICS (3cr.)

ELG7100 (EACJ 5404) TOPICS IN ELECTROMAGNETICS I (3cr.)

ELG7101 (EACJ 5405) TOPICS IN ELECTROMAGNETICS II

ELG7500 (EACJ 5308) SUJETS CHOISIS EN ÉLECTROMAGNÉTISME (3cr.)

Dispositifs à semi-conducteurs et fabrication de circuits intégrés / Solid State Devices and Integrated Circuit Fabrication

ELG5107 (EACJ 5001) SEMICONDUCTOR OPTICAL LOGIC (3cr.)
Principles of Optical Amplification. Structures of Semiconductor Optical Amplifier (SOA). Steady-state model of SOA. Dynamic model of SOA. Network Applications of SOAs. SOA Nonlinearities. SOA Wavelength Converters. SOA optical gates. SOA Logic Devices. Optical Memory Devices. SOA based signal regeneration. Precludes additional credit for this course taken as a special topic in (EACJ 5807) ELG 7116. Prerequisites: ELG 5103 or equivalent course.

ELG6320 (EACJ 5208 / ELEC 5200) ADVANCED TOPICS IN INTEGRATED CIRCUITS AND DEVICES (3cr.)
Recent and advanced topics in the field of Integrated Circuits and Devices and its related areas.

ELG6359 (ELEC 5509) INTERINTEGRATED CIRCUIT TECHNOLOGY (3cr.)
Survey of technology used in integrated circuit fabrication. Crystal growth and crystal defects, oxidation, diffusion, ion implantation and annealing, gettering, chemical vapour deposition, etching, materials for metallization and contacting, and photolithography. Structures and fabrication techniques for submicron devices. Applications in CMOS and BiCMOS processes.

ELG6373 (ELEC 5703) ADVANCED TOPICS IN SOLID STATE DEVICES AND IC TECHNOLOGY (3cr.)
Recent and advanced topics in Solid State Devices and IC Technology. The subject material will vary from year to year according to research interests in the department. Students may be expected to contribute to lectures or seminars on selected topics. Prerequisite: Permission of the Department.

ELG6377 (ELEC 5707) MICROELECTRONICS SENSORS (3cr.)
Physical design of microelectromechanical systems (MEMS) and microfabricated sensors and actuators. An overview of thin and thick film processes and micromanufacturing techniques will provide fabrication background. Design of a variety of devices including piezoresistive, piezoelectric, electromagnetic, thermal, optical, and chemical sensors and actuators.

ELG6380 (ELEC 5800) THEORY OF SEMICONDUCTOR DEVICES (3cr.)

ELG6382 (ELEC 5802) SURFACE-CONTROLLED SEMICONDUCTOR DEVICES (3cr.)

ELG7132 (EACJ 5900) TOPICS IN ELECTRONICS I (3cr.)
Current topics in the field.
Circuits intégrés à très grande échelle / VLSI

ELG6360 (ELEC 5600) DIGITAL INTEGRATED CIRCUIT TESTING (3cr.)
The fundamentals of digital integrated circuits. Cost and difficulty of testing. Outline of methods of testing used in production. Testing schemes and design for testability. Specific topics are: faults and fault models, yield estimates, testability measures, fault simulation, test generation methods, sequential testing, scan design, boundary scan, built-in self-test, CMOS testing.

ELG6374 (ELEC 5701) ADVANCED TOPICS IN CAD (3cr.)
Recent and advanced topics in Computer-Aided Design (CAD). The subject material will vary from year to year according to research interests in the department. Students may be expected to contribute to lectures or seminars on selected topics. Prerequisite: Permission of the Department.

ELG6374 (ELEC 5702) ANALOG INTEGRATED FILTERS (3cr.)
The fundamentals and details of analog integrated filters with emphasis on active continuous-time filters and SAW filters. Comparison to switched-capacitor filters. Review of filter concepts, types of filters, approximations, transformations. Building blocks such as op amps, transconductance amplifiers, and gyrators. Design using cascaded second-order sections, multiple loop feedback and LC ladder simulations. Discussion of issues such as tuning, linearity, dynamic range, and noise.

ELG6375 (ELEC 5705) ADVANCED TOPICS IN VLSI (3cr.)
Recent and advanced topics in Very Large Scale Integration (VLSI). The subject material will vary from year to year according to research interests in the department. Students may be expected to contribute to lectures or seminars on selected topics. Prerequisite: Permission of the Department.

ELG6376 (ELEC 5706) SUBMICRON CMOS AND BICMOS CIRCUITS FOR SAMPLED DATA APPLICATIONS (3cr.)
The analog aspects of digital CMOS and BiCMOS circuit design in submicron technologies including reliability; sampled analog circuits, including amplifier nonidealities and switch charge injection; CMOS/BiCMOS amplifier design considerations, leading up to standard folded-cascode and two-stage circuits.

ELG6378 (ELEC 5708) ASICs IN TELECOMMUNICATIONS (3cr.)
The definition of Application Specific Integrated Circuits is given along with current ASIC technology trends. CMOS and BiCMOS fabrication technologies are compared for their potential use in communications circuits. Circuit building blocks such as amplifiers, switched-capacitor filters and analog to digital converters are overviewed in the context of their communications applications. An overview of vendor technologies is followed by application examples such as line drivers, pulse shaping and equalization circuits, high-speed data transmission over twisted pair copper cables and mobile radio components and implementation issues. Students are required to submit a related literature study and design a communications integrated circuit component using a standard cell library environment.

ELG6384 (ELEC 5804) VLSI DESIGN (3cr.)
Integrated circuit design with a strong emphasis on design methodology. Design philosophies considered include Full Custom design, standard cells, gate arrays and sea-of-gates using CMOS and BiCMOS technology. A prelude to ELEC 5805.

ELG6385 (ELEC 5805) VLSI DESIGN PROJECT (3cr.)
Using state-of-the-art CMOS and BiCMOS technologies, students will initiate their own design of an integrated circuit using tools in the CAD lab and submit it for fabrication where the design warrants.

ELG6386 (ELEC 5808) SIGNAL PROCESSING ELECTRONICS (3cr.)
Signal processing from the viewpoint of analog circuit design. CCDs, BBDs, transversal filters, recursive filters, switched capacitor filters, with particular emphasis on integration of analog signal processing techniques in monolithic MOS ICs. Detailed operational amplifier design in CMOS technology. Implications of nonideal operational amplifier behaviour in filter performance. Basic sampled data concepts, detailed Z transform analysis of switched capacitor filters and more complex circuits. Noise in analog and sampled analog circuits, including calculation of dynamic range and signal-to-noise ratio.

ELG6389 (ELEC 5809) NONLINEAR ELECTRONIC CIRCUITS (3cr.)
A unified representation of non-linear circuits used in today's telecommunications ICs is introduced. Nonlinear representation of circuits based on operational amplifiers, sinusoidal oscillators, amplitude modulators, demodulators, frequency modulators, frequency demodulators, mixers and Phase Locked Loop (PLL) is introduced. Design implications for commonly used Complementary Metal-Oxide Semiconductor (CMOS) and bipolar circuits. Precluded additional credit for this course taken previously as a special topics course ELG 6375 (ELEC 5705) in Fall 1999, Winter 2004 and Winter 2005. Prerequisite: Permission of the Institute.

Cotes de service / Service Codes

ELG5900 Projet / Project (3cr.)
English (PhD)

Academic Information

The Department of English offers the degrees of master of arts (with or without thesis) and doctor of philosophy in English. Both programs equip students to pursue advanced studies in British, Canadian, or American literature informed by a broad knowledge of literary history and by recent developments in literary criticism and cultural theory. The department is well known for its annual Canadian Literature Symposium, and its faculty is distinguished and well-published. The Ontario Council on Graduate Studies (OCGS), has consistently awarded the department the council's highest rating.

General regulations are to be found in the Faculty of Graduate and Postdoctoral Studies calendar. Please note, however, that any course fulfilling a graduate degree requirement in English must be completed with a mark of B or higher. A student whose record shows any two grades lower than a mark of B will automatically be asked to withdraw from the program. All graduate courses in the Department of English at the University of Ottawa carry three credits. Requirements are stated in number of credits.

Admission

A master's degree in English literature, or the equivalent, with at least high second class standing (B+), is required. A 500-word statement describing specific interest in the program is required with the application.

Collaborative Program in Canadian Studies at the PhD Level

The Department of English is a participating unit in the collaborative program in Canadian Studies at the PhD level. This program has been established for students wishing to include an interdisciplinary component in Canadian studies as part of their degree in English. The Canadian Studies Seminar (CDN 6910) counts towards departmental course requirements and does not add to the number of courses required for the PhD.

To be admitted to the program, students must be registered in or have successfully completed at least one graduate course in English with Canadian content. The mention "Specialization in Canadian Studies" will be added to the diploma of students who pass the CDN 6910 Seminar and successfully defend a thesis on a Canadian topic in English. For further details, please consult the Canadian Studies Website of the Faculty of Graduate and Postdoctoral Studies.

Program Requirements

PhD Degree Requirements

The student must successfully complete 18 credits of course work (or 15 credits if the student has completed ENG 6302 and ENG 6303 as an MA student in English at the University of Ottawa, or an equivalent course elsewhere), one language requirement, comprehensive examinations, ENG 6101 Directed Research (Thesis Proposal) (graded satisfactory/not satisfactory) and a dissertation.
Normal progress through the program:

**Year One:**
18 credits of course work, including ENG 6302 and ENG 6303 (or 15 credits if the student has completed ENG 6302 and ENG 6303 as an MA student in English at the University of Ottawa, or an equivalent course elsewhere); registration of the dissertation topic by the end of the third session (that is, the spring session, if initially registered in the fall) after the date of initial enrollment; progress toward meeting the language requirement.

**Year Two:**
Completion of comprehensive examinations and the language requirement.

**Year Three:**
Submission of thesis proposal ENG 6101 Directed Research followed by research and writing of the dissertation.

**Year Four:**
Completion of the dissertation and its defence.

Comprehensive examinations are normally taken by the end of the second year and are offered three times each year (late August, December, and April). Students who wish to write the comprehensives must obtain approval from the director of graduate studies by April 1 for August examinations, by September 1 for December examinations, and by December 1 for April examinations.

The examinations are made up of three written papers (a major field and two minor fields) and corresponding oral examinations. If the major field is before 1790, then at least one of the minor fields will be post-1790, or the converse. Complete guidelines and procedures are available in the department.

The language requirement is normally French. However, where knowledge of another language is necessary for the major field (e.g. Latin for students working in Medieval or Renaissance studies), the student may request an alternative choice from the Department's Graduate Committee.

Students may satisfy the requirement by passing FLS 1000 or by passing six credits of second-year university-level language course(s). These courses are additional to the 18 credits required for the degree. Language testing of languages other than French is normally administered by the Department during the first week of September and in December and April of each year. The departmental language tests are one-hour examinations which require the candidate to translate, with the aid of a dictionary, a passage of literary criticism or another appropriate selection of similar difficulty approximately one page in length. In call cases, the minimum passing mark is C+, and leads to an S (Satisfactory) on the transcript.

The language requirement must be satisfied before the student proceeds to the thesis proposal.

The program is offered on a full-time basis only and requires full-time registration for a minimum of six sessions. The student must complete all requirements within six years of initial registration.

### Courses

Every year the department usually offers at least three credits in each of the following areas: medieval, renaissance, restoration and 18th century, romanticism, victorian, modern British, American, Canadian, and theory.

The titles below refer to general subject areas, whereas the actual seminars will consist of specific studies in the subject areas. For a detailed description of the seminars available in any year, please consult the department webpage. Information is normally available early in the winter for the next academic year. All courses are three credits.

**ENG6300 OLD ENGLISH I** (3cr.)

**ENG6301 OLD ENGLISH II** (3cr.)

**ENG6302 RESEARCH METHODOLOGY** (1.5cr.)
Preparation of students for the professional study of English. Review and analysis of the expanding number of electronic and print research tools and methods. Internet database searches, both in the discipline of English as well as in related fields (such as history, philosophy, and sociology), and evaluation of Internet sites. Short assignments based on the student’s proposed area of research. Preparation of grant applications and of the thesis proposal. Compiling a preliminary bibliography and taking the initial steps toward the preparation of a thesis proposal. Graded S/NS. Offered in the fall session.

**ENG6303 PROFESSIONAL DEVELOPMENT** (1.5cr.)
Preparation of students for the professional study of English. Introduction to professional concerns and activities: writing and publishing scholarly articles, presenting conference papers, membership in professional organizations, and career opportunities (including the interview). Sessions to be devoted to the practice of teaching, covering such topics as syllabus construction, teaching "styles," classroom management, teaching dossiers, and student evaluation. Graded S/NS. Offered in the winter session.
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<th>Course Code</th>
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<td>MIDDLE ENGLISH LITERATURE I</td>
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<td>ENG6321</td>
<td>MIDDLE ENGLISH LITERATURE III</td>
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<td>ENG6357</td>
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ENG7302 MODERN LITERATURE III (3cr.)
ENG7303 MODERN LITERATURE IV (3cr.)
ENG7310 AMERICAN LITERATURE I (3cr.)
ENG7311 AMERICAN LITERATURE II (3cr.)
ENG7312 AMERICAN LITERATURE III (3cr.)
ENG7313 AMERICAN LITERATURE IV (3cr.)
ENG7320 CANADIAN LITERATURE I (3cr.)
ENG7321 CANADIAN LITERATURE II (3cr.)
ENG7322 CANADIAN LITERATURE III (3cr.)
ENG7323 CANADIAN LITERATURE IV (3cr.)
ENG7330 ANGLO IRISH LITERATURE (3cr.)
ENG7331 ANGLO-IRISH LITERATURE II (3cr.)
ENG7332 ANGLO-IRISH LITERATURE III (3cr.)
ENG7370 HISTORY OF ENGLISH LANGUAGE (3cr.)
ENG7375 COMMONWEALTH LITERATURE (3cr.)
ENG7376 COMMONWEALTH LITERATURE II (3cr.)
ENG7377 COMMONWEALTH LITERATURE III (3cr.)
ENG7380 HISTORY OF CRITICISM I (3cr.)
ENG7381 THEORY OF CRITICISM I (3cr.)
ENG7382 HISTORY OF CRITICISM II (3cr.)
ENG7383 HISTORY OF CRITICISM III (3cr.)
ENG7384 THEORY OF CRITICISM II (3cr.)
ENG7385 THEORY OF CRITICISM III (3cr.)

ENG7900 SECOND LANGUAGE REQUIREMENT
In keeping with the bilingual character of the University, the program has a French language requirement. Students may satisfy this requirement by passing FLS1000, the test administered by the Official Languages and Bilingualism Institute, or the departmental language test. The departmental tests are one-hour examinations which require the candidate to translate, with the aid of a dictionary, a passage of literary criticism or another appropriate selection of similar difficulty approximately one page in length. Language testing of languages other than French is normally administered by the Department. Students may also satisfy the language requirement by passing six credits of second-year university-level language course(s). These courses are additional to the 18 credits required for the degree. In all cases, the minimum passing grade is 66 percent and leads to an "S" (Satisfactory) on the transcript for ENG7900. NOTE: Students who achieve 66% or higher at the MA level will not be required to retake the test if they continue on to the PhD.

Readings and Research

ENG6101 DIRECTED RESEARCH (THESIS PROPOSAL) (3cr.)
ENG6111 DIRECTED READINGS I (3cr.)
Only in the most exceptional of circumstances and subject to the approval of the graduate committee will a directed reading be accepted.

**ENG6112 DIRECTED READINGS II (3cr.)**

Only in the most exceptional of circumstances and subject to the approval of the graduate committee will a directed reading be accepted.

**ENG6313 DIRECTED READING (3cr.)**

**ENG7999 MA THESIS RESEARCH**

**ENG9998 COMPREHENSIVE EXAM (PhD)**

**ENG9999 PhD THESIS RESEARCH**

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**Environmental Engineering (PhD)**

**Ottawa-Carleton Joint Program**

**General Information**

Established in 2000, the Ottawa-Carleton Institute of Environmental Engineering (OCIEE) combines the teaching and research strengths of the Department of Civil Engineering and the Department of Chemical Engineering at the University of Ottawa with that of the Departments of Civil and Environmental Engineering at Carleton University.

The Institute offers graduate programs leading to the degrees of Master of Applied Science (MASc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Environmental Engineering.

The objective of these programs is to prepare candidates for careers in teaching and/or in research, in a private or a public setting. Graduates will acquire autonomy in conducting research and in preparing scholarly publications.

Members of the Institute are involved in four main research fields: water and waste processing or treatment; management of solid and hazardous waste; air pollution; water resources and groundwater management. Further information is posted on the departmental website.

Most of the courses in the graduate programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

**Admission**

Admission to the graduate program in Environmental Engineering is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a master’s degree in chemical engineering or in an engineering discipline with an environmental specialization;
2. Demonstrate a good academic research performance;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The Department may require students to take additional courses depending on their backgrounds.

**Program Requirements**
PhD Degree Requirements

The requirements of this program are as follows:

1. Successful completion of a minimum of 9 course credits;
2. Participation and attendance at the environmental engineering seminar EVG 5801;
3. Successful completion of comprehensive examination (EVG9998);
4. Presentation and defense of a thesis (EVG9999) based on original research carried out under the direct supervision of a research faculty member in the Department.

Master's students with outstanding performance in the master's courses may request transfer into the PhD program without completing the master's degree. Students who are permitted to do so require 27 course credits for a PhD, including any credits transferred from the Master's degree program.

Candidates in the PhD program are expected to demonstrate a broad knowledge of the areas within environmental engineering (see “Breadth Requirement” under “Master’s Program” above) through course work (undergraduate and graduate) already completed. The comprehensive examination should be completed within the first 16 months (or the equivalent of four full-time sessions) of the student's registration in the PhD program.

The passing grade in all courses is B. Students who fail 6 credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Courses

Le choix de cours doit être approuvé par le directeur de recherche ou le Comité consultatif. L'étudiant peut choisir des cours des deux universités dans la liste suivante.

Les cours énumérés ci-dessous sont regroupés par domaine. Les étudiants doivent suivre au moins un cours dans au moins trois des cinq domaines. Le directeur de l'Institut décidera si un cours offert en tant que thème spécial ou études dirigées coïncide avec l'un des domaines. Les descriptions de cours figurent dans les sections consacrées aux départements concernés dans les annuaires des deux universités.

Les cotes entre parenthèses sont celles de Carleton University. Les cours énumérés ici ne sont pas nécessairement offerts chaque année.

Course selection is subject to the approval of the advisor or the advisory committee. Students may choose courses offered at either university from among those listed below.

The courses listed below are grouped by area of study. Students must complete at least one course in three of the five areas. The director will decide when a course offered under a special topics or directed studies heading can be considered to meet the requirements of a given area. Course descriptions may be found in the departmental sections of the calendars concerned.

Course codes in parentheses are for Carleton University. Only a selection of courses given in a particular academic year.

Pollution atmosphérique / Air Pollution

CVG7161 (ENVE 5102) TRAFFIC RELATED AIR POLLUTION (3cr.)

CVG7162 (ENVE 5103) AMBIENT AIR QUALITY AND POLLUTION MODELLING (3cr.)

CHG8132 (ENVE 5105) ADSORPTION SEPARATION PROCESSES (3cr.)

Evg5101 (ENVE 5101) AIR POLLUTION CONTROL (3cr.)

Evg7104 (ENVE 5104) INDOOR AIR QUALITY (3cr.)
Admission

The School of Human Kinetics (SHK), located within the Faculty of Health Sciences, offers a Master of Arts degree (MA), a Master of Science (MS). Topics will be selected and representative of current developments in the field.

For detailed information about the primary participating graduate programs, consult the relevant sections of the graduate calendar at the web link provided.

Members of the program include scientists with interest and expertise in the following areas: developmental genetics, neuromuscular disease, exercise intensity, and body composition.

Residence

The standard residence is seven years in the case of the students transferring from the master's to the doctorate.

Comprehensive examination as required by the primary program; the successful completion of the Doctoral Research Seminar (HIS 8900) (3 cr.)

During their first session in the program, a thesis advisory committee (TAC) is formed for each student. The thesis supervisor chairs the TAC, which consists of a minimum of three members. The TAC is responsible for overseeing the student's research and providing guidance on the development of the thesis.

Note: The Department may require students to take additional courses depending on their backgrounds.

The passing grade in all courses is B. Students who fail 6 credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Research

The aim of the research program is to provide students with an opportunity to engage in original research and to develop their research skills. Students will undertake a course project to design a genetic study and will be guided through the research process by a faculty advisor. The project will involve designing a study, data collection, analysis, and interpretation.

A comprehensive examination (EPI9998) to be completed within sixteen months of initial registration in the program; to demonstrate knowledge of the field.

Identify at least one professor who is willing and available to act as thesis supervisor; the approval of the program director.

The language of instruction is decided on mutually between the student and the professor.

Students: By June 30 of the first year of study, students must complete a course in Statistics and permission of the program director.

The student will participate in one or more research projects under way in the Department, and will be supervised by a faculty member.

Experience in a workplace setting. Graded P (Pass) / F (Fail) by a professor in the Department.

The focus is on scientific (research) evaluation, but other evaluation strategies and techniques are discussed. Lectures and discussions.

Technical writing course. Graded P (Pass) / F (Fail) by a professor in the Department.

Comprehensive examination of techniques for building and analyzing process models is made. Topics include: linear least squares estimation, non-linear least squares estimation, and model selection.

A comprehensive examination (EPI9998) to be completed within sixteen months of initial registration in the program; to demonstrate knowledge of the field.

Students: By June 30 of the first year of study, students must complete a course in Statistics and permission of the program director.

The passing grade in all courses is B. Students who fail 6 credits, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

The language of instruction is decided on mutually between the student and the professor.
GEO5147 (ERTH 5407) GEOCHEMISTRY OF NATURAL WATERS (3cr.)
Aqueous speciation, solubility of metals, minerals and gas, reaction kinetics and equilibria. Chemistry and dynamics of groundwaters and hydrothermal fluids.

GEO5148 (ERTH 5408) THEORY OF FLOW AND CONTAMINANT TRANSPORT IN GEOLOGICAL MATERIALS (3cr.)
Development of governing groundwater flow equations and solute transport equations from first principles, and application of principles in case studies. Topics: Forces and potentials, fluids, geological materials, contaminants, case studies. Prerequisite: undergraduate hydrogeology.

EVG7301 (ENVE 5301) CONTAMINANT HYDROLOGY (3cr.)

EVG7303 (ENVE 5303) MULTIPHASE FLOW IN SOILS (3cr.)

Gestion des déchets solides, dangereux et radioactifs et prévention de la pollution / Management of Solid, Hazardous, and Radioactive Waste and Pollution Prevention
CVG5133 (ENVJ 5906) SOLID WASTE DISPOSAL (3cr.)
Collection and disposal of solid wastes. Sanitary landfill, composting, incineration and other methods of disposal. Material and energy recovery.

CVG5179 (ENVJ 5908) ANAEROBIC DIGESTION (3cr.)
Advanced theoretical, biological, and practical aspects of anaerobic digestion processes. Principles to be applied to the design and application of conventional and advanced anaerobic processes used for treatment of municipal and industrial wastewaters. Topics to include microbiology and biochemistry fundamentals, techniques for monitoring anaerobic digestion performance, municipal sludge stabilization, anaerobic composting, anoxic/anaerobic bioremediation, Andrew's dynamic model. Design of the following: two-phase digestion; Downflow Stationary Fixed Film (DSFF) reactors; Upflow Anaerobic Sludge Blanket (UASB); Upflow Blanket Filter (UBF) reactors; and Anaerobic Sequencing Batch Reactors (ASBR).

CVG5331 (ENVJ 5902) SLUDGE UTILIZATION AND DISPOSAL (3cr.)
Introduction to sludge processing technology and procedures to be used in the planning and design of sludge treatment processes. Evaluate the economics and performance of sludge unit process operations. Selection of methods for final disposition of sludge.

EVG5203 (ENVE 5203) HAZARDOUS AND RADIOACTIVE WASTE MANAGEMENT (3cr.)

EVG7201 (ENVE 5201) GEO-ENVIRONMENTAL ENGINEERING (3cr.)

EVG7202 (ENVE 5202) CONTAMINANT FATE MECHANISMS (3cr.)

Traitement de l'eau et des eaux usées / Water and Wastewater Treatment
CVG5130 (ENVJ 5900) WASTEWATER TREATMENT PROCESS DESIGN (3cr.)
The physical, chemical and biological processes involved in the treatment of domestic and industrial wastes. Waste characteristics, stream assimilation, biological oxidation, aeration, sedimentation, anaerobic digestion, sludge disposal.

CVG5132 (ENVJ 5901) UNIT OPERATIONS OF WATER TREATMENT (3cr.)
Unit operations and unit processes involved in the treatment of a water supply for various uses. Topics included are: water quality, water microbiology, sedimentation, chemical treatment, disinfection, water chemistry, flocculation.

CVG5134 (ENVJ 5907) CHEMICAL ANALYSIS FOR ENVIRONMENTAL ENGINEERING (3cr.)

CVG5135 (CIVJ 5608) WATER SUPPLY AND SANITATION IN DEVELOPING COUNTRIES (3cr.)

CVG5137 (ENVJ 5905) WATER AND WASTEWATER TREATMENT PROCESS ANALYSIS (3cr.)
Mass balancing in complex systems. Reaction kinetics and kinetic data analysis: classical and computer based methods. Reactor design: ideal reactors and real reactors. Analysis of tracer tests. Interfacial mass transfer: common theories. Mass transfer models. Prerequisite: CVG 3132 or equivalent. Students with a Chemical Engineering background may not take this course for credit.

CVG5138 (ENVJ 5902) ADVANCED WATER TREATMENT (3cr.)
Scope, limitations and design procedures for water treatment processes for the removal of toxic and non-standard contaminants. Current water treatment problems and regulations. Activated carbon treatment, ion exchange, disinfection practices and oxidation via advanced oxidation processes (ozonation and UV
oxidation), iron and manganese removal, recent developments in coagulation, membranes, air stripping. Prerequisite: CVG 3132 or equivalent.

CVG7160 (ENVE 5001) BIOFILM PROCESSES IN WASTEWATER TREATMENT (3cr.)

CVG5180 (ENVJ 5909) BIOLOGICAL NUTRIENT REMOVAL (3cr.)
Advanced theoretical, biological, and practical aspects of biological nutrient removal (BNR) (nitrification, denitrification and excess biological phosphorus) processes. Principles to be applied to the design and application of conventional and advanced BNR processes used for treatment of municipal and industrial wastewaters. Topics as follows: microbiology and biochemistry fundamentals of BNR, nitrification process design of suspended growth and fixed film growth systems, denitrification process design of suspended growth and fixed film growth systems, excess biological phosphorus removal design including pre fermentation. Design of 2,3,4 and 5 stage BNR systems. General activated sludge model and Simworks for BNR systems. Retrofit of exiting plants and pilot plant testing for BNR.

CVG5232 (ENVJ 5911) UNIT OPERATIONS OF WATER TREATMENT LAB (1.5cr.)
Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physicochemical processes for particular applications, and b) design a full-scale facility. Conventional analytical techniques used in water treatment (pH, alkalinity, hardness, turbidity, color, spectrophotometric analysis). Process analysis techniques for process evaluation and scale-up including: zone sedimentation, batch flux settling tests, coagulation with iron and aluminum salts, floculent sedimentation, filtration and fluidization, flotation. Prerequisite: CVG 3132 or equivalent. Co-requisite: CVG 5132.

CVG5238 (ENVJ 5912) ADVANCED WATER TREATMENT PROCESSES LAB (1.5cr.)
Bench-scale and pilot-scale experiments required to: a) assess the suitability of different physicochemical processes for the removal of toxic and non-standard contaminants, and b) design a full-scale facility. Tracer tests and none-ideal reactor behaviour, activated carbon adsorption equilibria and kinetics, aeration. Total organic carbon analysis, spectrophotometry. Process analysis, techniques for process evaluation and scale-up including: aeration, analysis of non-ideal flow conditions. Tracer study of three basins, adsorption isotherm tests, activated carbon mini-column tests, oxidation kinetic tests. Prerequisite: CVG 3132 or equivalent. Co-requisite: CVG 5138.

CHG8181 (ENVJ5501) BIOCHEMICAL ENGINEERING (3cr.)

CHG8192 (ENVJ5502) MEMBRANE APPLICATIONS IN ENVIRONMENTAL ENGINEERING (3cr.)
Course emphasizing the applications of membrane separation processes in the resolution of various environmental problems. Applications of reverse osmosis, ultrafiltration and pervaporation to the treatment of industrial waste waters. Applications of membrane gas and vapor permeation to the removal of pollutants from air. Discussion of fundamentals underlying each separation process.

CHG8198 (ENVJ5503) REVERSE OSMOSIS (3cr.)

Évaluation de l’impact sur l’environnement / Environmental Impact Assessment

EVT7401 (ENVE 5401) ENVIRONMENTAL IMPACT ASSESSMENT OF MAJOR PROJECTS (3cr.)

CVG5139 (ENVJ 5700) ENVIRONMENTAL ASSESSMENT OF CIVIL ENGINEERING PROJECTS (3cr.)
Procedures and methods for systematic evaluation of the environmental impact of civil engineering projects including wastewater disposal systems, solid waste disposal systems, and water resource development systems.

Autres cours / Other Courses

Pour remplir les exigences au-delà des neuf crédits de cours dans le domaine, les étudiants peuvent choisir de prendre certains des cours suivants :

To fulfill the requirements beyond the nine credits of area courses, students may choose from the following:

EVT7402 (ENVE 5402) FINITE ELEMENTS IN FIELD PROBLEMS (3cr.)

CHG8153 (ENVJ5500) STATISTICAL MODELLING AND CONTROL OF DYNAMIC PROCESSES (3cr.)

Dynamic Processes

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CHG8186 (ENV506) MODELLING OF STEADY-STATE PROCESSES (3cr.)
A comprehensive examination of techniques for building and analyzing process models is made. Topics include: linear least squares estimation, non-linear least squares estimation, multiresponse parameter estimation, error in variables estimation, heteroscedasticity, design of experiments for precise parameter estimation and model discrimination.

CHG8194 (ENV504) MEMBRANE SEPARATION PROCESSES (3cr.)
Advanced topics of membrane separations including reverse osmosis, ultrafiltration, gas separation, non-aqueous liquid separation, and membrane applications in biotechnology. The course involves problem solving in membrane transport, membrane design, and membrane process design.

CHG8195 (ENV505) ADVANCED NUMERICAL METHODS IN TRANSPORT PHENOMENA (3cr.)
Survey course of numerical methods for solving linear and non-linear ordinary and partial differential equations. Techniques reviewed include Runge-Kutta and predictor-corrector methods, shooting techniques, control volume discretization methods and finite elements. Example problems from the field of transport phenomena.

Transport Phenomena

CHG8196 (ENV507) INTERFACIAL PHENOMENA IN ENGINEERING (3cr.)
Interfacial tension and interfacial free energy; contact angles; spreading of liquids; wetting of surfaces; experimental techniques. Interfacial tension of mixtures; Gibbs equation; absorbed and insoluble monolayers; properties of monolayers and films. Electrical phenomena at interfaces; the electrical double layer; zeta-potential; electrokinetic phenomena (electrophoresis, electro-osmosis, streaming potential); surface conductance. Dispersed systems; formation and practical uses of emulsions; spontaneous emulsification; flocculation.

CVG5128 (ENVJ504) WATER RESOURCES PLANNING AND POLICY
Examination of engineering and non-engineering aspects of arrangements which affect Federal and Provincial water resources policy. Application of basic concepts of engineering hydrology, economic projections and water law to current problems of water resources planning and policy.

CVG7140 (CIVE 501) STATISTICS, PROBABILITIES AND DECISION-MAKING (3cr.)
CVG7150 (CIVE 5304) INTERCITY TRANSPORTATION, PLANNING AND MANAGEMENT (3cr.)
CVG7151 (CIVE 5305) TRAFFIC ENGINEERING (3cr.)
CVG7153 (CIVE 5307) URBAN TRANSPORTATION AND MANAGEMENT (3cr.)

Séminaires, études dirigées et thèmes spéciaux / Seminars, Directed Studies and Special Topics

EVG5800 (ENVE 5800) SEMINAR FOR MASTER'S CANDIDATES IN ENVIRONMENTAL ENGINEERING (1cr.)
EVG5801 (ENVE 7800) SEMINAR FOR DOCTORAL CANDIDATES IN ENVIRONMENTAL ENGINEERING (3cr.)
EVG6108 (ENVE 5906) DIRECTED STUDIES I (3cr.)
EVG6109 (ENVE 5907) DIRECTED STUDIES II (3cr.)
EVG6300 SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING I (3cr.)
EVG6301 SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING II (3cr.)
EVG6302 SPECIAL TOPICS IN ENVIRONMENTAL ENGINEERING III (3cr.)

Projet et thèses / Project and Theses

EVG6001 PROJET EN GÉNIE DE L'ENVIRONNEMENT / ENVIRONMENTAL ENGINEERING PROJECT (6cr.)
Epidemiology (PhD)

The Department of Epidemiology and Community Medicine, located in the Faculty of Medicine, offers graduate programs leading to the Master of Science (MSc) degree and the Doctor of Philosophy (PhD) degree in Epidemiology.

The purpose of the PhD program is to develop graduates who are capable, independent epidemiological researchers, and who display a probing and enquiring approach to science while maintaining a high level of scientific integrity.

Faculty members of the Department come from a wide variety of academic backgrounds and interests and are engaged in extensive collaborations with other groups. Their research falls within two broad fields:

1. Descriptive and analytic epidemiology;

Further information is posted on the program website.

The program is offered on a full-time basis. Most of the courses are offered in English. Research activities can be conducted either in English, French or both, depending on the language skills of the thesis supervisor.

In accordance with the University of Ottawa regulations, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the PhD program is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a master’s degree with thesis in epidemiology or a closely related discipline such as biostatistics or population-based genetics*;
2. Have achieved a minimum average of 75% (B+);
3. Demonstrate strong research performance;
4. Provide at least two confidential letters of recommendation from professors who are familiar with their work;
5. Provide a statement of purpose outlining their career goals and their proposed research area;
6. Identify at least one professor who is willing and available to act as thesis supervisor;
7. Provide proof of proficiency (understand, speak and write) in either English or French and of at least a passive knowledge (listening, reading) in English so as to be able to take courses and read the scientific literature in English. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS.

* Applicants must have mastered the equivalent of the content of the following courses either during their previous studies or through work experience: EPI5240; EPI5242; EPI5340; EPI5341; EPI6178; (2 among EPI5344; EPI5345; EPI5346). Otherwise, they may need to complete some of these courses either prior to admission or in addition to the regular requirements of the degree.

Transfer from master’s to PhD program
Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Completion of all master’s course work;
2. Satisfactory progress in the research program;
3. Submission of a well developed research plan that must include, at a minimum, a thesis proposal and background literature review that has been approved by the departmental Graduate Education Committee;
4. Proof of substantial experience in empirical data collection and analysis;
5. Written recommendation by the thesis supervisor and the advisory committee;
6. Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master’s. Following the transfer, all of the requirements of the doctoral program must be met.

Program Requirements

Degree Requirements

The minimum requirements of the program are as follows:

1. Six compulsory credits: EPI8166 or EPI8566 and MED8167 or MED 8567;
2. Six optional credits chosen from EPI graduate courses;
3. A comprehensive examination (EPI9998) to be completed within sixteen months of initial registration in the program;
4. A thesis proposal to be completed and defended within 24 months of initial registration in the program;
5. Presentation and defence of a thesis (EPI9999) based on original research carried out under the direct supervision of a faculty member of the Department.

Note: The Department may require students to take additional courses depending on their backgrounds.

Individual Study Plan (ISP)

Students will have an Individual Study Plan approved by their thesis supervisor and by the Graduate Studies Committee prior to their initial registration in the PhD program. This plan will specify items such as the following: courses to be taken, skills to be mastered; the proposed thesis topic and area; expectations for attendance at workshops and scientific meetings; a timeline for completion. Any deviation from this plan requires the approval of the Graduate Studies Committee.

Thesis Advisory Committee

During their first session in the program, a thesis advisory committee (TAC) is formed for each student. The thesis supervisor chairs the TAC, which consists of at least two members and at most four, including the chair. The TAC is responsible for guiding the student throughout the program, including the comprehensive examination, thesis proposal, and thesis preparation and defence.

Comprehensive Examination (EPI9998)

The comprehensive examination consists of two parts, with each part involving a written exam followed by an oral presentation and defence. Details about the examination are posted on the program website. Students who fail any component of this exam are allowed to repeat it once. A second failure leads to withdrawal from the program.

Projet de thèse / Thesis Proposal (EPI 9997)

The thesis proposal, prepared under the direction of the thesis supervisor, must be defended to the satisfaction of the Thesis Advisory Committee (TAC). In the event of failure, the proposal can be resubmitted and defended the following session at the latest. A second failure leads to withdrawal from the program. The proposal must be successfully completed before submitting it to the Research Ethics Board and before undertaking any independent data collection.

Residence

All students must complete a minimum of six sessions of full-time registration. In the case of students transferring from the master’s, the residency period is nine full-time sessions from the date of initial registration in the master’s.

Minimum Standards

The passing grade in all courses is 65% (C+). Students who fail two courses (equivalent to 6 credits), the comprehensive exam, the thesis proposal, the thesis or whose progress is deemed unsatisfactory must withdraw from the program.

Duration of the program

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.
Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

**EDU5699 ÉVALUATION DE PROGRAMMES** (3cr.)

**EPIS126 INTRODUCTION TO HEALTHCARE EPIDEMIOLOGY** (3cr.)
Applications of epidemiologic and statistical methods within the healthcare setting; issues specific to infection control; roles and administration of infection control, risk management and quality assurance within healthcare facilities; surveillance mechanisms for nosocomial infections; outbreak investigation methods; infection risks in special populations and settings; prevention and risk management of adverse outcomes; regulatory guidelines and accreditation; emerging issues in infection control.

**EPIS142 HEALTH SERVICES EVALUATION** (3cr.)
The theory and practice of health services evaluation, including specification of objectives, research designs, measures of process and outcome, and practical problems in conducting evaluations. The focus is on scientific (research) evaluation, but other evaluation strategies and techniques are discussed. Lectures and student presentations. Prerequisite: EPI 5240 or equivalent and permission of the program director.

**EPIS143 EPIDEMIOLOGICAL RESEARCH USING LARGE DATABASES** (3cr.)
A practical approach to using administrative and other large databases for epidemiological research. Basic and advanced statistical techniques to manipulate, link, and examine datasets; large health surveys; coding systems; data warehouses; data mining; birth and death registries; use of census data; linking postal codes to geographical files; geographical information systems. Extensive use of SAS as the primary application package. Prerequisite: Permission of the program director.

**EPIS180 INTERNATIONAL HEALTH AND DEVELOPMENT** (3cr.)
Presentations and seminars on philosophy of international development, international health and demographics, determinants of health, international health and human rights and humanitarian emergencies, tropical diseases and emerging pathogens, aboriginal health issues, impact of new health technologies on international health, cross cultural communication, management methods for international health. Seminar presentation required. Prerequisite: Permission of the program director.

**EPIS181 POPULATION HEALTH RISK ASSESSMENT I** (3cr.)
National and international policy frameworks for health risk assessment and management, including determinants of population health; epidemiological, clinical, and toxicological methods for identifying health hazards; population health surveillance; methods of population health risk assessment; regulatory, economic, advisory, and technological approaches to population health risk management; community action and social marketing; selection of risk management strategies; risk perception and risk communication. Lectures and case studies. Preparation of term paper on a current issue in population health risk assessment. Co-requisites: EPI 5240 and EPI 5242 or equivalents. Exclusion: PHR 5181. Prerequisite: Permission of the program director.

**EPIS182 SAMPLE SURVEY RESEARCH METHODS** (3cr.)

**EPIS183 APPROACHES TO COMMUNITY/PUBLIC HEALTH PROGRAM EVALUATION** (3cr.)
Critical review and practical application, in collaboration with a health care community partner, of approaches to community and public health program evaluation. Community partners include representatives of the community agencies whose mandate or remit includes evaluation of their community/public health program(s). Evaluation based on student’s ability to (a) identify most appropriate approaches to evaluation, (b) critically review strengths and limitations of chosen approaches, (c) apply the selected approach appropriately to examine and quantify impact of the program(s).

**EPIS188 HEALTH TECHNOLOGY ASSESSMENT** (3cr.)
Definition and scope of health technology assessment; needs assessment; practice variations; use of administrative databases; evaluation of diagnostic tests; development and use of practice guidelines and clinical prediction rules; health technology assessment in the developing world. Lectures, seminars and case studies. Prerequisite: Permission of the program director.

**EPIS189 HEALTH ECONOMIC EVALUATION** (3cr.)
Brief overview of economics and health economics; examination of analyses used in epidemiologic and clinical research: cost-effectiveness analysis, cost-minimization analysis, cost-utility analysis (including determination of utilities), cost-benefit analysis, cost of illness studies and use of economic methods in
priority-setting. Lectures and seminars. Written report required, presenting an economic evaluation or a detailed review of the economic literature in a particular area. Prerequisite: Permission of the program director.

**EPI5210 PUBLIC HEALTH ADMINISTRATION** (3cr.)
Introduction to practical aspects of managing a health unit from the viewpoint of a Medical Officer of Health. The organization of public health services, relationships with the Board, leadership and management, budgeting and human resource issues including labour relations. Problem-based approach in a seminar format. Prerequisite: Permission of the program director.

**EPI5212 COMMUNICABLE DISEASE EPIDEMIOLOGY** (3cr.)
Consideration of the specialized methods used in the investigation and control of communicable disease. Detailed review of the epidemiology of the major communicable diseases. Lectures, presentations by invited experts, and student presentations. Prerequisite: A basic knowledge of epidemiologic methods and permission of the program director.

**EPI5213 CHRONIC DISEASE EPIDEMIOLOGY** (3cr.)
Review of the descriptive epidemiology (distribution, trends, risk factors) of the major chronic diseases, with emphasis on circulatory diseases, cancer, injuries, and mental health problems. Approaches to primary and secondary prevention. Lectures, presentations by invited experts, and student presentations. Prerequisite: Permission of the program director.

**EPI5240 EPIDEMIOLOGY I - INTRODUCTORY EPIDEMIOLOGY** (3cr.)
An overview of epidemiology - uses, methods, and data sources. Descriptive and analytical epidemiology. Lectures and assignments in which students will work with data and will gain experience in critically reviewing epidemiologic literature. Prerequisites: EPI 5242 (Biostatistics I) or equivalent; may be taken concurrently with the permission of the program director.

**EPI5241 EPIDEMIOLOGY II - ADVANCED EPIDEMIOLOGY** (3cr.)
This second level epidemiology course covers major principles of design, analysis, and interpretation of epidemiologic research. Material presented in a quantitative manner. Prerequisites: EPI 5240 (Epidemiology I) and EPI 6276 (Quantitative Methods in Epidemiology); EPI 6276 may be taken concurrently with the permission of the program director.

**EPI5242 BIOSTATISTICS I** (3cr.)
Building on the students' prior background in statistics, this course explores the use of mathematical models in statistical data analysis. Topics include analysis of categorical data, choice of linear vs non-linear models, estimation of parameters, testing of hypotheses by parametric and non-parametric methods, analysis of variance, linear and logistic regression models, introduction to survival analysis. This course may also be offered in French: EPI 5642. Prerequisite: Basic course in Statistics and permission of the program director.

**EPI5243 GUIDED RESEARCH PROJECTS** (3cr.)
Practical experience of the application of epidemiologic methods. The student will participate in one or more research projects under way in the Department, and will gain experience in the day-to-day management of the project, in data collection, in data analysis and report preparation.

**EPI5244 SPECIAL TOPICS IN EPIDEMIOLOGY** (3cr.)
The content of this seminar course is flexible, covering issues of current debate in communicable and non-communicable disease epidemiology: Presentations by participants and invited experts and seminar discussion. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

**EPI5251 MEASUREMENT IN HEALTH** (3cr.)
An overview of measurement theory as applied to health measurement; a review of existing measurements of health status in clinical and research applications, plus practical experience of how to develop and test new measurement methods. Prerequisite: Permission of the program director.

**EPI5271 HEALTH PROMOTION** (3cr.)
Origins, theories and techniques of health promotion at the individual and community levels. Examination of current health promotion activities in Canada and elsewhere. Prerequisite: Permission of the program director.

**EPI5281 DEVELOPMENTS IN EPIDEMIOLOGY** (3cr.)
Major new developments in epidemiology, conceptualization of research topics and objectives for the thesis. Critical appraisal of current and classical literature in epidemiology. Seminars on current topics. Prerequisite: Permission of the program director.

**EPI5330 VITAL AND HEALTH STATISTICS AND DEMOGRAPHY** (3cr.)
An introduction to the techniques of demography, health and vital statistics with particular reference to health care and epidemiologic research. The Canadian demographic structure and trends, vital registration procedures, calculation and interpretation of vital rates, life table analysis and record linkage. Lectures and exercises. Prerequisite: Permission of the program director.

**EPI5340 EPIDEMIOLOGICAL METHODS** (1.5cr.)
Major principles of study design and analysis: Validity in epidemiologic studies; Precision and statistics in epidemiology studies; Confounding; Additive and multiplicative interaction; Stratified analysis; Introduction to regression models; Introduction to regression modeling; Bias analysis; Analytical strategy. Prerequisites: EPI 5240 and EPI 5242.
EPI5341 EPIDEMIOLOGICAL APPLICATIONS (1.5cr.)
Interpretation of epidemiologic research and some specific topics: Complex survey data analysis; Attributable risk, odds ratio and relative risk estimation in multivariate analysis; Combined effect of multiple exposures and interaction measures; Chronic disease screening and surveillance; Environmental epidemiology. 
Prerequisite: EPI5340

EPI5342 GENETIC EPIDEMIOLOGY (1.5cr.)
Basic scope of genetic epidemiology, including an overview of types of human genetic variation, approaches to gene discovery vs. gene characterization. Specific issues include: Assessment of effect of family history on disease risk; Measurement of genetic variation, genotyping errors and factors affecting these; Study designs specially adapted to genetic epidemiology – family based designs (e.g. case-parent trio, case-sib designs), case-only designs; Candidate gene and genome-wide association approaches to genetic association; Gene-environment and gene-gene interaction; Integration of evidence; Evaluation of potential value of genetic information in screening (e.g. newborn screening), family history tools and genetic testing. 
Prerequisite: EPI5340

EPI5343 OUTCOME MEASURES IN HEALTH RESEARCH (1.5cr.)
Technical review of the design requirements for outcome measures in health research and clinical trials; a historical review of the evolution of such measures and a survey of the quality of existing instruments in various fields of health research (disability, quality of life, mental health, pain, etc.). This course is designed for students who will need to use and interpret health measures in their research. 
Prerequisite: EPI5340

EPI5344 SURVIVAL ANALYSIS IN THE HEALTH SCIENCES (1.5cr.)
Exploration of methods for the analysis of data which includes information about the time when an event occurred. Non-regression methods of analyzing survival data, including actuarial life tables, the Kaplan-Meier method, the log-rank test, and person-time. The hazard curve will be introduced and linked to incidence rate/density. Proportional hazards regression modelling (Cox modelling) including interpretation of model parameters, model building strategies and assessing the fit of the model. Methods to handle time varying covariates and non-proportional hazards will be discussed. Classes will include hands on modeling examples using SAS statistical software. 
Prerequisite: EPI5340

EPI5345 APPLIED LOGISTIC REGRESSION (1.5cr.)
Foundation of model estimation: maximum likelihood; Modeling dichotomous outcome (dependent) variables: logistic regression; Logistic models with several independent variables; Interpretation of model parameters; Model building strategies; Assessing the fit of the model; Regression diagnostics. Classes will include hands on modeling examples using SAS statistical software. 
Prerequisite: EPI5340

EPI5346 APPLIED LONGITUDINAL AND CLUSTERED DATA ANALYSIS (1.5cr.)
Introduction to longitudinal (repeated measures) and clustered data and overview of regression models for correlated data; Linear Mixed Effects Models: Modelling the mean; Modelling the Covariance structure; Generalized Estimating Equations and Generalized Linear Mixed Effects Models; Regression diagnostics; Missing data and drop-out; Case studies. Classes will include hands on modeling examples using SAS statistical software. 
Prerequisite: EPI5340

EPI5642 BIOSTATISTIQUE I (3cr.)
En misant sur les connaissances préalables en statistique des étudiants, ce cours examine l'application des modèles mathématiques dans l'analyse de données statistiques. Parmi les sujets à traiter : analyse de données catégoriques, choix de modèles linéaires ou non linéaires, estimation des paramètres, tests d'hypothèses par méthodes paramétriques ou non paramétriques, analyse de la variance, modèles de régression linéaire et logistique, et introduction à l'analyse de survie. Également offert en anglais : EPI 5242. Préalable: Cours de base en statistiques et permission du responsable du programme.

EPI6126 ADVANCED HEALTHCARE EPIDEMIOLOGY (3cr.)
Exploration of advanced healthcare epidemiology topics including pandemic planning, emergency preparedness, environmental considerations, healthcare surveillance techniques, quality improvement and patient safety initiatives, antimicrobial control programs, blood safety, developing and delivering educational programs, healthcare organization and administration, healthcare epidemiology research design. Lectures, presentations by invited experts, workshops and student presentations. Pre-requisites: EPI 5240, EPI 5126.

EPI6178 INTERVENTION STUDIES IN HEALTH RESEARCH (3cr.)
Practical introduction to intervention studies in the health field, including experimental and quasi-experimental studies and clinical and community trials. Question formulation; conduct of literature reviews; design issues (choice of research design and study population, implications for validity of results); ethical issues; instrument development; data collection and management; approach to data analysis; report writing and presentation. Examples drawn from both population and clinical research. Development and presentation of proposal for an intervention study. 
Prerequisite: Permission of the program director.

EPI6179 COMPUTER APPLICATIONS IN MEDICINE (3cr.)
A laboratory course introducing health researchers to packaged computer programs for data analysis. The course will address applications to the participants' own research, the organization of large data files and the choice between different types of computers. 
Prerequisite: Permission of the program director.

EPI6181 SOCIAL ASPECTS OF EPIDEMIOLOGY (3cr.)
This course will analyze the way in which behavioural, social and emotional forces influence patterns of disease. The links between these processes and physiological changes; inferences on how best to intervene to modify "lifestyle" risk factors; recent prevention and health promotion trials will be reviewed. May also be offered in French: EPI 6581. 
Prerequisite: Permission of the program director.

EPI6182 POPULATION HEALTH RISK ASSESSMENT II (3cr.)
Scientific methods for population health risk assessment; characterization of population health risks, and attendant uncertainties; risk modeling; combining risk information from different sources; risk acceptability; principles of risk management decision making; evidence-based risk management policy development;
Students are expected to fulfill all requirements within four years. The maximum time permitted is six years from the date of initial registration in the program, or supervisor must be from the School of Human Kinetics. The TAC is responsible for guiding the student throughout the program, including the comprehensive

Collaborative Program in Canadian Studies at the PhD Level

The transfer must take place within sixteen months of initial registration in the master's. Following transfer, all the requirements of the doctoral program based on the work performance evaluation provided by the workplace supervisor and the student's work term report.

Master's students may also take, with the approval of the departmental graduate studies committee, three credits from among fourth-year seminars.

Courses with 53XX and 57XX codes are reserved for students enrolled in the MSc, MGeg or PhD programs.

EPI6188 SYSTEMATIC REVIEWS AND META-ANALYSIS (3cr.)
Approaches to the systematic review of evidence in the health sciences. Searching for the evidence, selection of studies, quality and validity of included studies, heterogeneity, statistical analysis and other quantitative and qualitative methods. Students to be required to do a meta-analysis on a topic of their own interest. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6189 CLINICAL DECISION MAKING (3cr.)
Theories of decision making and their validity in health care applications. Comparison of decision support methods: decision analysis, utility assessment techniques, patient aids, practice guidelines, care maps. Methods for developing, evaluating, and disseminating decision support tools in clinical practice. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6276 QUANTITATIVE METHODS IN EPIDEMIOLOGY (3cr.)
Application of advanced topics in statistical methods for epidemiologic data analysis: logistic regression and discriminant analysis, Poisson regression, contingency table analysis (including log-linear modelling), time series, survival analysis, Cox regression with and without time-dependent covariates, principle components and factor analysis. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6277 BIOSTATISTICS II (3cr.)
The course, a continuation of EPI 5242, will focus on the statistical analysis of more than one variable and/or more than two groups. Topics covered include the analysis of variance, multiple linear regression and multivariate analysis topics such as the linear discriminant analysis. Statistical analysis relevant to clinical medicine will be discussed in detail with relevant examples from clinical research papers. Prerequisite: EPI 5242 or equivalent and permission of the program director.

EPI6278 ADVANCED CLINICAL TRIALS (3cr.)
Lectures and laboratories on the detailed principles, design, methodology and statistical techniques associated with clinical trials. Emphasis on emerging topics and procedures. Prerequisites: EPI 5242 and EPI 6178 and permission of the program director.

EPI6282 SPECIAL TOPICS IN COMMUNITY MEDICINE (3cr.)
Current Community Health topics will be reviewed. Weekly seminars, written assignments, discussions, research meetings and presentations by students and invited speakers will be conducted throughout the year. Each student must present two seminars. Prerequisite: Permission of the program director.

EPI6283 PHARMACOEPIDEMIOLOGY (3cr.)
Issues in and methodology of pharmacoepidemiology. Discussion on the biases and confounders possible at every stage of a pharmacoepidemiological study, in drug utilization review, drug effectiveness, risk/benefit assessment and other topics. This course will normally be given every second year. Prerequisites: EPI 5240 or equivalent and permission of the program director.

EPI6344 CURRENT ISSUES IN EPIDEMIOLOGY (1.5cr.)
Topics will be selected based on student and faculty interests. Depending on the topics, the course may be given as formal lectures or in seminar format with presentations by participants and invited experts followed by in-class discussion. Prerequisites: EPI 5240 and EPI 5242 or permission of the program director.

EPI6581 INTRODUCTION À L’ÉPIDÉMILOGIE SOCIALE (3cr.)
Une analyse de l'influence des forces sociales et du comportement humain sur le développement de la maladie. L'interaction entre le comportement et les systèmes physiologique et endocrinien, y compris le processus psychosomatique. Les indications pour l'intervention préventive par la modification du mode de vie. Également offert en anglais : EPI 6181. Préalable: Permission du responsable du programme.

EPI7101 GENETIC EPIDEMIOLOGY (3cr.)
Application of genetic biological methods to epidemiological research. Covers the development of research hypotheses; genetic determinants and gene-environment interactions; biomarkers for exposure and outcome as well as for predicting prognosis. Students will undertake a course project to design a genetic epidemiological study. Prerequisite: EPI5240 or equivalent.

EPI7102 DATA ANALYSIS METHODS IN GENETIC EPIDEMIOLOGY (3cr.)
Data analysis methods in genetic epidemiology and gene identification. Topics include the relationship between design and analysis; genetic models; methods for case-unrelated control studies, case-familial control studies and other familial designs; introduction to frequentist multiple testing and empirical Bayes methods, focus on applications to genome-wide association studies. Basic approaches in bioinformatics; insights into gene function based on the characterization of three major categories of cellular components (genome, transcriptome and proteome) and their interactions; public molecular databases. Practical lab sessions, both on statistical analysis and integration of discovery with information on gene function (commonly used algorithms; hands-on practice with data retrieval, manipulation and analysis). Prerequisite: EPI5242 or equivalent.

EPI7103 GENETIC ASSOCIATION STUDIES (3cr.)
Population-based family studies, case-control and case-familiy control designs and analysis. Topics include population-based family studies; case-unrelated control design and variants; case-familiy control designs (including case-parent trios, e.g. maternal versus paternal versus fetal genetic effects; mitochondrial
DNA; imprinting); genome-wide association; linkage disequilibrium; genotyping error; imputation; population stratification and methods for its control; genotyping errors; modeling haplotype variation; Hardy-Weinberg equilibrium; replication; selection of participants, rationale for choice of genes and variants; treatment effects in studying quantitative traits; relatedness of participants; reporting of descriptive and outcome data; issues of data volume; joint effects of genes and environmental factors; episatasis; bioinformatics; causal inference. Prerequisite: EPI5242 or equivalent.

EPI7104 ADVANCED METHODS IN BIOSTATISTICS: ANALYSIS OF VARIANCE (3cr.)
Exploration of the theoretical foundations of the advanced methods in biostatistics as well as of the practical application and interpretation of these methods. Topics include repeated measures ANOVA; multivariate analysis of variance (MANOVA); split-plot ANOVA (SPANOVA); expected mean squares; randomization theory; estimation of variance using regression; tests of hypotheses for balanced and unbalanced data sets. Prerequisite: EPI5242 or equivalent.

EPI7105 ADVANCED METHODS IN BIOSTATISTICS: STATISTICAL INFERENCE (3cr.)
Advanced methods in biostatistics and probability modeling. Sample topics include: Bayesian parameter estimation; construction and use of likelihoods; hypothesis testing; comparison of inference methods using jackknife, bootstrap and normal approximations. Prerequisite: EPI5242 or equivalent.

EPI7106 QUALITATIVE RESEARCH METHODS IN EPIDEMIOLOGY (3cr.)
Theoretical frameworks and corresponding methods of qualitative research applied to epidemiological research. Topics will include: theoretical paradigms of qualitative research; matching qualitative research to types of research questions; sampling objectives and procedures; methods of data collection; analysis and interpretation; quality criteria for evaluating qualitative research studies; ethical issues and responsibilities of qualitative researchers. Relationship between qualitative and quantitative research will be explored. Prerequisite: EPI5240 or equivalent.

EPI7107 DESCRIPTIVE EPIDEMIOLOGY (3cr.)
Issues of current debate in Descriptive Epidemiology and epidemiological methods. Topics will include methods for studying the distribution of health conditions and their predictors in populations, current issues and principles of disease classification and surveillance, surveillance of prognostic factors, applying principles of demography in epidemiologic research. Prerequisite: EPI5240 or equivalent.

EPI7108 ANALYTIC EPIDEMIOLOGY (3cr.)
Issues of current debate in Analytic Epidemiology and epidemiological methods. Topics will include theory and methods in the study of the etiology of health conditions and prognostic factors, current theories of disease causation, application of causal models to epidemiologic questions, implications for study design and analysis, measurement error. Prerequisite: EPI5240 or equivalent.

EPI7109 CLINICAL AND APPLIED EPIDEMIOLOGY (3cr.)
Issues of current debate in Clinical and Applied Epidemiology and epidemiological methods. Topics will include clinical health interventions related to individual patient care; research related to the design and delivery of broader health systems and services; current analytical methods and population-based studies; decision rules; randomized clinical trials; diagnostic tests; interventions that are relevant to public health practice. Prerequisite: EPI5240 or equivalent.

EPI7111 BIOSTATISTICS III (3cr.)
Advanced methods in biostatistics, with emphasis on one or two major methods. Examination of the theoretical foundations of the methods as well as of their practical application and interpretation. Topics include multivariate statistics, longitudinal data analysis, multi-level models, and statistical genetics. Pre-requisite: EPI5242 or equivalent.

EPI7113 SPECIAL TOPICS IN EPIDEMIOLOGY II (3cr.)
Variable topics depending on the interests of students and faculty.

EPI7184 HEALTH POLICY (3cr.)
Exploration of key issues relating to health policy within and outside Canada. Topics covered: rationale for public provision and funding of health care in Canada; historical and current perspectives regarding structure and process of the Canadian health care system; specific micro and macro policy issues relating to health and health care provision (Canadian and international).

EPI7303 TRANSLATION OF GENETIC DISCOVERIES FROM THE RESEARCH LABORATORY TO THE HEALTH CARE SYSTEM (1.5cr.)
Overview of the process of transferring genetic discoveries into medicine and public health, focusing primarily on chronic diseases. Topics include basic concepts and existing knowledge translational pathways and frameworks. Interdisciplinary approaches to knowledge translation, including clinical trials, guideline development, dissemination research, outcomes research, and health policy research. Using chronic disease examples to illustrate the process, students will learn which elements need to be considered at each step in the translation process. Prerequisite: EPI5240 or equivalent.

EPI7501 ÉPIDÉMILOGIE GÉNÉTIQUE (3cr.)
Étude de l’application de méthodes de la biologie génétique à la recherche épidémiologique. Élaboration d’hypothèses de recherche; déterminants génétiques et interactions entre facteurs génétiques et environnementaux; utilisation de biomarqueurs pour la mesure d’une exposition et de son résultat ainsi que pour l’établissement d’un pronostic. Réalisation d’un projet d’étude d’épidémiologie génétique. Préalable : EPI5240 ou l’équivalent.

EPI7502 MÉTHODES D’ANALYSE DE DONNÉES EN ÉPIDÉMILOGIE GÉNÉTIQUE (3cr.)
Aperçu de méthodes d’analyse des données en épidémiologie génétique et pour l’identification de gènes. Sujets abordés : relation entre protocole et analyse; modèles génétiques; méthodes d’études avec cas témoins non apparentés, d’études avec cas témoins appartenant à la famille, ainsi que d’autres protocoles
familiaux; introduction aux tests multiples fréquentistes et aux méthodes bayésiennes empiriques, en mettant l’accent sur des applications à des études d’association pangénomique. Méthodes de base de la bioinformatique; aperçu de la fonction des gènes à partir de la caractérisation de trois catégories principales de composantes cellulaires (gène, transcriptome et protéome) et de leurs interactions; bases de données moléculaires publiques. Séances pratiques de laboratoire, tant sur l’analyse statistique que sur l’intégration de découvertes et de l’information sur la fonction de gènes (algorithmes communément utilisés; travaux pratiques d’extraction, de traitement et d’analyse de données). Préalable : EPI5242 ou l’équivalent.

EPI7503 ÉTUDES D’ASSOCIATION EN GÉNÉTIQUE (3cr.)
Examen approfondi d’études familiales de population, d’études cas témoins et de protocoles avec cas témoins appartenant à la famille, ainsi que de l’analyse des données correspondantes. Sujets abordés : études familiales de population; protocoles avec cas témoins non apparentés et leurs variants; protocoles avec cas témoins appartenant à la famille (dont des trios formés d’un sujet et de ses parents, p. ex. effets génétiques maternels, paternels et fœtaux; ADN mitochondrial; emprunté); études d’association pangénomique; déséquilibre de liaison; imputation; stratification d’une population et méthodes de contrôle de la stratification; erreurs de génotyping; modélisation des variantes d’un haploïde; équilibre de Hardy-Weinberg; réplication; sélection de participants, justification du choix de gènes et de variantes; effets d’un traitement sur l’étude de traits quantitatifs; liens entre participants; compte rendu de données descriptives et de résultats; problèmes liés à la quantité de données; effets conjoints de facteurs génétiques et environnementaux; épistasse; bioinformatique; inférence causale. Préalable : EPI5242 ou l’équivalent.

EPI7504 MÉTHODES AVANCÉES DE BIOSTATISTIQUE : ANALYSE DE VARIANCE (3cr.)
Exploration des fondements théoriques des méthodes avancées de biostatistique ainsi que des applications pratiques et de l’interprétation de ces méthodes. Sujets abordés : analyse de la variance de mesures répétées; analyse de variance multidimensionnelle; analyse de variance avec subdivision de parcelles; valeurs quadratiques moyennes prévues; théorie de randomisation; estimation de la variance à l’aide d’une régression; tests d’hypothèses sur des jeux de données équilibrés et non équilibrés. Préalable : EPI5242 ou l’équivalent.

EPI7505 MÉTHODES AVANCÉES DE BIOSTATISTIQUE : INFÉRENCE STATISTIQUE (3cr.)

EPI7506 MÉTHODES DE RECHERCHE QUALITATIVE EN ÉPIDÉMIOLogie (3cr.)
Cadres théoriques et méthodes correspondantes de recherche qualitative appliquées à la recherche en épidémiologie. Sujets abordés : paradigmes théoriques de la recherche qualitative; recherche qualitative adaptée à divers types de questions; objectifs et procédures d’échantillonnage; méthodes de collecte, d’analyse et d’interprétation de données; critères de qualité pour l’évaluation d’une recherche qualitative; questions d’éthique et responsabilités des chercheurs en matière de recherche qualitative. Relations entre recherche qualitative et recherche quantitative. Préalable : EPI5240 ou l’équivalent.

EPI7507 ÉPIDÉMIologie DESCRIPTIVE (3cr.)
Questions actuellement débattues en épidémiologie descriptive et à propos des méthodes de l’épidémiologie. Sujets abordés : méthodes d’étude de la répartition de diverses affections et de leurs prédicteurs dans une population; problèmes actuels et principes de la classification et de la surveillance des maladies; surveillance de facteurs de pronostic; applications des principes de la démographie à la recherche en épidémiologie. Préalable : EPI5240 ou l’équivalent.

EPI7508 ÉPIDÉMIologie ANALYTIQUE (3cr.)
Questions actuellement débattues en épidémiologie analytique et à propos des méthodes de l’épidémiologie. Sujets abordés : théorie et méthodes de l’étude de l’étiologie des affections et de leurs facteurs de pronostic; théories actuelles sur les causes des maladies; application de modèles de causalité à des questions d’épidémiologie; conséquences sur la conception de protocoles, l’analyse de données et les erreurs de mesure. Préalable : EPI5240 ou l’équivalent.

EPI7509 ÉPIDÉMIologie CLINIQUE ET APPLiquée (3cr.)
Questions actuellement débattues en épidémiologie clinique et appliquée, ainsi qu’à propos des méthodes de l’épidémiologie. Sujets abordés : interventions cliniques liées aux soins aux patients particuliers; recherche liée à la conception et à la prestation de systèmes et services élargis de soins de santé; méthodes analytiques actuelles et études de population; règles de décision; essais cliniques aléatoires; tests diagnostiques; interventions pertinentes en matière de santé publique. Préalable : EPI5240 ou l’équivalent.

EPI7511 BIOSTATISTIQUE III (3cr.)

EPI7513 SUJETS PARTICULIERS EN ÉPIDÉMIologie II (3cr.)
Divers sujets choisis en fonction des intérêts des étudiants et du professeur.

EPI7702 ÉTUDES D’OBSERVATION (1.5cr.)

EP17910 ÉTUDES DIRIGÉES EN ÉPIDÉMIOLOGIE / DIRECTED STUDIES IN EPIDEMIOLOGY (3cr.)
Étude approfondie d’un sujet d’intérêt particulier pour l’étudiant, sous la direction d’un professeur membre du programme. Préalables : EP15240 ou l’équivalent et approbation du Comité des études doctorales/Directed Studies on a topic of individual interest to the student under the direction of a faculty supervisor. Students planning to take this course must have the proposed content, learning activities and evaluation methods approved by the Doctoral Studies Committee. "Prerequisite: EP15240 or equivalent."

EP17912 ÉTUDES DIRIGÉES EN BIOSTATISTIQUE / DIRECTED STUDIES IN BIOSTATISTICS (3cr.)
Étude approfondie d’un sujet en biostatistique d’intérêt particulier pour l’étudiant, sous la direction d’un professeur membre du programme. Préalables : EP15242 ou l’équivalent et approbation du Comité des études doctorales. / In-depth study on a topic in biostatistics of individual interest to the student under the direction of a faculty member in the program. "Prerequisites: EP15242 or equivalent and permission of the Doctoral Studies Committee."

EP17913 THÈMES SPÉCIAUX EN ÉPIDÉMIOLOGIE/SPECIAL TOPICS IN EPIDEMIOLOGY (3cr.)
Sujets variables selon les intérêts des étudiants et du corps professoral. / Variable topics depending on the interests of students and faculty.

EP17980 STAGE / INTERNSHIP
Expérience pratique et exécution d’un projet ayant trait à l’évaluation des technologies de la santé dans un organisme de recherche ou une agence d’évaluation des technologies de la santé, sous la supervision d’un membre du corps professoral. Noté S/NS à partir d’un rapport de stage écrit et des résultats du stage. / Practical experience and completion of a project related to HTA in a research organization or an HTA agency, under the supervision of a faculty member. Graded S/NS based on a written report on the project, and on performance during the internship.

EP17999 THÈSE DE MAÎTRISE EN ÉPIDÉMIOLOGIE / MSc THESIS IN EPIDEMIOLOGY
EP18167
EP18166 PhD SEMINAR (3cr.)
Presentation of one seminar as well as regular attendance at the departmental seminar series. Offered over two consecutive sessions. Compulsory for all students enrolled in the doctoral program in Epidemiology. Graded S/NS (Satisfactory/Not satisfactory).

EP18567
EP18566 SÉMINAIRE DE DOCTORAT (3cr.)

EP19997 PROJET DE THÈSE / THESIS PROPOSAL
EP19998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION
EP19999 THÈSE DE DOCTORAT / PhD THESIS

**Geography (PhD)**

The objectives of the department are to foster awareness of the field of Geography, and to add to the body of geographic knowledge and methodology through teaching and research. The department also endeavors to prepare specialized teachers and researchers to meet the demands of the teaching profession and of various public and private agencies. The Department of Geography offers a master of arts (with thesis), a master of science (with thesis), a master in geography (without thesis) and a PhD in geography. In certain cases, students may be admitted to the master's in geography on a part-time basis.**

**Part-time students must normally complete course requirements, except the thesis, within a period of not more than 24 months. For more information consult the department.**

**Admission**
Admission Requirements

Students must meet the admission requirements outlined in the general regulations of the Faculty of Graduate and Postdoctoral Studies, as well as the specific requirements of the department.

Students may be admitted to the PhD program on the basis of a master’s degree or its equivalent in geography or a related discipline, with an academic record indicating at least a (B+) average or the equivalent.

The Faculty of Graduate and Postdoctoral Studies requires that these students spend at least six sessions of full-time registration at the University. For a definition of full-time registration, please see Section C - Registration of the general regulations of the FGPS.

Application Deadline

To find the application deadline, please check the “program-specific requirements” under Application Procedures and Information at the following address: www.grad.uOttawa.ca/apply.

Collaborative Program in Canadian Studies at the PhD Level

The Department of Geography is a participating unit in the collaborative program in Canadian Studies at the PhD level. This program has been established for students wishing to enrich their training by including an interdisciplinary component in Canadian Studies.

For further details, please consult the Canadian Studies Website of the Faculty of Graduate and Postdoctoral Studies.

Additional Information

For additional information refer to the following Website:

http://www.geography.uottawa.ca/PDF/Form_geography.pdf

Program Requirements

Degree Requirements

The requirements of this program are as follows:

1. Nine credits in geography from courses at the 5000-level or higher. A maximum of three credits can be replaced by three other credits approved by the Department of Geography and by the Faculty of Graduate and Postdoctoral Studies.
2. GEG 9998 Comprehensive Examination
3. GEG 9001 Preparation and Presentation of PhD Thesis Project (6 cr.)
4. GEG 9999 PhD Thesis
5. Second Language Proficiency Test
   - The requirements for the second official language of Canada are the same as those specified for the Master of Arts (see Degree Requirements - Master of Arts).

Courses

Les cours de cotes 51XX et 55XX sont réservés aux étudiants inscrits aux programmes de maîtrise ès arts, de maîtrise en géographie et de doctorat.

Les cours de cotes 53XX et 57XX sont réservés aux étudiants inscrits aux programmes de maîtrise ès sciences, de maîtrise en géographie et de doctorat.

Les cours de niveau 6000 sont disponibles pour l'ensemble des étudiants diplômés en géographie.

Les cours de niveau 7000 sont réservés aux étudiants inscrits dans les programmes de maîtrise ès arts et de maîtrise ès sciences.

Les cours de niveaux 8000 et 9000 sont réservés aux étudiants inscrits au programme de doctorat.
Courses with 51XX and 55XX codes are reserved for students enrolled in the MA, MGeg or PhD programs.

Courses with 53XX and 57XX codes are reserved for students enrolled in the MSc, MGeg or PhD programs.

Courses at the 6000-level are available for all graduate students in geography.

Courses at the 7000-level are reserved for students enrolled in the MA and MSc programs.

Courses at the 8000- or 9000-levels are reserved for students enrolled in the PhD program.

**GEG5105 SELECTED TOPICS IN HUMAN GEOGRAPHY** (3cr.)

**GEG5109 PLACE AND SOCIAL TRANSFORMATIONS** (3cr.)
Interplay between social and spatial transformations and its implications for meanings and representations from global to local scales.

**GEG5310 SELECTED TOPICS IN PHYSICAL GEOGRAPHY** (3cr.)

**GEG5311 ENVIRONMENTAL CHANGE IN COLD REGIONS** (3cr.)
Dynamics of cold environments with particular emphasis on their sensitivity to climate variability and climate change, natural and anthropogenically induced.

**GEG5505 THÈMES CHOISIS EN GÉOGRAPHIE HUMAINE** (3cr.)

**GEG5510 ESPACES ET LIEUX ENTRE SOCIÉTÉ ET CULTURE** (3cr.)
Espaces de référence, lieux d'appartenance et territoire dans le contexte des mutations sociales contemporaines et de la fragmentation des identités culturelles.

**GEG5707 MILIEUX NORDIQUES** (3cr.)
Les milieux glaciaires ou périglaciaires, anciens ou actuels. Approches géomorphologique, hydrologique et paléobotanique.

**GEG5710 THÈMES CHOISIS EN GÉOGRAPHIE PHYSIQUE** (3cr.)

**GEG6101 DATA ANALYSIS AND MODELLING** (3cr.)
Techniques of analysis of empirical data: quantitative, semi-quantitative and qualitative. Multivariate and time-series data analysis.

**GEG6102 ADVANCED GEOMATICS** (3cr.)
Concepts and themes in advanced geomatics: geographical information systems, computer cartography and remote sensing.

**GEG6103 SPATIAL DATA ANALYSIS** (3cr.)
Visualisation and analysis of spatial data: point-pattern analysis, spatial interpolation and estimation, spatial autocorrelation. Analysis of spatial interaction and spatio-temporal dynamics.

**GEG6501 ANALYSE DE DONNÉES ET MODÉLISATION** (3cr.)
Modes de traitement appropriés à différents types de données empiriques : quantitatives, semi-quantitatives et qualitatives. Examen des méthodes d'analyse multivariées et temporelles.

**GEG6502 GÉOMATIQUE AVANCÉE** (3cr.)
Concepts et thèmes en géomatique avancée : systèmes d'information géographique, cartographie digitale et télédétection.

**GEG6503 ANALYSE DES DONNÉES SPATIALES** (3cr.)
Visualisation et analyse de données spatiales : analyse de configurations spatiales, interpolation et estimation spatiales, autocorrélation spatiale. Analyse des interactions dans l'espace et de la dynamique spatiotemporelle.

**GEG7906 RECHERCHE DIRIGÉE / DIRECTED RESEARCH** (6cr.)
Recherche dirigée pendant une session, évaluée par trois membres de la Faculté des études supérieures et postdoctorales. L'inscription à temps plein est obligatoire. La note donnée sera (S) satisfaisant ou (NS) non satisfaisant. N.B. Inscription limitée aux étudiants désirant transférer de la maîtrise au doctorat. / One session of directed research, evaluated by three members of the Faculty of Graduate and Postdoctoral Studies. The student must be enrolled full-time for this session. The course will be graded (S) satisfactory or (NS) not satisfactory. NOTE: Restricted to students intending to transfer from master's to PhD.

**GEG7910 LECTURES DIRIGÉES / DIRECTED READINGS** (3cr.)

**GEG7996 ÉLABORATION ET PRÉSENTATION DU PROJET DE THÈSE DE MAITRISE ÉS SCIENCES/PREPARATION AND
PRESENTATION OF THE MSc THESIS PROJECT (3cr.)
Le projet de recherche doit normalement s'inscrire dans un champ d'études reconnu par le CRSNG. / The research project must normally be in a research field recognized by NSERC.

GEG7998 ÉLABORATION ET PRÉSENTATION DU PROJET DE MAÎTRISE ÈS ARTS/PREPARATION AND PRESENTATION OF THE MA THESIS PROJECT (3cr.)
Le projet de recherche doit normalement s'inscrire dans un champ d'études reconnu par le CRSH. / The research project must normally be in a research field recognized by SSRHC.

GEG9999 THÈSE DE MAÎTRISE/MASTER'S THESIS

GEG8900 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)

GEG9001 ÉLABORATION ET PRÉSENTATION DU PROJET DE THÈSE DE DOCTORAT / PREPARATION AND PRESENTATION OF PhD THESIS PROJECT (6cr.)

GEG9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION

Ottawa-Carleton Geoscience Centre
GEO5133 (GEOL 5303) ADVANCED MICROPAL EONTOLOGY
Selected topics in micropaleontology covered in greater detail than in introductory micropaleontology. Areas addressed include the paleoecology, biogeography and biology of foraminifera and other microfossil groups, as well as their application to biostratigraphy and paleo-oceanography.

GEO5139 (GEOL 5309) GLACIAL AND PERIGLACIAL GEOLOGY (3cr.)
An examination of various sedimentary environments associated with glacial and periglacial processes and their significance for mineral exploration and environmental geochemistry. Study of cold climate non-glacial conditions and the development of permafrost and permafrost-related features, including the effect of groundwater flow on permafrost distribution.

GEO5140 (GEOL 5400) PLEISTOCENE PERMAFROST AND PERIGLACIAL ENVIRONMENTS
An examination of the stratigraphical evidence for cold, non-glacial conditions during the Pleistocene when extensive areas of mid-latitude were exposed to intense frost action and permafrost. Pleistocene periglacial sediments and sedimentary structures indicative of past permafrost are considered.

GEO5141 (GEOL 5401) PERMAFROST HYDROLOGY AND INVESTIGATIVE METHODS
An examination of groundwater flow in permafrost regions. The importance of groundwater in the formation of various types of ground ice, and the effect of groundwater flow on permafrost distribution.

GEO5142 (GEOL 5402) ENVIRONMENTAL GEO SCIENCE (3cr.)
A study-seminar course in which students will examine, in depth, certain environmental problems, including geological hazards, mineral and energy consumption and environmental degradation. The relation between development and the environment will be considered. Students will prepare a report and present a seminar on a subject of their choice, and will participate in a research project centered in the Ottawa area.

GEO5143 (GEOL 5403) ENVIRONMENTAL ISOTOPES AND GROUNDWATER GEOCHEMISTRY (3cr.)
Stable environmental isotopes (18O, 2H, 13C, 34S, 15N) in studies of groundwater origin and flow, and geothermal studies. Groundwater dating techniques involving tritium and radiocarbon, and exotic radioisotopes (e.g. 36Cl, 39Ar, 85Kr). Low temperature aqueous geochemistry and mineral solubility with emphasis on the carbonate system. Some applications to paleoclimatology will be discussed. Prerequisite: Fourth-year Hydrogeology (67.420 or GEO 4342) or equivalent.

History (PhD)

The Department of History offers the degrees of Master of arts (with or without thesis) and doctor of philosophy in history. Within the limits imposed by the availability of qualified staff, students may pursue their studies in English or in French.

At the master's level students undertake research in diverse areas corresponding to the expertise and interests of faculty members.

At the doctoral level, the department has five areas of strength:

1) Canada and North America

2) Europe
3) Women, Gender and the Family

4) Empire, Colonization and Decolonization

5) War, Conflict and Diplomacy.

Candidates may be accepted in other areas depending upon the availability of qualified supervisors.

Admission

Students must have an MA in history (or the equivalent) with a minimum average of 75 per cent (B+) before they can be considered for admission. However, applicants with an 80 per cent (A-) average in the honours BA may also be accepted after completion of the course work of the non-thesis master's program, provided they have performed at the same level in their master's courses. The department may require a written or oral entrance examination.

Advisers

On admission, students are assigned an adviser to assist in the choice of courses and fields.

Program Requirements

PhD Degree Requirements

Students satisfy the academic requirements of the doctoral degree by:

1. the successful completion of the Doctoral Research Seminar (HIS 8900) (3 cr.)
2. the successful completion of three fields (9 cr.)
3. the successful completion of an oral examination (HIS 9998), covering the candidate's three fields; and
4. the successful completion and defence of a doctoral thesis (HIS 9999).

1. Each doctoral field entails independent reading and written work under the guidance of a director. An outline of the work to be undertaken in each field must be approved by the relevant field director and submitted for approval to the graduate studies committee before the end of the student's first session of registration in the program. The field director is responsible for monitoring the student's progress and for grading the student's written work and overall performance. Students may not enrol in any doctoral field for more than four sessions.

2. The oral examination, combining all three doctoral fields, is held before a jury presided over by the chairperson of the departmental graduate studies committee, or his representative. Students are required to take the oral examination by the end of their fourth session.

3. The research, writing and defence of the thesis generally require two full years after the oral examination. The thesis must be an original contribution to historical knowledge. It should be 250-350 pages in length excluding notes and bibliography and appendices. It must be defended before a jury normally composed of four examiners, three of whom are members of the Faculty of Graduate and Postdoctoral Studies at the University of Ottawa and one of whom is from outside the University.

Residence

Students must register full-time for at least six sessions at the beginning of their program.

Language Requirements

Students in both the master's and doctoral programs must understand, speak and write either English or French fluently. In addition, students in both programs must demonstrate their reading competence in Canada's other official language, French or English, at the earliest opportunity, by passing a language examination administered by the department in the fall or winter session. To this end, registration in HIS 5599 is compulsory.

Students who take a graduate course in history in the other language may be exempted from this examination, given a favourable report from the professor concerned.

Students working in a field of history where a language other than English or French is necessary may also be required to demonstrate their grasp of that language.

Duration of the program

Students are expected to fulfill all requirements within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Collaborative Program in Canadian Studies at the Doctoral Level
The Department of History is a participating unit in the collaborative program in Canadian Studies at the doctoral level. This program has been established for students wishing to enrich their training in history by including an interdisciplinary component in Canadian Studies. In addition to the 12 credits required for the PhD program in History, the collaborative program requires completion of either CDN 6910 Seminar in Canadian Studies or CDN 6520 Séminaire sur la Francophonie canadienne.

To be admitted to the collaborative program, students must have successfully completed at least one graduate course in history with Canadian content. The mention “Specialization in Canadian Studies” will be added to the diploma of students who pass the CDN 6910 or CDN 6520 seminar and successfully defend a thesis on a Canadian topic in history.

For further details, please consult the collaborative program in Canadian Studies website of the Faculty of Graduate and Postdoctoral Studies.

**Courses**

Pour satisfaire aux exigences de la maîtrise, les étudiants peuvent accumuler jusqu'à six crédits parmi les champs de niveau 9000. Le cours HIS 5522 ou HIS 5122 est obligatoire pour les candidats à la maîtrise.

Les personnes inscrites à la maîtrise peuvent, à la discrétion du Comité des études supérieures du Département, suivre un cours de trois crédits choisi entre HIS 7399 Directed Studies in History ou HIS 7799 Études dirigées en histoire.

Les candidats à la maîtrise peuvent, avec la permission du Comité des études supérieures du Département, accumuler trois crédits parmi les séminaires de quatrième année.

Tous les cours de niveau 5000, 6000 et 7000 énumérés ci-après valent trois crédits (à l'exception des cotes HIS 5199, 5599, 6999 et 7999). Ils ne sont pas nécessairement offerts chaque année. Pour savoir quel est le programme en vigueur chaque année, consulter le Département d'histoire ou encore son site Internet.

Up to six credits in 9000-level fields may be counted towards the master's program course requirements. HIS 5122 or HIS 5522 is obligatory.

Students in the master's program may take, at the discretion of the departmental graduate studies committee, one three-credit directed studies course (either HIS 7399 Directed Studies in History or HIS 7799 Études dirigées en histoire).

Master's students may also take, with the approval of the departmental graduate studies committee, three credits from among fourth-year seminars.

All of the 5000-, 6000- and 7000-level courses listed below are for three credits each (except for HIS 5199, 5599, 6999 and 7999). They are not necessarily offered every year.

Students should check with the Department or the departmental Web site for annual course offerings.

**HIS7399 DIRECTED STUDIES IN HISTORY** (3cr.)
**HIS7799 ÉTUDES DIRIGÉES EN HISTOIRE** (3cr.)
**HIS5103 SEMINAR IN CANADIAN HISTORY** (3cr.)
**HIS5111 SEMINAR IN NEW FRANCE** (3cr.)
**HIS5122 RESEARCH SEMINAR** (3cr.)
**HIS5125 SEMINAR ON HISTORY OF QUEBEC** (3cr.)
**HIS5129 SEMINAR ON BRITISH NORTH AMERICA** (3cr.)
**HIS5199 ENGLISH LANGUAGE REQUIREMENT IN HISTORY**
**HIS5503 SÉMINAIRE EN HISTOIRE CANADA** (3cr.)
The PhD program in human kinetics requires successful completion of the following:

- A minimum of 6 credits and a maximum of 18 credits of coursework, with at least 12 credits in the candidate's primary field.

Students in the human kinetics master's program who have achieved an 80% (A-) average in their last two years of undergraduate studies may be admitted. The successful candidate will specify the primary program and indicate 'specialization in human and molecular genetics'.

HIS9940 HISTOIRE DU MOYEN-ORIENT ET DE L’AFRIQUE DU NORD / MIDDLE EASTERN AND NORTH AFRICAN HISTORY

At the doctoral level, the department has five areas of strength:

1. History of Africa
2. History of the Middle East
3. History of the Mediterranean
4. History of Japan
5. History of China

The program is offered on a full-time basis. Most of the courses are offered in English. Research activities can be conducted either in English, French, or both.

Admission:

- Practical experience and completion of a project related to HTA in a research organization or an HTA agency, under the supervision of a faculty member.

For further details, please consult the Canadian Studies Website of the Faculty of Graduate and Postdoctoral Studies.

CVG7162 (ENVE 5103) AMBIENT AIR QUALITY AND POLLUTION MODELLING

Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master's thesis provided they meet the following criteria:

- Satisfactory progress in the research program;
- The successful completion of an oral examination (HIS 9998), covering the candidate's three fields; and
- Submission of a well developed research plan that must include, at a minimum, a thesis proposal and background literature review that demonstrates a good academic research performance.

In-depth examination of issues relating to the history of colonialism and postcolonialism.

Prerequisite: Permission of the co-op office.

EPI7501 ÉPIDÉMIOLOGIE GÉNÉTIQUE

Students will write a thesis or dissertation under the supervision of a faculty member.

ENG6101 DIRECTED RESEARCH (THESIS PROPOSAL) (3cr.)

ENG6111 DIRECTED READINGS I (3cr.)

Only in the most exceptional of circumstances may a student be allowed to undertake-directed research (EPI 7501) in another University or in industry.

Prerequisite: EPI5240 or equivalent.

Non-regression methods of analyzing survival data:

- Propensity scores
- Marginal structural models
- Inverse probability weighting

In-depth examination of issues relating to the history of colonialism and postcolonialism.

Prerequisite: Permission of the co-op office.

EPI7503 ÉTUDES D’ASSOCIATION EN GÉNÉTIQUE

Students will write a thesis or dissertation under the supervision of a faculty member.

ENG6101 DIRECTED RESEARCH (THESIS PROPOSAL) (3cr.)

ENG6111 DIRECTED READINGS I (3cr.)

Only in the most exceptional of circumstances may a student be allowed to undertake-directed research (EPI 7503) in another University or in industry.

Prerequisite: EPI5240 or equivalent.
HIS7535 SÉMINAIRE SUR LA GUERRE ET LA SOCIÉTÉ (3cr.)

HIS7705 MÉTHODES DE RECHERCHE EN HISTOIRE (3cr.)

HIS7731 SÉMINAIRE EN HISTOIRE DES FEMMES ET DU Genre (3cr.)

HIS7733 SÉMINAIRE EN RELATIONS INTERNATIONALES (3cr.)

HIS7738 SÉMINAIRE EN HISTOIRE DU COLONIALISME ET DU POSTCOLONIALISME (3cr.)

Etudes approfondies sur des questions liées à l'histoire du colonialisme et du postcolonialisme.

HIS7999 THÈSE DE MAÎTRISE / MA THESIS

HIS8900 SÉMINAIRE DE RECHERCHE DOCTORALE / DOCTORAL RESEARCH SEMINAR (3cr.)

Séminaire sur des sujets se rapportant aux débats historiographiques et aux méthodologies de recherche en histoire. / Seminar on topics relating to the historiographical debates and research methodologies in history.

Tous les champs de niveau 9900 ci-après valent trois crédits (à l'exception des cotes HIS 9998 et 9999). Les étudiants doivent choisir leurs champs d'études et leurs directeurs de champs, tout en tenant compte de la disponibilité des professeurs. La langue d'enseignement est décidée sur entente entre l'étudiant et le professeur.

All the 9900-level doctoral fields listed below are for three credits (except HIS 9998 and 9999). Subject to availability of professors, students are responsible for determining their fields and field directors. The language of instruction is decided on mutually between the student and the professor.

HIS9901 LE CANADA FRANÇAIS / FRENCH CANADA (3cr.)

HIS9902 L'AMÉRIQUE COLONIALE / COLONIAL AMERICA (3cr.)

HIS9903 L'AMÉRIQUE BRITANNIQUE DU NORD JUSQU'À 1873 / BRITISH NORTH AMERICA TO 1873 (3cr.)

HIS9904 LE CANADA APRÈS LA CONFÉDÉRATION / POST-CONFEDERATION CANADA (3cr.)

HIS9905 LA NOUVELLE-FRANCE / NEW FRANCE (3cr.)

HIS9910 QUÉBEC / QUEBEC (3cr.)

HIS9920 L'AMÉRIQUE LATINE / LATIN AMERICA (3cr.)

HIS9930 HISTOIRE DE L'ASIE / ASIAN HISTORY (3cr.)

HIS9940 HISTOIRE DU MOYEN-ORIENT ET DE L'AFRIQUE DU NORD / MIDDLE EASTERN AND NORTH AFRICAN HISTORY (3cr.)

HIS9950 HISTOIRE DE L'AFRIQUE / HISTORY OF AFRICA (3cr.)

HIS9954 HISTOIRE DES ÉTATS-UNIS / U.S. HISTORY (3cr.)

HIS9980 HISTOIRE ÉCONOMIQUE / ECONOMIC HISTORY (3cr.)

HIS9981 HISTOIRE SOCIO-CULTURELLE / SOCIO-CULTURAL HISTORY (3cr.)

HIS9982 HISTOIRE INTELLECTUELLE / INTELLECTUAL HISTORY (3cr.)

HIS9983 HISTOIRE POLITIQUE / POLITICAL HISTORY (3cr.)

HIS9984 RELATIONS INTERNATIONALES / INTERNATIONAL RELATIONS (3cr.)

HIS9985 HISTOIRE DE LA MÉDECINE, DES TECHNIQUES ET DES SCIENCES / HISTORY OF MEDICINE, TECHNOLOGY AND
SCIENCE (3cr.)

HIS9986 HISTOIRE DES AUTOCHTONES DU CANADA / HISTORY OF CANADA'S NATIVE PEOPLES (3cr.)

HIS9987 HISTOIRE DES IMMIGRANTS ET DES COMMUNAUTÉS ETHNO-CULTURELLES EN AMÉRIQUE DU NORD / HISTORY OF IMMIGRANTS AND ETHNIC GROUPS IN NORTH AMERICA (3cr.)

HIS9988 HISTOIRE DES FEMMES / HISTORY OF WOMEN (3cr.)

HIS9989 HISTOIRE MILITAIRE ET DIPLOMATIQUE / MILITARY AND DIPLOMATIC HISTORY (3cr.)

HIS9990 L’EUROPE MÉDIÉVALE / MEDIEVAL EUROPE (3cr.)

HIS9991 L’EUROPE MODERNE / EARLY MODERN EUROPE (3cr.)

HIS9992 LA GRANDE-BRETAGNE / GREAT BRITAIN (3cr.)

HIS9993 L’EUROPE DES 19e ET 20e SIÈCLES / 19th AND 20th CENTURY EUROPE (3cr.)

HIS9994 LA FRANCE DEPUIS LA RÉVOLUTION / FRANCE SINCE THE REVOLUTION (3cr.)

HIS9995 LA FRANCE DE L'ANCIEN RÉGIME / FRANCE OF THE ANCIEN RÉGIME (3cr.)

HIS9998 EXAMEN ORAL DU DOCTORAT / DOCTORAL ORAL EXAMINATION

HIS9999 THÈSE DE DOCTORAT / PhD THESIS

**Human and Molecular Genetics (PhD) (Collaborative)**

This is a collaborative graduate specialization in human and molecular genetics at master's and doctoral level. The primary graduate programs in biochemistry (BCH), cellular and molecular medicine (CMM) and neuroscience (NSC) all collaborate in offering the specialization. The degree awarded specifies the primary program and includes "specialization in human and molecular genetics".

Students must meet the admission and curriculum requirements of their primary program as well as the specific requirements of the collaborative program.

Members of the program include scientists with interest and expertise in the following areas: developmental genetics, neuromuscular disease, microbial genetics, host resistance, cancer biology, aging, development of novel molecular therapeutics, gene therapy, growth and development, auto-immune diseases, molecular biology of viruses, bacteria and parasites, genetic epidemiology, retinal development and disease, animal models of human disease, molecular aspects of signal transduction.

**Admission**

Candidates are admitted through the master's or doctoral program either in biochemistry (BCH) or cellular and molecular medicine (CMM) or neuroscience (NSC) and must therefore meet the admission requirements of those programs. Transfer from master's to doctoral level without completing a master's thesis is permitted in the collaborative program under the same conditions as in the primary programs. Proficiency in English is required. Candidates should indicate in their initial application for admission into the primary program that they wish to be accepted into the collaborative program. To be accepted, the thesis director must be a member of the collaborative program. Students will normally be informed about their acceptance into the collaborative program at the same time as being informed about their admission into the primary program.

**Additional Information**

For detailed information about the primary participating graduate programs, consult the relevant sections of the graduate calendar at the web address: www.grad.uOttawa.ca.

Students are also advised to consult the General Regulations of the Faculty of Graduate and Postdoctoral Studies at the web address: www.grad.uOttawa.ca.

**Program Requirements**
Doctoral Program Requirements

1. Six credits of courses, three credits of which must be from the student’s primary program and three of which must be HMG credits;
2. Enrolment in the seminar course, presentation of one seminar and active participation in the seminar series in the student’s primary program;
3. Comprehensive examination as required by the primary program;
4. Presentation of one research seminar to the primary program prior to thesis submission;
5. Presentation and successful defence of a thesis based on original research carried out under the direct supervision of a member of the collaborative program.

Course selection is subject to the approval of the HMG program director.

Students Transferring from Master's to Doctorate

Following transfer, all the requirements of the HMG doctoral program must be met: six credits of courses including three HMG credits, the seminar in the primary program, comprehensive exam, presentation of one research seminar, and the thesis.

Comprehensive Examination

The examination is subject to the regulations in place for the student’s primary program.

Courses

HMG8103 ADVANCED TOPICS IN THE MOLECULAR BIOLOGY OF HUMAN DISEASES I (3cr.)
Topics will be selected and representative of current developments in the field. The course consists of a repeated series of 3 hour lecture by an expert in the field one week, followed by student presentations, discussions and critique of assigned papers on that topic the following week. Topics on selected diseases will focus on various aspects of cancer, apoptosis, disease gene identification and gene therapy. In the past these topics have included the molecular aspects of various cancers, spinal muscular atrophy, tissue regeneration, the discovery of disease genes, infectious disease (HIV) and gene therapy. Students will write a grant proposal and participate in mock grant review panels. Depending on enrolment, the course may be limited to HMG students only. Prerequisite: Permission of the HMG program director.

HMG8105 / BCH8105 ADVANCED TOPICS IN THE MOLECULAR BIOLOGY OF HUMAN DISEASES II (3cr.)
Topics will be selected and representative of current developments in the field. The course consists of a repeated series of a 3 hour lecture by an expert in the field one week, followed by student presentations, discussions and critique of assigned papers on that topic the following week. Topics on selected diseases will focus on various aspects of cancer, apoptosis, disease gene identification and gene therapy. In the past these topics have included the molecular aspects of various cancers, spinal muscular atrophy, tissue regeneration, the discovery of disease genes, infectious disease (HIV) and gene therapy. Students will write a grant proposal and participate in mock grant review panels. Depending on enrolment, the course may be limited to HMG students only. Prerequisite: Permission of the HMG program director.

HMG8600 SPECIAL TOPICS IN HUMAN AND MOLECULAR GENETICS (3cr.)
Current topics in molecular genetics, developmental genetics, cancer genetics, neurogenetics, population genetics, clinical genetics and other areas depending on available expertise and interest expressed. Offered alternate years subject to sufficient demand. Prerequisite: Permission of the course coordinator.

Human Kinetics (PhD)

The School of Human Kinetics (SHK), located within the Faculty of Health Sciences, offers a Master of Arts degree (MA), a Master of Science degree (MSc), a Master of Human Kinetics (MHK) and a Doctor of Philosophy degree (PhD) in human kinetics. The PhD program prepares candidates for a career involving research and/or professional practice in the psychosocial or biophysical sciences in human kinetics and/or related fields. Students will acquire state-of-the-art knowledge and research methodology skills that will enable them to be true leaders in their chosen field. PhD graduates will acquire autonomy in their field of research as well as a demonstrated aptitude to produce scholarly publications.

The PhD program involves two fields of research:

1. Psychosocial sciences of sport, physical activity and health: This field involves studying sport, physical activity, and health from psychological, pedagogical, administrative, and/or socio-cultural perspectives.
2. Biophysical sciences of sport, physical activity and health: This field includes biomechanics, physiology and metabolism, and neuro-psychomotor sciences as they relate to sport, physical activity, and health.

The program is offered on a full-time basis, in French and in English. In accordance with the University of Ottawa regulation, students have the right to produce their work, their thesis, and to answer examination questions in French or in English.

**Admission**

Admission to the PhD program in the human kinetics is governed by the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS). Applicants must have a master’s degree in Human Kinetics or a related discipline with a minimum average of 75% (B+) calculated in accordance with FGPS guidelines. Proficiency in either English or French is required. Applicants whose first language is neither English nor French should provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the admission section of the general regulations of the FGPS.

Applications will be evaluated based on the following criteria:

1. Academic performance in previous studies;
2. Letters of recommendation (3);
3. Statement of purpose;
4. Identification of a professor (member of the FGPS) who is willing and available to act as thesis supervisor.

**Transfer from Master’s to PhD Program**

Students in the human kinetics master’s program who have achieved an 80% (A-) average in their last two years of undergraduate studies may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Completion of 5 graduate courses (15 credits) with a grade of A- or better in each;
2. Satisfactory progress in the research program;
3. Written recommendation from the supervisor and the thesis advisory committee;
4. Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master’s. Following transfer, all the requirements of the doctoral program must be met: six credits of coursework, the comprehensive exam and the thesis.

**Collaborative Program in Canadian Studies at the PhD Level**

The School of Human Kinetics is a participating unit in the Collaborative Program in Canadian Studies at the PhD level. This program has been established for students wishing to enrich their training in human kinetics by including an interdisciplinary component in Canadian Studies. Students must pass the Canadian Studies Seminar (CDN 6910 or CDN 6520) in addition to the six credits of course required for the PhD in human kinetics.

To be admitted to the Canadian Studies specialization, students must be registered in or have successfully completed at least one graduate course in human kinetics with Canadian content. The designation “Specialization in Canadian Studies” will be added to the diploma of students who pass the Canadian Studies Seminar (CDN 6910 or CDN 6520) and successfully defend a thesis on a Canadian topic in human kinetics.

For further details, please consult the Canadian Studies program on the Faculty of Graduate and Postdoctoral Studies (FGPS) website.

**Program Requirements**

**Degree Requirements**

The PhD program in human kinetics requires successful completion of the following: a minimum of 6 credits and a maximum of 18 credits of coursework, with at least 3 credits from 7000-level courses within the School of Human Kinetics; a comprehensive examination; a thesis proposal; and a thesis. The type and amount of coursework depends on the student's background (research experience and skills) and chosen field of research. Each student’s course selection must be approved by the School of Human Kinetics’ Assistant Director of Graduate Studies.

**Residence**

All full-time students must complete a minimum of six sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the initial registration in the program.

**Thesis Advisory Committee**

During their first session in the program, a thesis advisory committee (TAC) is formed for each student. The thesis supervisor chairs the TAC, which consists of at least three members, including the chair. The majority of committee members must be from the University of Ottawa and at least two members besides the
supervisor must be from the School of Human Kinetics. The TAC is responsible for guiding the student throughout the program, including the comprehensive examination, thesis proposal, and thesis defence.

**Minimum Standards**

The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), the thesis proposal, the comprehensive exam or whose progress is deemed unsatisfactory must withdraw from the program.

**Duration of the program**

Students are expected to fulfill all requirements within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

**Courses**

**APA5103 LEADERSHIP AND SUPERVISION IN SPORT AND PHYSICAL ACTIVITY** (3cr.)

Critical analysis of leadership theories and related research. Discussion of the nature and scope of supervision of personnel and programs, strategic planning, personal values and development of organizational vision, and staff and program evaluation in sport and physical activity environments.

**APA5104 SPORT AND PHYSICAL ACTIVITY IN CANADIAN LIFE** (3cr.)

Sociological analysis of sport and physical activity. Socio-historical determinants of sport and physical activity. Emphasis on the organizational structure of sport and physical activity, ideologies, and current practices. Different themes may also be examined: sociology of sport organizations, social movements, and social problems.

**APA5105 ORGANIZATIONAL THEORY IN SPORT AND PHYSICAL ACTIVITY** (3cr.)

Interpretation of organizational theory in the context of sport and physical activity environments. Focus on the study of Canadian amateur and professional sport organizations as well as other organizations associated to sport and physical activity in the public and private sectors.

**APA5106 MENTAL SKILLS TRAINING FOR SPORT, PHYSICAL ACTIVITY AND HEALTH** (3cr.)

Critical examination of mental skills used to enhance performance in diverse sport, exercise, and health settings. Discussion of various ways to assess mental skills. Experimentation with teaching different mental training techniques and creating effective mental skills training programs. *Prerequisite: APA 5309.*

**APA5107 COUNSELLING SKILLS AND APPROACHES IN SPORT, PHYSICAL ACTIVITY AND HEALTH** (3cr.)

Critical examination of counselling approaches and theories. Discussion and application of fundamental counselling skills in the contexts of sport, physical activity, and health.

**APA5303 MARKETING AND SPONSORSHIP OF SPORT AND PHYSICAL ACTIVITY** (3cr.)

Study of the literature and research pertaining to the marketing and sponsorship of sport and physical activity programs and events. Strategic planning, fundraising, and event management for various types of organizations.

**APA5304 ECONOMY OF SPORT AND PHYSICAL ACTIVITY** (3cr.)

Principles of economics applied to sport and physical activity: market supply and demand, competition, profit maximisation, and cartels. Study of labour markets: value of the marginal physical product, monopoly, exploitation, and unionization. Public economics of sport and physical activity.

**APA5305 POLICY ANALYSIS OF SPORT AND PHYSICAL ACTIVITY IN CANADA** (3cr.)

Critical examination of the role of government in policy development. An analysis of sport and physical activity policies as related to amateur and professional sport organizations in Canada as well other organizations involved in sport and physical activity in the public and private sectors.

**APA5306 ETHICS AND VALUES IN SPORT AND PHYSICAL ACTIVITY** (3cr.)

Critical examination of professionals' and volunteers' decision-making in the context of sport and physical activity. Discussion of concepts and theories to encourage and cultivate critical, reflective, and ethically-based thinking about the cases examined.

**APA5307 SPORT, PHYSICAL ACTIVITY AND THE LAW** (3cr.)

Study of legal aspects of sport and physical activity including general introduction to law and the Canadian constitution. Legislation related to sports and physical activity programs, criminal liability for violence, civil liability for injuries and the duties of organizers and instructors, civil rights of athletes in selection and disciplinary procedures, human rights issues, and selected issues in professional sport including employment relations.

**APA5308 ORGANIZATIONAL BEHAVIOUR IN SPORT AND PHYSICAL ACTIVITY** (3cr.)

Study of organizational behavior in sport and physical activity organizations. Discussion of topics such as effective interpersonal communication, goal setting, group dynamics, team building, group renewal processes, gender differences in the workplace, power dynamics, and conflict management.
The aim of this seminar is to provide doctoral students with the necessary methodological and professional tools for carrying out research in linguistics. This includes (phonetics, phonology, morphology, syntax, semantics), first and second language acquisition, psycholinguistics, neurolinguistics and the like. The student will submit a written work to the members of the advisory committee at the end of the third registration session (noted S satisfactory / NS not satisfactory basis).

APA5309 PERFORMANCE ENHANCEMENT, QUALITY LIVING AND MENTAL TRAINING CONSULTATION (3cr.)
Presentation of current material in applied sport psychology, mental training consulting, and performance and life enhancement. Discussion of mental skills used at developmental and high performance levels. Application of mental skills related to personal excellence.

APA5311 ANALYSIS AND ENHANCEMENT OF INTERVENTIONS IN SPORT, PHYSICAL ACTIVITY AND HEALTH SETTINGS (3cr.)
Critical behaviour analysis of practitioners and clients in various sport, physical activity, and health contexts. Presentation of plans to enhance learning situations. Discussion of concepts of clinical supervision, self- supervision and peer-supervision. Experimentation with various observational tools. Prerequisite: APA 5107, 5925, 6905.

APA5314 SEMINAR: CONSULTATION AND INTERVENTION I (1.5cr.)
Presentation, discussion, and critical analysis of current interventions and related issues in sport, physical activity, and health. Graded on a (S) satisfactory / (NS) not satisfactory basis.

APA5315 SEMINAR: CONSULTATION AND INTERVENTION II (1.5cr.)
Critical analysis of current interventions and related issues in sport, physical activity, and health. Discussion of applied consultations. Preparation for the internship. Graded on a (S) satisfactory / (NS) not satisfactory basis.

APA5316 SEMINAR: CURRENT RESEARCH IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY (1.5cr.)
Critical analysis of current research in the administration of sport and physical activity. Graded on a (S)satisfactory / (NS) not satisfactory basis.

APA5317 SEMINAR: PROFESSIONAL ENVIRONMENT (1.5cr.)
Presentation and discussion of current issues in the administration of sport and physical activity. Oral presentation of selected topics and research papers. Graded on a (S)satisfactory / (NS) not satisfactory basis.

APA5318 FINANCIAL MANAGEMENT OF SPORT AND PHYSICAL ACTIVITY (3cr.)
Financial management concepts and tools applied to sport and physical activity programs. Topics include: public and private sector funding, accounting and budgeting, economic impact studies, feasibility studies, resource acquisition strategies, public private partnerships, forms of ownership and event management.

APA5503 LEADERSHIP ET SUPERVISION EN SPORT ET ACTIVITÉ PHYSIQUE (3cr.)
Analyse critique des théories et de la recherche en leadership. Discussion de la supervision du personnel et des programmes, de la planification stratégique, des valeurs personnelles et du développement d'une vision organisationnelle, et de l'évaluation du personnel et des programmes dans le contexte du sport et de l'activité physique.

APA5504 SPORT ET ACTIVITÉ PHYSIQUE DANS LA VIE CANADIENNE (3cr.)

APA5505 PERSPECTIVES ORGANISATIONNELLES DU SPORT ET DE L'ACTIVITÉ PHYSIQUE (3cr.)
Interprétation des théories organisationnelles dans le contexte du sport et de l'activité physique. Accent sur les organisations du sport amateur et professionnel au Canada de même que des organisations du secteur public et privé oeuvrant dans le domaine du sport et de l'activité physique.

APA5506 ENTRAINEMENT DES HABILETÉS MENTALES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)

APA5507 HABILETÉS ET APPROCHES DE CONSEILLING EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Analyse critique des approches et théories de counselling. Discussion et application des habiletés de counselling de base dans les contextes du sport, de l'activité physique et de la santé.

APA5703 MARKETING ET COMMANDITE DU SPORT ET DE L'ACTIVITÉ PHYSIQUE (3cr.)
Revue de la littérature et de la recherche portant sur le marketing, la commandite des événements et des programmes de sport et activité physique. Planification stratégique, levée de fonds et gestion des événements pour divers types d'organisations.

APA5704 ÉCONOMIE DU SPORT ET DE L'ACTIVITÉ PHYSIQUE (3cr.)

APA5705 POLITIQUE CANADIENNE EN MATIÈRE DE SPORT ET D'ACTIVITÉ PHYSIQUE (3cr.)
Analyse critique du rôle de l'État dans le développement des politiques en matière de sport et d'activité physique. Analyse de ces politiques dans le contexte des différents organismes de sport amateur et professionnel au Canada de même que des autres organismes du secteur public et privé oeuvrant dans le domaine du sport et de l'activité physique.
APA5706 SPORT ET ACTIVITÉ PHYSIQUE : ÉTHIQUE ET VALEURS (3cr.)
Examen critique de la prise de décision des professionnels et des bénévoles dans le domaine du sport et de l’activité physique. Discussion de concepts et de théories visant à encourager la pensée éthique, critique et réfléctive des enjeux présentés.

APA5707 SPORT, ACTIVITÉ PHYSIQUE ET LOI (3cr.)
Étude des aspects juridiques du sport et de l'activité physique, y compris une introduction générale au droit et à la constitution canadienne. Les thèmes discutés comprennent : la législation relative aux programmes de sport et d'activité physique, la violence dans le sport et le droit pénal, la responsabilité civile pour des accidents sportifs et les devoirs des organisateurs et des entraîneurs, les droits des athlètes en matière de sélection et de procédures disciplinaires, les droits de la personne, et quelques aspects particuliers du sport professionnel y compris les relations de travail.

APA5708 COMPORTEMENT ORGANISATIONNEL EN SPORT ET ACTIVITÉ PHYSIQUE (3cr.)
Étude des comportements de groupe au sein des organismes de sport et d'activité physique. Discussion de divers enjeux tels la communication efficace, l’établissement d'objectifs, la dynamique de groupe, le développement de l'esprit d'équipe, le ressourcement collectif, les différences entre les hommes et les femmes en milieu de travail, les relations de pouvoir et la gestion des conflits.

APA5709 CONSULTATION EN PRÉPARATION MENTALE ET EN AMÉLIORATION DE LA PERFORMANCE ET DE LA QUALITÉ DE VIE (3cr.)
Présentation des derniers développements dans le domaine de la psychologie du sport et de la consultation dans le domaine de la préparation mentale et de l’amélioration de la performance et de la qualité de vie. Discussion de la préparation mentale des athlètes qui sont à leurs débuts et de ceux qui sont à un niveau plus élevé. Application d’aptitudes mentales reliées à l’excellence personnelle.

APA5711 ANALYSE ET PERFECTIONNEMENT DE L’INTERVENTION DANS LE DOMAINE DU SPORT, DE L’ACTIVITÉ PHYSIQUE ET DE LA SANTÉ (3cr.)

APA5714 SÉMINAIRE : CONSULTATION ET INTERVENTION I (1.5cr.)
Présentation, discussion et analyse critique d’interventions courantes et questions apparentées dans le domaine du sport, de l’activité physique et de la santé. Noté (S) satisfaisant ou (NS) non satisfaisant.

APA5715 SÉMINAIRE : CONSULTATION ET INTERVENTION II (1.5cr.)
Analyse critique d'interventions courantes et questions apparentées dans le domaine du sport, de l'activité physique et de la santé. Discussion de consultations. Préparation pour l'internat. Noté (S) satisfaisant ou (NS) non satisfaisant.

APA5716 SÉMINAIRE : RECHERCHE EN ADMINISTRATION DU SPORT ET DE L'ACTIVITÉ PHYSIQUE (1.5cr.)
Analyse critique des recherches récentes en administration du sport et de l’activité physique. Noté (S) satisfaisant ou (NS) non satisfaisant.

APA5717 SÉMINAIRE : ENVIRONNEMENT PROFESSIONNEL (1.5cr.)
Présentation et discussion des enjeux actuels en administration du sport et de l’activité physique. Présentations orales d’enjeux choisis et de travaux de recherche. Noté (S) satisfaisant ou (NS) non satisfaisant.

APA5718 GESTION FINANCIÈRE DU SPORT ET DE L’ACTIVITÉ PHYSIQUE (3cr.)
Concepts et instruments de gestion financière appliqués aux programmes de sport et d'activité physique. Sujets abordés : financement des secteurs privé et public, comptabilité et budget, études d'impact économique, études de faisabilité, stratégies d'acquisition de ressources, partenariat public privé, formes de propriété et gestion d'événements.

APA5915 STAGE EN ADMINISTRATION DU SPORT ET DE L’ACTIVITÉ PHYSIQUE / INTERNSHIP IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY
Entraînement pratique d'une durée de 360 heures sous la direction d'un membre du corps professoral et d'un spécialiste travaillant au sein d'un organisme oeuvrant dans le domaine du sport et/ou de l'activité physique. Préalables : APA 5504, APA 5708, APA 5716, APA 5717, APA 5505, APA 6702 ou APA 6703. / A 360-hour practical internship under the supervision of a faculty member and of a specialist in a selected organization in the field of sport and/or physical activity. Prerequisites: APA 5508, APA 5516, APA 5517, APA 5104, APA 5105, APA 6302 or APA 6303.

APA5920 RAPPORT DE STAGE EN ADMINISTRATION DU SPORT ET DE L’ACTIVITÉ PHYSIQUE / INTERNSHIP REPORT IN ADMINISTRATION OF SPORT AND PHYSICAL ACTIVITY
Rapport écrit analysant le stage pratique en administration du sport et de l’activité physique à la lumière des connaissances théoriques acquises dans les cours du programme. Préalable : APA 5915. / Major paper analyzing the internship in administration of sport and physical activity in light of the theoretical knowledge gained in program courses. Prerequisite : APA 5915.

APA5925 STAGE EN INTERVENTION ET CONSULTATION / INTERNSHIP IN INTERVENTION AND CONSULTATION
Entraînement pratique d'une durée de 400 heures sous la direction d'un membre du corps professoral et d'un spécialiste travaillant au sein d'un organisme dans le domaine du sport, de l'activité physique, et/ou de la santé. Préalables : APA 6905, APA 5106, APA 5507, APA 5709, APA 5706, APA 5714, APA 5715. / A 400-hour practical internship under the supervision of a faculty member and a specialist in a selected organization in the field of sport, physical activity, and/or
APSA930 RAPPORT DE STAGE EN INTERVENTION ET CONSULTATION / INTERNSHIP REPORT IN INTERVENTION AND CONSULTATION
Rapport écrit analysant le stage pratique en intervention et consultation à la lumière des connaissances théoriques acquises dans les cours du programme. Préalable : APA 5925. / Major paper analyzing the internship in intervention and consultation in light of the theoretical knowledge gained in program courses. Prerequisite: APA 5925.

APSA997 ÉTUDES DIRIGÉES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ / DIRECTED STUDIES IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Recherche individuelle sur un problème relié au sport, à l’activité physique et/ou à la santé. Le sujet, sa portée et le plan de travail doivent être approuvés par le directeur adjoint des études supérieures. Un résumé écrit, signé par le professeur(e) est exigé. / Individual research investigation of a problem related to sport, physical activity and/or health. The subject and the work plan must be approved by the Assistant Director of Graduate Studies. A written abstract, signed by the Professor is also required.

APSA6100 QUALITATIVE DATA ANALYSIS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Study of the major methods (observation, interviews, textual analysis) used to collect qualitative data in sport, physical activity and health. Emphasis on developing the skills needed in the management, analysis and interpretation of qualitative data.

APSA6101 QUANTITATIVE DATA ANALYSIS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Advanced statistical analysis and interpretation of data derived from experimental and quasi-experimental research. Application of analysis of variance, analysis of covariance, MANOVA and techniques of linear regression, multivariate analysis and factor analysis. Prerequisite: undergraduate statistics course is strongly recommended.

APSA6302 QUALITATIVE RESEARCH METHODS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Discussion of theoretical foundations of qualitative research methods. Detailed examination of a research proposal. Critical evaluation of methodology and analysis of research related to sport, physical activity and health.

APSA6303 QUANTITATIVE RESEARCH METHODS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Discussion of theoretical foundations of quantitative research methods. Detailed examination of a research proposal. Critical evaluation of methodology and analysis of research related to sport, physical activity and health.

APSA6500 ANALYSE DE DONNÉES QUALITATIVES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Présentation des principales méthodes (observations, entrevues, textes) utilisées pour la collecte de données dans les recherches qualitatives en sport, activité physique et santé. Accent sur le développement des habiletés nécessaires pour la gestion, l'analyse et l'interprétation de données qualitatives.

APSA6501 ANALYSE DE DONNÉES QUANTITATIVES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Analyse statistique avancée et interprétation des données de recherche dans le cadre de plans expérimentaux et quasi-expérimentaux. Application de la procédure d'analyse de la variance, d'analyse de la covariance, d'analyse MANOVA et techniques de régression linéaire, d'analyse multivariée et d'analyse factorielle. Préalable : cours de statistiques au baccalauréat est fortement recommandé.

APSA6702 MÉTHODES DE RECHERCHE QUALITATIVE EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Discussion des fondements théoriques des méthodes en recherche qualitative. Examen détaillé d'une proposition de recherche. Évaluation critique de la méthodologie et analyse de la recherche dans le domaine du sport, de l’activité physique et de la santé.

APSA6703 MÉTHODES DE RECHERCHE QUANTITATIVE EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ (3cr.)
Discussion des fondements théoriques des méthodes en recherche quantitative. Examen détaillé d’une proposition de recherche. Évaluation critique de la méthodologie et analyse de la recherche dans le domaine du sport, de l’activité physique et de la santé.

APSA6901 THÈMES CHOISIS EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ : ÉTUDES PHYSIOLIGIQUES / SELECTED TOPICS IN SPORT, PHYSICAL ACTIVITY AND HEALTH: PHYSIOLOGICAL STUDIES (3cr.)
Analyse critique et discussion des recherches récentes publiées dans le domaine de la physiologie de l'exercice et de la santé. / Critical analysis and discussion of recent theoretical and empirical papers presented and published in the physiology of exercise and health.

APSA6902 INTÉGRATION DE LA THÉORIE ET DE LA PRATIQUE / INTEGRATION OF THEORY AND PRACTICE (3cr.)
Analyse critique des expériences de stage à la lumière des théories et concepts en sciences administratives. Préalable : APA 5915. / Critical analysis of the internship experiences in light of organizational and administrative theories and concepts. Prerequisite: APA 5915.

APSA6903 THÈMES CHOISIS EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ : BIOMÉCANIQUE / SELECTED TOPICS IN SPORT, PHYSICAL ACTIVITY AND HEALTH: BIOMECHANICS (3cr.)
Analyse critique et discussion des recherches récentes publiées dans le domaine du développement de la biomécanique. / Critical analysis and discussion of recent theoretical and empirical papers presented and published in biomechanics.

APSA6904 THÈMES CHOISIS EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ : ÉTUDES SOCIOCULTURELLES / SELECTED TOPICS IN...
SPORT, PHYSICAL ACTIVITY AND HEALTH: SOCIOCULTURAL STUDIES (3cr.)
Analyse critique et discussion des recherches récentes publiées dans le domaine de la sociologie des organisations sportives ainsi que dans le domaine de la sociologie du sport, de l’activité physique et de la santé. / A critical analysis and discussion of recent theoretical and empirical papers presented and published in the sociology of sport organizations as well as in the sociology of sport, physical activity and health.

APA6905 THÈMES CHOISIS / SELECTED TOPICS (3cr.)
Analyse critique et discussion des recherches récentes publiées dans le domaine de l’intervention et de la psychologie du sport, de l’activité physique et de la santé. / A critical analysis and discussion of recent theoretical and empirical papers presented and published in intervention as well as in psychology of sport, physical activity and health.

APA6907 EXAMEN DES ÉCRITS PSYCHOSOCIAUX EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ / EXAMINATION OF PSYCHOSOCIAL LITERATURE IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Analyse critique et discussion des études théoriques et empiriques récemment publiées en études psychosociales dans le domaine du sport, de l'activité physique et de la santé. / A critical analysis and discussion of recent theoretical and empirical papers published in the psychosocial area of sport, physical activity and health.

APA6908 EXAMEN DES ÉCRITS BIOPHYSIQUES EN SPORT, ACTIVITÉ PHYSIQUE ET SANTÉ / EXAMINATION OF BIOPHYSICAL LITERATURE IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Analyse critique et discussion des études théoriques et empiriques récemment publiées en études biophysiques dans le domaine du sport, de l'activité physique et de la santé. / A critical analysis and discussion of recent theoretical and empirical papers published in the biophysical area of sport, physical activity and health.

APA6909 THÈMES CHOISIS : CONTRÔLE MOTEUR ET APPRENTISSAGE / SELECTED TOPICS: MOTOR CONTROL AND LEARNING (3cr.)
Concepts et principes importants de contrôle et d'apprentissage moteurs, analyse des facteurs sensoriels, cognitifs, neuraux et environnementaux qui affectent le contrôle et l'apprentissage moteurs. Étude de populations spéciales et de certains modèles numériques à l'aide de techniques contemporaines de laboratoire. / Major concepts and principles of motor control and learning. Analysis of sensory, cognitive, neural and environmental factors that affect motor control and learning. Study of special populations and computational models using contemporary laboratory techniques.

APA6923 SÉMINAIRE / SEMINAR (1.5cr.)
Discussion et critique des écrits scientifiques récents dans le domaine du sport, de l’activité physique et de la santé. Écriture scientifique et étapes menant au dépôt d’une proposition de thèse. Noté (S) satisfaisant ou (NS) non satisfaisant. / Lectures, discussions and critiques on current research in the field of sport, physical activity and health. Scientific writing and steps toward the submission of a thesis proposal. Graded on a (S) satisfactory / (NS) not satisfactory basis.

APA6924 SÉMINAIRE / SEMINAR (1.5cr.)
Discussion et critique des écrits scientifiques récents dans le domaine du sport, de l’activité physique et de la santé. Écriture scientifique et étapes menant à la publication d’un manuscrit. Noté (S) satisfaisant ou (NS) non satisfaisant. / Lectures, discussions and critiques on current research in the field of sport, physical activity and health. Scientific writing and steps toward the publication of a manuscript. Graded on a (S) satisfactory / (NS) not satisfactory basis.

APA7120 SELECTED TOPICS (3cr.)
Selected aspects of biophysical and/or psychosocial sciences, not covered by other graduate courses. Topics vary from year to year. Students at the Master's level must obtain permission from the Assistant Director of Graduate Studies.

APA7301 CRITICAL SOCIO-CULTURAL PERSPECTIVES ON SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Critical analysis of sport, physical activity and health issues and concepts through contemporary socio-cultural theories. Application of theoretical models most relevant to the students’ areas of research to assist them as they move forward in their doctoral thesis.

APA7302 CONTEMPORARY PSYCHOLOGICAL THEORIES IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)
Application of the most recent theories in psychology to issues in sport, physical activity and health. Seminar course to encourage active dialogue around the application of theory to contemporary issues in the field.

APA7304 ADVANCED EXERCISE METABOLISM AND PHYSIOLOGY (3cr.)
Principles of exercise metabolism and physiology. Topics include: regulation of energy and substrate metabolism, neuroendocrine systems, adipose tissue, environmental influences, nutrition, weight control, and the impact of exercise on health and disease.

APA7305 ADVANCED TOPICS IN BIOMECHANICS AND MOTOR/CONTROL LEARNING (3cr.)
Examination of current topics in biomechanics and motor/control research, including advanced motion analysis, biomedical imaging techniques, muscle mechanics, musculoskeletal injury mechanisms, musculoskeletal modeling, neuromuscular control of movement, and/or clinical biomechanics.

APA7520 THÈMES CHOISIS (3cr.)
Aspects choisis des sciences biophysique et/ou psychosocial non traités dans d’autres cours des cycles supérieurs. Les thèmes varient d’une année à l’autre. Les étudiants à la maîtrise doivent obtenir la permission du Directeur adjoint des études supérieures.

APA7701 PERSPECTIVES CRITIQUES SOCIOCULTURELLES SUR LE SPORT, L’ACTIVITÉ PHYSIQUE ET LA SANTÉ (3cr.)
The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program.

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the date of initial registration in the program.

Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, please see the program brochure or visit our website.

Applications are evaluated based on the following criteria:

1. Academic Background
2. Research Potential
3. Professional Experience
4. Letters of Recommendation

Candidates must have an adequate knowledge of both French and English, and they must be prepared to take courses in both languages.

## Linguistics (PhD)

### Courses

- **LIN5923 RESEARCH IN ENGLISH LINGUISTICS**
- **LIN5920 LINGUISTIQUE ET PHILOSOPHIE / LINGUISTICS AND PHILOSOPHY**

### Co-tutes

- **Cotes générales**
- **FRA6703 LITTÉRATURE DU XVIIe SIÈCLE**
- **FRA5503 SOCIOCRITIQUE ET SOCIOLOGIE DE LA LITTÉRATURE**

### Additional Requirements

- All courses, with the exception of FRA 7997, 7999, 8590, 9998, 9999, are worth three credits.

### Admission

To be considered for admission, applicants must have a strong academic record and demonstrate a clear interest in research in linguistics. The aim of this seminar is to provide doctoral students with the necessary methodological and professional tools for carrying out research in linguistics.

## Law (PhD)

The Faculty of Law offers a doctoral program leading to a PhD in law. The aim is to develop autonomous academics and lawyers who are highly qualified to contribute to the advancement of knowledge in their particular discipline through theoretical, practical and empirical research in various fields of law. The program focuses on the development and mastery of a research approach, of social and critical legal reasoning for the purpose of making original contributions in the field of law.

The doctoral program comprises the following elements: a legal research methodology and theory course, directed readings, an elective course, a comprehensive examination, a thesis proposal examination, the writing of a thesis and its defence before an examining board.

The program is offered in English and in French. In accordance with University of Ottawa Policy, examinations, assignments, and the research paper or thesis may be written in either English or French.
Fields and concentration

The LLM and PhD programs focus on the following fields:

- International law;
- Human rights law;
- International humanitarian and security law;
- Law and social justice;
- Global sustainability and environmental law;
- Droit notarial

In the context of the master's with research paper, there are several concentrations, which have specific requirements and which lead to a specification on the transcript and degree:

- Law and technology;
- Common law et commerce international;
- Civil law theory;
- International humanitarian and security law;
- Law and social justice;
- Global sustainability and environmental law;
- Droit notarial

The Faculty of Law can also accommodate students wishing to specialize in other areas (check the professors' individual research interests).

The Faculty of Law also participates in the collaborative Master's program in Women's Studies, leading to an LLM with Specialization in Women's Studies.

Please see the Website of the Faculty of Law for further information.

Admission

The applicant must:

- Have a master of laws degree (LLM) awarded by an accredited Canadian university, obtained with a minimum average of 75% (B+), calculated as per the established standards of the Faculty of Graduate and Postdoctoral Studies (FGPS) or an equivalent degree in law from a foreign university meeting the same standards, as well as demonstrated legal research and writing abilities;
- Have sufficient knowledge of French or English. Foreign applicants whose first language is neither English nor French will be required to provide proof of proficiency in one or other language as specified in section A of the General Regulations of the FGPS.

With the approval of the Director of the Doctoral Program or the Assistant Dean of Graduate Studies in Law, a master's student may exceptionally be admitted into the doctoral program without having completed all the requirements of the master's program. To take advantage of this option, the student must (a) complete at least three courses in the master's program with a minimum average of 80% (A-), and (b) obtain the approval of the Director of the Program or the Assistant Dean of Graduate Studies in Law. The student must also meet all the other requirements for admission to the doctoral program.

Financial Support

Internal Scholarships

The Faculty of Graduate and Postdoctoral Studies in conjunction with the Faculty of Law provides a number of scholarships per year to LLM or PhD students and a further scholarship in conjunction with the Human Rights Research and Education Centre. Please note that students do not need to apply for these scholarships. Recommendations are made to the Faculty of Graduate and Postdoctoral Studies by the admissions committee in law.

Several other named special scholarships have been provided to LLM and PhD by generous donors. Further details are available through the website of the Faculty of Law.

External Scholarships

For a comprehensive list of scholarships and awards offered by outside agencies, and details regarding application, please visit the following website: www.grad.uottawa.ca or contact:

Awards Office
Faculty of Graduate and Postdoctoral Studies
University of Ottawa
115 Séraphin Marion
Ottawa ON K1N 6N5

Applicants are encouraged to seek scholarships and financial assistance from other sources in Canada and abroad if applicable.
Program Requirements

Doctoral Degree Requirements

1. DCL 8330 Legal Research Methodology and Theory (3cr.) (1st session): The course will examine epistemology and methodology issues arising in the field of legal research;
2. DCL 8090 Lectures dirigées / Directed Readings (cr.) (1st, 2nd and 3rd session): Directed readings program, chosen in consultation with the Thesis Committee, allowing the student to acquire the theoretical foundations in his or her field of research. The student must submit a paper to the members of his or her Thesis Committee at the end of the third session of registration;
3. Elective Course (3cr.) (2nd session): The student registers in an optional course chosen from the bank of graduate courses offered at the Faculty of Law or another faculty at the University of Ottawa. The chosen course must be related to the thesis proposal and be approved by the Director of the Doctoral Program or the Assistant Dean of Graduate Studies in Law;
4. DCL 9998 Examen de synthèse / Comprehensive Examination (4th or 5th session): During this examination the student will be assessed orally on his or her knowledge of legal foundations in his or her field of research.
5. DCL 9997 Projet de thèse / Thesis Proposal (5th or 6th session): The student presents, in writing and orally, his or her thesis proposal. The student must submit a research proposal, a detailed plan and a comprehensive bibliography;
6. DCL 9999 Thèse de doctorat / PhD Thesis (from the 6th session onwards): The doctoral thesis is usually 90,000 to 120,000 words in length, excluding the tables, bibliography and appendices. It must be sufficiently well written to merit publication. The thesis must be approved by a jury of four members proposed by the Faculty of Law and approved by the FGPS.

For information regarding the thesis, consult Section G of the “General Regulations” of the FGPS and the guide ”Preparing a Thesis or a Research Paper”, which can both be accessed through the FGPS website: www.grad.uottawa.ca.

Additional Requirements

The Director of the Doctoral Program or the Assistant Dean of Graduate Studies in Law may impose additional requirements in order to allow students to acquire the necessary skills to succeed in the program. For example, a legal research and writing course may be required of students whose first language is neither English nor French, or optional courses considered essential for the purpose of the thesis proposal may be added.

Residence

The candidate must be registered full-time during the first six sessions of the program (24 months). Students who are admitted to the doctoral program without having completed their master's degree must spend at least nine sessions in full-time residence, including the sessions already completed for the master's.

Minimum standards

The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), the thesis proposal, the comprehensive exam, or whose research progress is deemed unsatisfactory are required to withdraw.

Duration of the program

The program is designed as a four-year program and students are expected to complete it within four years. All requirements other than the thesis must be fulfilled at the end of the sixth session of registration. The maximum time permitted is five years from the date of initial registration in the program, or six years in the case of students transferring from the master's to the doctorate.

Part-time Registration

A part-time student may not, except with the permission of the co-director of graduate studies in law, take more than one course in a given session.

Courses in other faculties

With the approval of the Director of the Program or the Assistant Dean of Graduate Studies in Law, a candidate may be allowed to take a limited number of courses in other faculties.

Courses

Cours obligatoires / Compulsory Courses

DCL 5301 LEGAL RESEARCH METHODOLOGY (3cr.)
Review of basic legal research techniques, legal resource materials and legal citation.

DCL 5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)
Révision des techniques de recherche, des sources du droit et des méthodes d'analyse.

Général / General
DCL5336 LEGAL RESEARCH SEMINAR (3cr.)
This seminar explores alternative teaching styles for legal education. Students will be presenting their research projects.

DCL5736 SÉMINAIRE DE RECHERCHE JURIDIQUE (3cr.)
Ce séminaire explore les différentes méthodes d'enseignement du droit. Les étudiants présenteront leurs projets de recherche.

Théorie juridique / Legal Theory

DCL5302 PHILOSOPHY OF LAW (3cr.)
Examination of topics, theories, writers in philosophy of law. May include comparative or critical materials.

DCL5303 STUDIES IN LEGAL THEORY I (3cr.)
Survey of current theories of law. May be organized around a particular problem of writer or perspective. May include interdisciplinary materials.

DCL5304 STUDIES IN LEGAL THEORY II (3cr.)
Exploration of a particular theme or problem from a theoretical point of view, eg. legal education, professional responsibility, law and sociology. May include interdisciplinary materials.

DCL5305 FEMINIST ANALYSIS OF LAW (3cr.)
Exploration of feminist perspectives, theories and themes and the application of these to particular problems or issues. Development of techniques for analyzing social meaning of law.

DCL5307 INTRODUCTION TO CIVIL LAW (3cr.)
Survey of basic concepts of Civil Law, including codification, law of the person, obligations, property. Exploration of legal reasoning in civilian context.

DCL5308 COMPARATIVE LAW (3cr.)
Exploration of issues, legal institutions, legal rules in context of different jurisdictions. May include theory of comparative law.

DCL5309 LEGAL THEORY SEMINAR (3cr.)
Examination of current legal issues in their legal, historical and social context.

DCL5337 CRITICAL LEGAL THEORIES (3cr.)
This course examines contemporary approaches to and debates in critical legal theory, law and society, feminist jurisprudence, critical race theory, and post-colonial theory, including critiques of essentialist theory and models of interdisciplinary analysis.

DCL5340 SUSTAINABILITY AND LAW (3cr.)
This course provides theoretical perspectives on alternative approaches to environmental policy emphasizing ethical and economic perspectives.

DCL5502 PHILOSOPHIE DU DROIT (3cr.)
Définition du droit et de la philosophie du droit; les buts du droit; les concepts juridiques; le raisonnement du droit; le language du droit; les philosophies et les théories du droit.

DCL5503 THÉORIES CONTEMPORAINES DU DROIT (3cr.)
Introduction à l'étude des différentes théories contemporaines du droit, telles la théorie marxiste, l'analyse économique, l'approche féministe, le positivisme, le droit naturel, etc.

DCL5504 SOCIOLOGIE DU DROIT (3cr.)

DCL5505 ANALYSE FÉMINISTE DU DROIT (3cr.)
Statut juridique, droits et obligations des femmes dans les domaines de la santé, de la famille, du travail, de la criminalité, de la fiscalité, du commerce, etc. Analyse critique du droit à partir d'une perspective féministe. Étude des différentes théories féministes du droit.

DCL5508 DROIT COMPARÉ (3cr.)
Définition et méthode du droit comparé. Étude sommaire des grands système de droit contemporains, et comparaison de leurs fondements. Étude de certaines institutions juridiques dans le contexte de ces divers systèmes.

DCL5509 PROBLÈMES THÉORIQUES CHOISIS DU DROIT PUBLIC (3cr.)
Étude critique, d'ordre fondamental ou méthodologique, de notions, de mécanismes ou d'institutions de droit public.

DCL5510 PROBLÈMES THÉORIQUES CHOISIS DU DROIT PRIVÉ (3cr.)
Étude critique, d'ordre fondamental ou méthodologique, de notions, de mécanismes ou d'institutions de droit privé.
DCL5610 INTERPRÉTATION DES LOIS (3cr.)

DCL5737 THÉORIES CRITIQUES DU DROIT (3cr.)
Ce cours examine des approches contemporaines aux diverses analyses critiques de droit telles que le droit et la société, l'analyse féministe du droit, l'analyse ethnique du droit, l'analyse post-coloniale du droit ainsi que les théories essentialistes et les modes d'analyse interdisciplinaire.

DCL5740 LA DURABIilité ET LE DROIT (3cr.)
Ce cours examine d'un point de vue théorique les perspectives éthiques et économiques de diverses approches relatives au développement de la politique environnementale.

DCL6126 INTERNATIONAL HUMANITARIAN LAW: CONTEMPORARY CHALLENGES (3cr.)
The philosophy, principles and practical application of International Humanitarian Law (IHL) in both historic and contemporary contexts.

DCL6720 DROIT INTERNATIONAL APPROFONDI (3cr.)

DCL7300 TECHNOPRUDENCE : LEGAL THEORY IN THE INFORMATION AGE (3cr.)
Séminaire examinant l'impact que la cyberspace et autres technologies utilisées dans la révolution dite de l'information sur l'legal theory and doctrine.

DCL7313 STATUTORY INTERPRETATION (3cr.)

DCL7500 TECHNO-THÉORIE : THÉORIE DU DROIT À L’ÈRE DE L'INFORMATION (3cr.)
Séminaire consacré à l'étude des incidences du cyberespace et des autres technologies de la révolution dite de l'information sur la théorie et la doctrine traditionelles.

Cours au choix / Electives

Droit international / International Law

DCL6120 ADVANCED INTERNATIONAL LAW (3cr.)

DCL6121 STUDIES IN INTERNATIONAL LAW I (3cr.)

DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)

DCL6123 INTERNATIONAL HUMAN RIGHTS (3cr.)

DCL6124 INTERNATIONAL BUSINESS TRANSACTIONS (3cr.)

DCL6125 INTERNATIONAL TRADE REGULATION (3cr.)

DCL6126 INTERNATIONAL HUMANITARIAN LAW: CONTEMPORARY CHALLENGES (3cr.)
The philosophy, principles and practical application of International Humanitarian Law (IHL) in both historic and contemporary contexts.

DCL6127 LAW AND DEVELOPING COUNTRIES (3cr.)
The role of domestic and international law in developing countries including historical, economic and critical (feminist and post-colonial) perspectives on law in the process of development; assessing the impact of law on developments regarding the environment, international trade, democratic and human rights, markets and investment, ethnic conflict, governance and corruption, technology development, and aid to developing countries.

DCL6128 LAW, POLITICS AND ECONOMICS IN INTERNATIONAL AFFAIRS (3cr.)
The linkages and differences between the disciplines of law, political science and economics as they relate to international affairs, including an in-depth exploration of the underlying assumptions of each discipline and how they interact in international affairs.

DCL6300 INTERNATIONAL INVESTMENT LAW (3cr.)
Study of the international law applicable to the promotion and protection of foreign investment. Origins, evolution and sources; treatment and protection principles; settlement of investment disputes.

DCL6319 ADVANCED INTERNATIONAL ECONOMIC LAW (3cr.)
This seminar explores theoretical and systemic issues of international economic law.

DCL6350 INTERNATIONAL ECONOMIC LAW CASE STUDIES (3cr.)
This seminar uses case studies to explore theoretical issues of international economic law in the context of actual disputes.
DCL6700 DROIT INTERNATIONAL DES INVESTISSEMENTS ÉTRANGERS (3cr.)
Étude du régime juridique international de promotion et de protection des investissements étrangers. Origines, évolution et sources ; principes de traitement et de protection ; règlement des différends liés aux investissements.

DCL6719 DROIT INTERNATIONAL ÉCONOMIQUE AVANCÉ (3cr.)
Ce séminaire explore les questions théoriques et systémiques liées au droit international économique.

DCL6720 DROIT INTERNATIONAL APPROFONDI (3cr.)

DCL6728 DROIT INTERNATIONAL PRIVÉ (3cr.)

DCL6730 ASPECTS INTERNATIONAUX DE LA PROPRÉTÉ INTELLECTUELLE (3cr.)

DCL6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)

DCL6732 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL II (3cr.)

DCL6733 DROIT COMMERCIAL INTERNATIONAL (3cr.)

DCL6734 ORGANISATION INTERNATIONALE DU COMMERCE (3cr.)

DCL6735 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL III (3cr.)
Étude approfondie de problèmes d'actualité en droit international.

DCL6736 DROIT INTERNATIONAL HUMANITAIRE (3cr.)
Le droit international humanitaire est la branche du droit international public qui régit les conséquences humanitaires de conflits armés. Le cours a pour but de familiariser les étudiants et étudiantes avec les sources du droit international humanitaire, ses principes et ses règles fondamentaux.

DCL6737 JUSTICE ET VIOLENCES POLITIQUES EXTRÊMES : LA RÉPONSE DU DROIT INTERNATIONAL (3cr.)
La multiplication, dans le monde contemporain, de situations de violences politiques extrêmes, oblige le droit et la justice à s’adapter et à trouver de nouvelles réponses à ces types de violations systématisques et radicales. Il s’agira, dans le cadre de ce cours, de réfléchir sur la nature, le rôle, la place, le fonctionnement, les forces et les limites de la justice, ainsi que les attentes qu’elle suscite et les défis qu’il lui faut relever dans des contextes de sortie de périodes de génocides et/ou crimes contre l’humanité.

DCL6738 RÉPRESSION PÉNALE INTERNATIONALE (3cr.)
Les origines de la responsabilité pénale individuelle, les tribunaux pénaux internationaux, mixtes et autres mécanismes alternatifs de justice seront étudiés notamment le Tribunal pénal international pour l’ex-Yougoslavie, le Tribunal pénal international pour le Rwanda, la Cour spéciale pour la Sierra Leone et la Cour pénale internationale. Le fondement juridique de la création de ces tribunaux, leurs compétences, leurs structures, ainsi que l’apport de la jurisprudence au droit international humanitaire et au droit international des droits de la personne seront examinés.

DCL6750 ÉTUDE DE CAS EN DROIT INTERNATIONAL ÉCONOMIQUE (3cr.)
Ce séminaire explore, par le biais d’études de cas, les questions théoriques liées au droit international économique dans le contexte de différends actuels.

Droits de la personne / Human Rights

DCL5120 ADVANCED HUMAN RIGHTS (3cr.)

DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)

DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)

DCL5123 STUDIES IN HUMAN RIGHTS III (3cr.)

DCL5125 ISSUES IN ABORIGINAL LAW (3cr.)
Examination of the unique legal position of the Indian, Metis and Inuit peoples in Canadian law. Specific issues to include the land claims process and agreements; aboriginal and treaty rights; administrative arrangements and other related issues.

DCL5126 COMPARATIVE INDIGENOUS RIGHTS (3cr.)
Critical issues affecting indigenous people arising within Canada, the United States, Australia, New Zealand and other countries in which the similarities and differences in domestic law and indigenous aspirations are explored in detail from a comparative perspective.

DCL5127 CONSTITUTIONAL EQUALITY LAW AND THEORY (3cr.)
Established in 1984, the Ottawa-Carleton Institute of Mathematics and Statistics (OCIMS) combines the research strengths of the University of
Mathematics and Statistics (PhD)

All students must spend a minimum of six sessions in residence and present a thesis incorporating the results of original research carried out under the supervision

The Department of Linguistics is a participating unit in the collaborative program in Canadian Studies at the PhD level. This program has been

FRA9998 EXAMEN DE SYNTHÈSE

domaine de recherche. L'étudiant devra soumettre un travail écrit aux membres du Comité d'accompagnement à la fin de la 3e session d'inscription (noté

DCL7033 RECHERCHE DIRIGÉE / DIRECTED RESEARCH

responsabilité du liquidateur; administration du bien d'autrui; gestion fiduciaire; planification successorale; droit international privé et droit comparé (testament

DCL7316 STUDIES IN BUSINESS LAW : COPYRIGHT LAW

as well as national and international approaches to data privacy protection.

DCL6120 ADVANCED INTERNATIONAL LAW

DCL6122 STUDIES IN INTERNATIONAL LAW II

DCL6121 STUDIES IN INTERNATIONAL LAW I

DCL6126 INTERNATIONAL HUMANITARIAN LAW: CONTEMPORARY CHALLENGES

The philosophy, principles and practical application of International Humanitarian Law (IHL) in both historic and contemporary contexts.

DCL6127 LAW AND DEVELOPING COUNTRIES (3cr.)
The role of domestic and international law in developing countries including historical, economic and critical (feminist and post-colonial) perspectives on law in

Concentrations

Droit humanitaire et droit de la sécurité internationale / International Humanitarian and Security Law

DCL5120 ADVANCED HUMAN RIGHTS (3cr.)

DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)

DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)

DCL5123 STUDIES IN HUMAN RIGHTS III (3cr.)

DCL5301 LEGAL RESEARCH METHODOLOGY (3cr.)

Review of basic legal research techniques, legal resource materials and legal citation.

DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)

Révision des techniques de recherche, des sources du droit et des méthodes d'analyse.

DCL5730 ASPECTS INTERNATIONAUX DES DROITS DE LA PERSONNE (3cr.)

DCL5731 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE I (3cr.)

DCL5732 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE II (3cr.)

DCL5733 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE III (3cr.)

DCL5734 PERSPECTIVES AUTOCHTONES DU DROIT (3cr.)

DCL5735 PROBLÈMES CHOISIS DE DROITS DE LA PERSONNE IV (3cr.)

Étude approfondie de problèmes d'actualité dans le domaine des droits de la personne.
the process of development; assessing the impact of law on developments regarding the environment, international trade, democratic and human rights, markets and investment, ethnic conflict, governance and corruption, technology development, and aid to developing countries.

DCL.6128 LAW, POLITICS AND ECONOMICS IN INTERNATIONAL AFFAIRS (3cr.)
The linkages and differences between the disciplines of law, political science and economics as they relate to international affairs, including an in-depth exploration of the underlying assumptions of each discipline and how they interact in international affairs.

DCL.6130 NATIONAL SECURITY LAW (3cr.)
This course examines international, Canadian and comparative laws governing efforts to preserve "national security." "National security" has been defined as the protection and preservation of a state's values, institutions and the well-being of its citizens - it is an expansive concept that, in colloquial terms, has a strong association with military preparedness and law enforcement and that sometimes co-exists uncomfortably with the "rule of law."

DCL.6150 INTERNATIONAL HUMANITARIAN AND SECURITY LAW INTERNSHIP (3cr.)
Internship with a governmental or non-governmental organization in order to enhance the student's practical experience in international humanitarian and security law issues. Students will be required to submit a written report relating to the work accomplished during the internship. The internship assessment, which will be based on this written report, will be conducted by the internship Faculty supervisor on a "satisfactory" or "not-satisfactory" (S/NS) basis.

DCL.6530 LE DROIT DE LA SÉCURITÉ NATIONALE (3cr.)
Ce cours examine le droit internationa, le droit canadien et le droit comparé concernant les stratégies proposées afin de protéger la "sécurité nationale". La "sécurité nationale" se définit comme la protection des valeurs, des institutions et de la sécurité des citoyens d'un état donné; le concept de sécurité nationale est souvent associé à la protection militaire ou policière. Ce concept et la règle de droit coexistent parfois difficilement.

DCL.6550 STAGE EN DROIT HUMANITAIRE ET EN DROIT DE LA SÉCURITÉ INTERNATIONALE (3cr.)
Stage en milieu gouvernemental ou non-gouvernemental dans le but d'offrir à l'étudiant une expérience pratique en droit humanitaire et en droit de la sécurité internationale. Les étudiants devront soumettre un rapport écrit fondé sur le travail effectué durant le stage, et ils seront notés "satisfaisant" ou "non-satisfaisant" (S/NS) par le professeur agissant à titre de directeur de stage sur la base de ce rapport écrit.

DCL.6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)

DCL.6732 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL II (3cr.)

DCL.6737 JUSTICE ET VIOLENCES POLITIQUES EXTRÊMES : LA RÉPONSE DU DROIT INTERNATIONAL (3cr.)
La multiplication, dans le monde contemporain, de situations de violences politiques extrêmes, oblige le droit et la justice à s'adapter et à trouver de nouvelles réponses à ces types de violations systémiques et radicales. Il s'agira, dans le cadre de ce cours, de réfléchir sur la nature, le rôle, la place, le fonctionnement, les forces et les limites de la justice, ainsi que les attentes qu'elle suscite et les défis qu'il lui faut relever dans des contextes de sortie de périodes de génocides et/ou crimes contre l'humanité.

DCL.6738 RÉPRESSION PÉNALE INTERNATIONALE (3cr.)
Les origines de la responsabilité pénale individuelle, les tribunaux pénaux internationaux, mixtes et autres mécanismes alternatifs de justice seront étudiés notamment le Tribunal pénal international pour l’ex-Yougoslavie, le Tribunal pénal international pour le Rwanda, la Cour spéciale pour la Sierra Leone et la Cour pénale internationale. Le fondement juridique de la création de ces tribunaux, leurs compétences, leurs structures, ainsi que l’apport de la jurisprudence au droit international humanitaire et au droit international des droits de la personne seront examinés.

Droit de l'environnement et du développement durable / Global Sustainability and Environmental Law

DCL.5301 LEGAL RESEARCH METHODOLOGY (3cr.)
Review of basic legal research techniques, legal resource materials and legal citation.

DCL.5340 SUSTAINABILITY AND LAW (3cr.)
This course provides theoretical perspectives on alternative approaches to environmental policy emphasizing ethical and economic perspectives.

DCL.5341 COMPARATIVE ENVIRONMENTAL LAW (3cr.)
This course offers comparative analysis of legal approaches to environmental law from civil, common, Islamic, socialist, and aboriginal law perspectives.

DCL.5342 GLOBAL ENVIRONMENTAL GOVERNANCE (3cr.)
This course examines the responsibilities and operation of a number of organizations with significant environmental responsibilities operating at the global level. The development of international environmental law and the implementation of international development goals will also be studied.

DCL.5343 ENVIRONMENTAL LAW INTERNSHIP (3cr.)
Internship with a governmental or non-governmental organization or research institution in order to enhance the student's practical experience in applied research or environmental law practice. Students will be required to submit a written report relating to the work accomplished during the internship. The internship
assessment, which will be based on this written report, will be conducted by the internship Faculty supervisor on a "satisfactory" or "not-satisfactory" (S/NS) basis.

DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)
Révision des techniques de recherche, des sources du droit et des méthodes d'analyse.

DCL5740 LA DURABILITÉ ET LE DROIT (3cr.)
Ce cours examine d'un point de vue théorique les perspectives éthiques et économiques de diverses approches relatives au développement de la politique environnementale.

DCL5741 DROIT DE L'ENVIRONNEMENT COMPARÉ (3cr.)
Ce cours favorise une étude comparée des approches du droit civil, du common law, du droit islamique, du droit socialiste et du droit autochtone en matière d'environnement.

DCL5742 ENVIRONNEMENT ET GOUVERNANCE MONDIALE (3cr.)
Ce cours examine les responsabilités et le fonctionnement de diverses organisations internationales ayant un mandat lié à l'environnement au niveau mondial. Le développement du droit international de l'environnement et la mise en œuvre des objectifs internationaux en la matière seront également étudiés.

DCL5743 STAGE EN DROIT DE L'ENVIRONNEMENT (3cr.)
Stage en milieu gouvernemental ou non-gouvernemental avec un institut de recherche dans le but d'offrir à l'étudiant une expérience pratique en recherche appliquée ou en pratique du droit de l'environnement. Les étudiants devront soumettre un rapport écrit fondé sur le travail effectué durant le stage, et seront notés « satisfaisant » ou « non-satisfaisant » (S/NS) par le professeur agissant à titre de directeur de stage sur la base de leur rapport écrit.

DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)
DCL6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)

Droit et justice social / Law and Social Justice
DCL5120 ADVANCED HUMAN RIGHTS (3cr.)
DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)
DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)
DCL5123 STUDIES IN HUMAN RIGHTS III (3cr.)
DCL5125 ISSUES IN ABORIGINAL LAW (3cr.)
Examination of the unique legal position of the Indian, Metis and Inuit peoples in Canadian law. Specific issues to include the land claims process and agreements; aboriginal and treaty rights; administrative arrangements and other related issues.

DCL5301 LEGAL RESEARCH METHODOLOGY (3cr.)
Review of basic legal research techniques, legal resource materials and legal citation.

DCL5303 STUDIES IN LEGAL THEORY I (3cr.)
Survey of current theories of law. May be organized around a particular problem of writer or perspective. May include interdisciplinary materials.

DCL5304 STUDIES IN LEGAL THEORY II (3cr.)
Exploration of a particular theme or problem from a theoretical point of view, eg. legal education, professional responsibility, law and sociology. May include interdisciplinary materials.

DCL5305 FEMINIST ANALYSIS OF LAW (3cr.)
Exploration of feminist perspectives, theories and themes and the application of these to particular problems or issues. Development of techniques for analyzing social meaning of law.

DCL5309 LEGAL THEORY SEMINAR (3cr.)
Examination of current legal issues in their legal, historical and social context.

DCL5337 CRITICAL LEGAL THEORIES (3cr.)
This course examines contemporary approaches to and debates in critical legal theory, law and society, feminist jurisprudence, critical race theory, and post-colonial theory, including critiques of essentialist theory and models of interdisciplinary analysis.
DCL5338 ACTION RESEARCH METHODOLOGY IN LAW (3cr.)
This course addresses issues of research ethics, accountability and partiality. It is also an introduction to research tools and methods of particular importance to studies related to social justice research and law.

DCL5501 MÉTHODOLOGIE DE LA RECHERCHE JURIDIQUE (3cr.)
Révision des techniques de recherche, des sources du droit et des méthodes d'analyse.

DCL5503 THÉORIES CONTEMPORAINES DU DROIT (3cr.)
Introduction à l'étude des différentes théories contemporaines du droit, telles la théorie marxiste, l'analyse économique, l'approche féministe, le positivisme, le droit naturel, etc.

DCL5504 SOCIOLOGIE DU DROIT (3cr.)

DCL5505 ANALYSE FÉMINISTE DU DROIT (3cr.)
Statut juridique, droits et obligations des femmes dans les domaines de la santé, de la famille, du travail, de la criminalité, de la fiscalité, du commerce, etc.
Analyse critique du droit à partir d'une perspective féministe. Étude des différentes théories féministes du droit.

DCL5721 PERSPECTIVES FÉMINISTES DU DROIT (3cr.)

DCL5726 PROBLÈMES CHOISIS DE DROIT DES PEUPLES AUTOCHTONES (3cr.)

DCL5730 ASPECTS INTERNATIONAUX DES DROITS DE LA PERSONNE (3cr.)

DCL5731 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE I (3cr.)

DCL5732 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE II (3cr.)

DCL5733 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE III (3cr.)

DCL5734 PERSPECTIVES AUTOCHTONES DU DROIT (3cr.)

DCL5737 THÉORIES CRITIQUES DU DROIT (3cr.)
Ce cours examine des approches contemporaines aux diverses analyses critiques de droit telles que le droit et la société, l'analyse féministe du droit, l'analyse ethnique du droit, l'analyse post-coloniale du droit ainsi que les théories essentialistes et les modes d'analyse interdisciplinaire.

DCL5738 MÉTHODOLOGIE DE LA RECHERCHE ACTION DANS LE DOMAINE JURIDIQUE (3cr.)
Ce cours traite de questions d'ethique en recherche, des responsabilités des chercheurs et de la partialité. Il offre également une initiation aux outils et méthodes de recherche ayant une importance particulière en justice sociale et en droit.

DCL6120 ADVANCED INTERNATIONAL LAW (3cr.)

DCL6121 STUDIES IN INTERNATIONAL LAW I (3cr.)

DCL6122 STUDIES IN INTERNATIONAL LAW II (3cr.)

DCL6123 INTERNATIONAL HUMAN RIGHTS (3cr.)

DCL6720 DROIT INTERNATIONAL APPROFONDI (3cr.)

DCL6731 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL I (3cr.)

DCL6732 PROBLÈMES CHOISIS DE DROIT INTERNATIONAL II (3cr.)

Droit et technologie / Law and Technology
DCL7300 TECHNOPRUDENCE : LEGAL THEORY IN THE INFORMATION AGE (3cr.)
Seminar examining the impact that cyberspace and other technologies utilized in the so-called information revolution might have on traditional legal theory and doctrine.

DCL7301 REGULATION OF INTERNET COMMERCE (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the traditional commercial law framework. Topics include intellectual property issues, on-line
contracts, digital signatures, taxation, securities regulation, and the provision of online legal services.

DCL.7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the rights of free speech and privacy. Topics include online obscenity, hate speech, defamation, as well as national and international approaches to data privacy protection.

DCL.7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
Practice-oriented seminar analyzing the legal issues and implications of electronic commerce. Topics include licensing, privacy and acceptable use policies, Web development agreements, and regulatory issues.

DCL.7304 TECHNOLOGY LAW INTERNSHIP (3cr.)
Co-operative and clinical work study program in technology law. Student placement at a technology-focused government department or a technology corporation’s in-house legal department. Pass/Fail grade, to be based on the grades obtained for the written report as well as on the evaluations of the employer. Prerequisite: At least one Intellectual Property or Internet Law course.

DCL.7305 STUDIES IN INTERNET LAW (3cr.)
Selected problems in the emerging intersection of law and technology.

DCL.7306 LEGAL PERSPECTIVES ON CYBERFEMINISM (3cr.)
This course analyses issues relating to application of feminist principles to the legal regulation of communication technologies. Topics covered include the gendered dynamics of networked capitalist society; women’s relationships with communication technologies; technology's potential impact on equality for women; and questions surrounding whether and how to legally regulate communication technologies.

DCL.7307 DIGITAL MUSIC LAW (3cr.)
This course addresses legal, cultural, economic and technological aspects of digital music around the world. Topics include the music industry; copyright protection; infringement and limitation issues; and new business strategies.

DCL.7310 TECHNOPOLICY : INTERPLAY BETWEEN TECHNOLOGIES AND EXISTING LEGAL RULES (3cr.)
Seminar examining the application of traditional legal analysis to difficult policy questions arising from the advent of information technologies.

DCL.7311 STUDIES IN INTELLECTUAL AND INDUSTRIAL PROPERTY (3cr.)
Trademarks, registration, the torts of passing off and misappropriation of personality; trade names; copyright, the protection of computer software, arts and entertainment industries; trade secrets, confidential information; patents; industrial designs, related competitive torts. Canadian and international perspectives.

DCL.7312 COMPETITION LAW (3cr.)
Restrictive trade practices and competition policy.

DCL.7315 PATENT LAW (3cr.)
Law of patents, both national and international. Procurement, licensing and enforcement of patents.

DCL.7316 STUDIES IN BUSINESS LAW : COPYRIGHT LAW (3cr.)
Law and policy relating to copyright law.

DCL.7317 COMMUNICATIONS LAW (3cr.)
Examination of the regulatory framework governing communications in Canada. Three industry sectors (telecommunications, broadcasting and cable television) be examined with particular attention to the legal, policy, administrative and practical constraints which affect their activities.

DCL.7366 TECHNOLOGY LAW PROJECT
Technology-based project which will integrate legal content, usually within a piece of software, machine code or a web-based application. The project must incorporate a substantive legal dimension in order to satisfy the research requirement. A project that does not have a built-in substantive legal dimension must be accompanied by a written report outlining the legal significance of the project. Technology law projects will be evaluated on a Pass/Fail basis by the supervisor and one other person appointed by the Co-Director of Graduate Studies in Law.

DCL.7500 TECHNO-THÉORIE : THÉORIE DU DROIT À L’ÈRE DE L’INFORMATION (3cr.)
Séminaire consacré à l’étude des incidences du cyberspace et des autres technologies de la soi-disant révolution de l’information sur la théorie et la doctrine traditionnelles.

DCL.7501 RÉGLEMENTATION DU CYBERCOMMERCÉ (3cr.)
Séminaire consacré à l’étude des défis juridiques que pose l’Internet en matière du droit commercial traditionnel. Les sujets à l’étude sont la propriété intellectuelle, les contrats en ligne, les signatures numériques, les impôts, la réglementation des valeurs mobilières et la prestation de services juridiques en ligne.

DCL.7502 RÉGLEMENTATION DES CYBERCOMMUNICATIONS (3cr.)
Séminaire consacré à l’étude des défis juridiques que pose l’Internet en matière de liberté d’expression et du droit à la vie privée. Certains sujets à l’étude sont l’obscénité, le discours haineux, la diffamation, les mécanismes pour la protection des renseignements personnels, à l’échelle nationale et à l’échelle...
internationale.

**DCL7503 PRATIQUE DU COMMERCE ÉLECTRONIQUE** (3cr.)
Séminaire pratique pour l’approfondissement de diverses questions et implications juridiques du commerce électronique. Certains sujets à l’étude sont l’attribution de licences, les politiques relatives à la protection des renseignements personnels et à la négligence, les ententes pour le développement du Web et les questions de réglementation.

**DCL7504 STAGE EN DROIT DE LA HAUTE TECHNOLOGIE** (3cr.)
Stage professionnel auprès d’un ministère gouvernementale ou d’un service du contentieux d’une entreprise se spécialisant en droit de la haute technologie. Noté S (satisfaisant) ou N/S (non satisfaisant) selon les résultats du rapport écrit et de l’évaluation de l’employeur. Préalable : au moins un cours dans le domaine de la propriété intellectuelle ou du droit d’Internet.

**DCL7505 ÉTUDES EN DROIT D’INTERNET** (3cr.)
Études de problèmes d'actualité pour l'approfondissement des interactions croisantes entre le droit et la technologie.

**DCL7506 DROIT DE LA COMMUNICATION DANS LE CYBERESPACE** (3cr.)
Dans un contexte de droit civil, étude des problèmes juridiques liés à la réglementation du contenu d’Internet et à la protection de la vie privée des Internautes, envisagés dans divers domaines du droit, tels les communications, la pornographie, la criminalité, la protection des renseignements personnels et les libertés publiques.

**DCL7507 DROIT INTERNATIONAL D’INTERNET : L’INTÉGRATION DES DIFFÉRENTS SYSTÈMES JURIDIQUES** (3cr.)
Dans un contexte de droit civil, étude des solutions proposées par les différents intervenants du cyberspace, tels les gouvernements, les organismes non-gouvernementaux, l’industrie et les utilisateurs pour la résolution des divers problèmes juridiques, à caractère international, reliés à l’utilisation d’Internet, notamment dans les domaines de droit suivants : la réglementation, la propriété intellectuelle, les noms de domaines, la compétence des tribunaux et la résolution des conflits.

**DCL7508 PROBLÈMES CHOISIS DE PROPRIÉTÉ INTELLECTUELLE ET INDUSTRIELLE** (3cr.)
Dans un contexte de droit civil, étude approfondie de certains problèmes contemporains en droit de la propriété intellectuelle et industrielle.

**DCL7509 ÉTUDES APPROFONDISSES DU DROIT DE LA CONCURRENCE** (3cr.)
Dans un contexte de droit civil, étude des législations en droit de la concurrence; structure administrative; étude des règles portant sur les ententes restreignant la concurrence, les fusions, l’abus de position dominante, les pratiques restrictives, etc.; aspects internationaux du droit de la concurrence.

**DCL7510 TECHNO-RÉGULATION : INTERACTION ENTRE LES TECHNOLOGIES ET L’ÉTAT ACTUEL DU DROIT** (3cr.)
Séminaire consacré à l’application des règles traditionnelles de l’analyse juridique aux difficiles questions de politiques soulevées par les nouvelles technologies de l’information.

**DCL7511 ÉTUDES EN PROPRIÉTÉ INTELLECTUELLE ET INDUSTRIELLE** (3cr.)
Dans un contexte de common law, études des sujets suivants : marques de commerce; système d’enregistrement; délits de commercialisation trompeuse et d’usurpaïon d’identité; noms commerciaux; droit d’auteur; protection des logiciels; domaine des arts et de l’industrie du spectacle; droit des secrets commerciaux et des renseignements confidentiels; droit des brevets; dessin industriel et tout délit en matière de concurrence. Perspective canadienne et internationale.

**DCL7566 PROJET EN DROIT DE LA TECHNOLOGIE**
Projet à contenu juridique qui peut prendre la forme d’un logiciel, d’un code machine ou d’une application sur l’Internet. Pour satisfaire aux exigences de recherche de la maîtrise, le contenu juridique doit être substantiel; à défaut d’un tel contenu, un rapport écrit décrivant la portée juridique du projet doit accompagner ce dernier. L’évaluation du projet est faite par la personne qui l’a dirigée et une autre personne désignée par la Direction des études supérieures en droit. Cette évaluation est sanctionnée uniquement par la mention « Réussite » ou « Échec ».

**DCL7706 PERSPECTIVES JURIDIQUES SUR LE CYBERFÉMINISME** (3cr.)
Ce cours analyse les questions liées à l’application de principes féministes à la réglementation juridique des technologies de communication. Les sujets abordés incluent les dynamiques liées au genre dans le contexte des technologies de communication et les femmes, l’impact sur l’égalité des femmes et le débat concernant le bien fondé de la réglementation juridique des technologies de la communication et les modalités de mise en œuvre de cette réglementation.

**DCL7707 LE DROIT DE LA MUSIQUE NUMÉRIQUE** (3cr.)
Ce cours s’intéresse aux aspects juridiques, culturels, économiques et techniques de la musique numérique dans le monde. Les sujets suivants seront discutés : l’industrie de la musique, les droits d’auteur, la violation du droit d’auteur, la prescription des recours et les nouvelles stratégies commerciales.

**DCL7712 PROBLÈMES CHOISIS DE DROIT ET TECHNOLOGIE** (3cr.)
Étude approfondie de problèmes contemporains dans le domaine du droit et de la technologie.

**DCL7717 DROIT DES COMMUNICATIONS** (3cr.)
Structure de l’industrie des communications au Canada et description de la technologie. Partage des pouvoir législatifs, organismes de réglementation et contrôle administratif, analyse de la réglementation des entreprises de communications.
Droit notarial

DCL5321 INTRODUCTION TO LEGAL DRAFTING AND THE PROFESSION OF NOTARY (3cr.)
Introduction to preventive legal drafting (legal opinions, notarized writings and non-litigious proceedings). Introduction to the profession of notary throughout the world. Duties and organization of the profession. Ethical obligations. Writing samples and interpretation analysis.

DCL5521 INITIATION À LA RÉDACTION D’ACTES ET À LA PROFESSION NOTARIALE (3cr.)
Introduction à la profession notariat et au droit préventif (le rôle, les devoirs et la responsabilité du notaire; les actes notariés, leur communication et leur conservation). Règles et techniques de rédaction d’une opinion juridique, d’un acte notari et d’un acte de procédure non contentieuse. Introduction à la rédaction préventive et aux conventions de règlement de conflits. Exercices d’analyse, d’interprétation et de rédaction des actes concernés.

DCL5522 STAGE DE DROIT NOTARIAL (3cr.)
Travail à la clinique de droit notarial, en pratique privée ou au gouvernement sous la supervision d’un notaire. Rapport de stage supervisé par un membre de la Faculté de droit.

DCL5523 PUBLICITÉ DES DROITS ET PROPRIÉTÉ (3cr.)
Règles régissant la publicité des droits (domaine, modalités et effets de la publicité des droits, immatriculation des immeubles, radiation des droits). Initiation aux modes d’accès aux registres et aux documents à distance. Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : modalités du droit de propriété (copropriété et propriété superficiaire); démembrements du droit de propriété (emptytheose, usufruit, usage et servitudes) et publicité des droits.

DCL5524 RELATIONS FAMILIALES (3cr.)
Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : régimes matrimoniaux; conventions matrimoniales; union civile; union de fait; dissolution et liquidation du régime matrimonial et conséquences fiscales; projets d’accord en matière de séparation et de divorce; droit international privé; adoption; régimes de protection des personnes inaptes ou absentes (tutelle, curatelle, conseiller, mandat d’inaptitude) et administration du bien d’autrui. Initiation à la médiation familiale.

DCL5525 NÉGOCIATION ET TRANSFERTS DE PROPRIÉTÉ (3cr.)
Initiation aux règles de la négociation. Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : avant-contrats; contrats translatifs de propriété (promesse de vente, vente, vente d’un immeuble à usage d’habitation, vente d’entreprise, vente de créance, échange, dation de paiement, donation, etc.); patrimoines d’affectation; reconnaissance judiciaire du droit de propriété; publicité des droits; lois fiscales applicables et conséquences fiscales; restrictions ou autorisations résultantes de lois particulières (Loi sur la protection du territoire agricole, Loi sur l’acquisition de terres agricoles par des non-résidents, Loi sur les biens culturels, Loi sur la Régie du logement.

DCL5526 ENGAGEMENTS FINANCIERS (3cr.)
Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : obligations; reconnaissance de dette; sûretés (priorités, hypothèques, garantie bancaire, cautionnement); garanties particulières (vente à tempérament, faculté de rachat, clause résolutoire, fiducie); publicité des droits; procédure particulière à la vente du bien d’autrui; ordre de collocation; droit international privé; droit comparé (garanties mobilières de common law) et faillite et insolvabilité.

DCL5527 DÉCÈS ET TRANSMISSION DES BIENS (3cr.)
Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : testaments; donation à cause de mort; assurance de personnes; substitution et fiducie testamentaire; jugement déclaratif de décès; règlement des successions; conséquences fiscales; devoirs, pouvoirs et responsabilité du liquidateur; administration du bien d’autrui; gestion fiduciaire; planification successorale; droit international privé et droit comparé (testament étranger, biens situés à l’étranger, etc.).

DCL5528 EXAMEN DES TITRES IMMOBILIERS (3cr.)

DCL5529 DROIT DES SOCIÉTÉS (3cr.)
Analyse de cas, dossiers pratiques et rédaction d’actes touchant principalement les domaines suivants : constitution, fonctionnement, financement, réorganisation, fusion et liquidation des sociétés par actions; distribution et attribution de bénéfices, surplus, biens ou avantages aux actionnaires; sociétés de personnes; lois fiscales et lois connexes; planifications financières, corporatives et fiscales.

DCL5530 DROIT DES ENTREPRISES RÉGLEMENTÉES (3cr.)

Recherche / Research
DCL.7033 RECHERCHE DIRIGÉE / DIRECTED RESEARCH (3cr.)

DCL.7066 MÉMOIRE DE RECHERCHE / RESEARCH PAPER

DCL.7999 RECHERCHE ET THÈSE DE MAÎTRISE / RESEARCH AND MASTER'S THESIS

DCL.8090 LECTURES DIRIGÉES / DIRECTED READINGS
Lectures dirigées, choisies en consultation avec le Comité d’accompagnement, visant à permettre à l’étudiant d’acquérir les fondements théoriques dans son domaine de recherche. L’étudiant devra soumettre un travail écrit aux membres du Comité d’accompagnement à la fin de la 3e session d’inscription (noté S/NS). / Directed readings program, chosen in consultation with the Thesis Committee, allowing the student to acquire the theoretical foundations in his field of research. Students must submit a paper to the members of their Thesis Committee at the end of the third session of registration (graded S/NS).

DCL.8330 LEGAL RESEARCH METHODOLOGY AND THEORY (3cr.)
The course will examine epistemology and methodology issues arising in the field of legal research.

DCL.8730 MÉTHODOLOGIE ET THÉORIE DU DROIT (3cr.)
Examen des questions épistémologiques et méthodologiques entourant la recherche en droit.

DCL.9997 PROJET DE THÈSE / THESIS PROPOSAL
Examen au cours duquel l’étudiant expose, par écrit et oralement, son projet de thèse. L’étudiant doit soumettre une proposition de recherche, un plan détaillé ainsi qu’une bibliographie exhaustive. / The student presents, in writing and orally, his or her thesis proposal. The student must submit a research proposal, a detailed plan and a comprehensive bibliography.

DCL.9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAM
Examen au cours duquel l’étudiant est évalué oralement sur ses connaissances des fondements dans son domaine de recherche. / During this examination the student will be assessed orally on his or her knowledge of legal foundations in his or her field of research.

DCL.9999 THÈSE DE DOCTORAT / PhD THESIS

Lettres françaises (PhD)
Le Département de français offre la maîtrise ès arts (avec mémoire et avec thèse) et le doctorat (Ph.D.) en lettres françaises. Le Département participe aux deux programmes pluridisciplinaires suivants : études des femmes (au niveau de la maîtrise) et études canadiennes (au niveau du doctorat) ce qui permet aux étudiants d’acquérir une spécialisation dans l’un ou l’autre domaine. Les champs de recherche au niveau des études supérieures sont : création littéraire, littérature française (du Moyen Age à nos jours) et littérature québécoise (des origines au XXIe siècle). Ce dernier champ comprend aussi la littérature canadienne-française (Acadie, Ontario, Ouest). Quant à la littérature francophone, elle se greffe au champ de la littérature française. Pour de plus amples renseignements, veuillez consulter le site Internet du Département de français.

Le programme de doctorat est offert uniquement à temps plein.

Admission

Tout candidat doit détenu une maîtrise ès arts en Lettres françaises obtenue avec une note minimale de 75 % (B+).

Le candidat désirant rédiger une thèse de doctorat en création littéraire doit avoir soutenu une thèse de maîtrise en création littéraire, ou l’équivalent, ou présenter un dossier attestant une production de textes jugés équivalents à la thèse de maîtrise en Lettres françaises avec profil en création.

Programme pluridisciplinaire en études canadiennes au niveau du doctorat
Le Département des lettres françaises est l’une des unités scolaires participant au programme pluridisciplinaire de doctorat en études canadiennes. Ce programme a été créé pour les étudiants qui souhaitent enrichir leur formation en Lettres françaises en y ajoutant la dimension interdisciplinaire des études canadiennes. Le séminaire d'études canadiennes (CDN 6910) étant reconnu par le Département de lettres françaises, les étudiants inscrits au programme pluridisciplinaire ne sont pas obligés de suivre un cours supplémentaire.

Afin d’être admis au programme, l’étudiant doit préalablement être inscrit à au moins un séminaire de deuxième ou troisième cycle en Lettres françaises ayant un contenu canadien ou avoir réussi un séminaire de deuxième ou troisième cycle en Lettres françaisos ayant un contenu canadien. Le titre du diplôme de ceux qui auront suivi avec succès le séminaire (CDN 6910) et qui auront soutenu avec succès une thèse avec contenu canadien sera suivi de la mention « spécialisation en études canadiennes ». 

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Pour de plus amples renseignements, veuillez vous reporter au site Web de la Faculté des études supérieures et postdoctorales consacrée au programme pluridisciplinaire d'études canadiennes.

Program Requirements

Exigences du grade

1. Scolarité

La scolarité du doctorat comprend quatre séminaires (soit 12 crédits, chaque séminaire équivalent à 3 crédits).

2. Examen de synthèse (FRA 9998) (cr.)

L'examen de synthèse doit avoir lieu au plus tard au cours du quatrième trimestre d'inscription. Les directives pour cet examen sont publiées dans le livret du Département.

L'épreuve est sanctionnée par la mention « satisfaisant » ou « non satisfaisant ». En cas d'échec, l'étudiant a droit à une reprise. S'il échoue une seconde fois, il doit se retirer du programme.

3. Rapport d'étape (FRA 8590) (cr.)

En cas d'échec, l'étudiant a droit à une reprise. S'il échoue une seconde fois, il doit se retirer du programme.

4. Thèse (FRA 9999) (cr.)

L'étudiant au doctorat doit faire approuver le choix de son directeur et de son sujet de thèse avant de se réinscrire à son troisième trimestre d'études.

1. La thèse peut être de type traditionnel ou de création littéraire.

2. Dans le cas d'une thèse de création littéraire, celle-ci doit être le lieu d'une réflexion sur une pratique personnelle de la création littéraire. La thèse se compose donc de deux parties qui peuvent prendre des formes variées; ces parties sont d'égale importance, mais non nécessairement de même longueur.

   - un texte de création littéraire inédit: poèmes, contes, nouvelles, roman, pièce de théâtre, essai;
   - une réflexion sur cette création: analyse personnelle des justifications théoriques, considérations esthétiques, problèmes techniques, formes et genres impliqués, etc.; cette analyse doit s'appuyer sur une bonne connaissance théorique de la question (étude des auteurs ayant traité de la création, de la théorie des genres, etc.).

Le volume d'une thèse de doctorat est de quelques trois cents pages.

5. Résidence et limite de temps

Le candidat au doctorat doit être inscrit à temps plein durant au moins six trimestres normalement au début du programme. Toutes les exigences du programme de doctorat doivent normalement être remplies en quatre ans.

Courses

Tous les cours, à l'exception de FRA 7997, 7999, 8590, 9998, 9999, valent trois crédits.

Certains cours ne sont pas offerts chaque année.

Approches critiques

FRA5501 POÉTIQUE ET INTERTEXTUALITÉ (3cr.)

FRA5502 LECTURES FÉMINISTES (3cr.)

FRA5503 SOCIOCRITIQUE ET SOCIOLOGIE DE LA LITTÉRATURE (3cr.)
FRA5505 LITTÉRATURE ET PHILOSOPHIE (3cr.)
FRA5507 ENJEUX DE LA LITTÉRATURE (3cr.)
FRA5508 APPROCHES PHILOLOGIQUES DES TEXTES (3cr.)
FRA5560 ANALYSE DU DISCOURS (3cr.)
FRA5570 RHÉTORIQUE ET PRAGMATIQUE (3cr.)
FRA5590 ATELIER DE MÉTHODOLOGIE (3cr.)
FRA5760 TEXTOLOGIE ET CRITIQUE GÉNÉTIQUE (3cr.)
FRA5770 LITTÉRATURE COMPARÉE (3cr.)
FRA5790 LITTÉRATURE ET AUTRES ARTS (3cr.)
FRA6755 LECTURES POSTCOLONIALES (3cr.)

Siècles
FRA6701 LITTÉRATURE DU MOYEN ÂGE (3cr.)
FRA6702 LITTÉRATURE DE LA RENAISSANCE (3cr.)
FRA6703 LITTÉRATURE DU XVIIe SIÈCLE (3cr.)
FRA6704 LITTÉRATURE DU XVIIIe SIÈCLE (3cr.)
FRA6741 LITTÉRATURE DU XIXe SIÈCLE I (3cr.)
FRA7706 LITTÉRATURE DU XIXe SIÈCLE II (3cr.)
FRA6742 LITTÉRATURE DU XXe SIÈCLE I (3cr.)
FRA7705 LITTÉRATURE DU XXe SIÈCLE II (3cr.)
FRA7707 LITTÉRATURE DU XXe SIÈCLE III (3cr.)
FRA7745 LITTÉRATURE ACTUELLE (3cr.)

Genres
FRA5504 FRONTIÈRES DES GENRES (3cr.)
FRA5509 CRÉATION LITTÉRAIRE (3cr.)
FRA6751 ROMAN ET AUTRES GENRES NARRATIFS I (3cr.)
FRA7755 ROMAN ET AUTRES GENRES NARRATIFS II (3cr.)
FRA6752 POÉSIE I (3cr.)
FRA7756 POÉSIE II (3cr.)
FRA6753 THÉÂTRE I (3cr.)
FRA7757 THÉÂTRE II (3cr.)
FRA6754 ESSAI ET PROSE D'IDÉES (3cr.)
Linguistics (PhD)

The Department of Linguistics offers graduate programs leading to the degrees of MA in linguistics and PhD in linguistics. It is possible, through the selection of relevant courses, to specialize in a variety of areas of linguistic research. These include the following: theoretical linguistics (phonetics, phonology, morphology, syntax, semantics), first and second language acquisition, psycholinguistics, neurolinguistics and sociolinguistics. Detailed information about the programs, for instance, the research areas of professors, course descriptions, and student advising arrangements is provided in the department’s student handbook.

Admission

The BA with honours in linguistics (or the equivalent) is required for admission to the master's program.

Applicants to the master’s program whose BA with honours is in an area other than linguistics may be admitted to a qualifying program which will be established for each student, taking previous preparation into account. This program will comprise up to 30 credits to ensure coverage of all the major areas of linguistics. After the requirements of the qualifying program have been satisfactorily fulfilled, students may apply for admission to the regular master's program.

The M.A. in Linguistics (or the equivalent) is required for admission to the doctoral program.

Collaborative Program in Canadian Studies at the PhD Level

The Department of Linguistics is a participating unit in the collaborative program in Canadian Studies at the PhD level. This program has been established for students wishing to enrich their training in linguistics by including an interdisciplinary component in Canadian studies. The Canadian Studies Seminars (CDN 6520 and CDN 6910) fits into the departmental course requirements and does not add to the number of courses required for the PhD in linguistics.

To be admitted to the program, students must be registered in or have successfully completed at least one graduate course in linguistics with Canadian content. The mention “Specialization in Canadian Studies” will be added to the diploma of students who pass one of the canadian studies seminars (CDN 6520 or CDN 6910) and successfully defend a thesis on a Canadian topic in linguistics.

For further details, please consult the Canadian Studies Website of the Faculty of Graduate and Postdoctoral Studies.

Language Requirements

Candidates must have an adequate knowledge of both French and English, and they must be prepared to take courses in both languages.

Program Requirements
1. Course requirements: A total of six courses (18 credits)

- a) All students must take two of the following courses (or approved equivalents):
  - LIN6915 PHONOLOGIE II / PHONOLOGY II (3cr.)
  - LIN6917 SYNTAXE II / SYNTAX II (3cr.)
  - LIN6918 SÉMANTIQUE II / SEMANTICS II (3cr.)

- b) All students must take four additional graduate courses, chosen in consultation with their advisory committees. All linguistics graduate courses fulfill this requirement, except those which are prerequisites to required doctoral courses (LIN 5915, LIN 5917, LIN 5918)

N.B. Research courses and seminar courses may be repeated if the content of the course is different.

2. Doctoral Seminar (cr.)
The aim of this seminar is to provide doctoral students with the necessary methodological and professional tools for carrying out research in linguistics. This seminar must be taken in conjunction with their first comprehensive exam. Topics to be covered include: defining a research project; presentation of research results; poster preparation; techniques for writing academic papers, conference abstracts, and reviews; journal submission and review procedures; conference participation; research ethics. Compulsory for doctoral students. Graded S/NS.

3. Comprehensive examination
All students must satisfy a comprehensive examination requirement. The requirement consists of two substantial research papers each in a different field, selected in consultation with the student's advisory committee.

4. Residence and Thesis
All students must spend a minimum of six sessions in residence and present a thesis incorporating the results of original research carried out under the supervision of a member of the Faculty of Graduate and Postdoctoral Studies. Transfer students must complete a total of nine sessions in residence (master's and doctorate combined).

5. Language Requirements
Candidates must have an adequate knowledge of both French and English, and they must be prepared to take courses in both languages.

Additional Requirements
The requirements listed above are necessary minimums, and the department may impose additional courses if this appears desirable in view of the candidate's previous preparation. Candidates will be informed of any such additional courses at the beginning of their studies.

Courses

- LIN5902 TECHNIQUES DE LABORATOIRE : LOGICIELS, SIGNAUX ET STIMULI / LABORATORY TECHNIQUES: SOFTWARE, SIGNALS AND STIMULI (3cr.)
- LIN5903 SOCIOLINGUISTIQUE I / SOCIOLINGUISTICS I (3cr.)
- LIN5904 PSYCHOLINGUISTIQUE / PSYCHOLINGUISTICS (3cr.)
- LIN5908 BILINGUISME / BILINGUALISM (3cr.)
- LIN5909 HISTOIRE DE LA LINGUISTIQUE / HISTORY OF LINGUISTICS (3cr.)
- LIN5910 DIALECTOLOGIE / DIALECTOLOGY (3cr.)
- LIN5915 PHONOLOGIE I / PHONOLOGY I (3cr.)
- LIN5916 THÉORIES DU LANGAGE / THEORIES OF LANGUAGE (3cr.)
- LIN5917 SYNTAXE I / SYNTAX I (3cr.)
- LIN5918 SÉMANTIQUE I / SEMANTICS I (3cr.)
- LIN5919 LINGUISTIQUE HISTORIQUE / HISTORICAL LINGUISTICS (3cr.)
- LIN5920 LINGUISTIQUE ET PHILOSOPHIE / LINGUISTICS AND PHILOSOPHY (3cr.)
Residence

3. Presentation and defense of a thesis (MAT9999) based on an original research carried out under the direct supervision of a faculty member of the Institute.

The following requirements must be met:

Program Requirements

Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, contact the Faculty of Graduate and Postdoctoral Studies.

3. Comprehensive examination

The Department of Linguistics is a participating unit in the collaborative program in Canadian Studies at the PhD level. This program has been designed to provide a comprehensive education in the field of Canadian Studies, and to prepare students for careers in academia, government, and the private sector.

Le programme de doctorat est offert uniquement à temps plein. Les étudiants qui échouent à la première tentative à l'examen peuvent se voir accorder la mention « Réussite » ou « Échec ».

Duration of the program

Awards Office

External Scholarships

The Faculty of Graduate and Postdoctoral Studies in conjunction with the Faculty of Law provides a number of scholarships per year to LLM or JUR博士学位 students.

Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the applicant's work.

Rapport d'étape (FRA 8590) (cr.)

Définition et méthode du droit comparé. Étude sommaire des grands système de droit contemporains, et comparaison de leurs fondements. Étude de certaines doctrine.

Révision des techniques de recherche, des sources du droit et des méthodes d'analyse.

APA9998 EXAMEN DE SYNTHEZE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION (3cr.)

APA6100 QUALITATIVE DATA ANALYSIS IN SPORT, PHYSICAL ACTIVITY AND HEALTH (3cr.)

APA5706 SPORT ET ACTIVITE PHYSIQUE: ETHIQUE ET VALEURS (3cr.)

APA5303 MARKETING AND SPONSORSHIP OF SPORT AND PHYSICAL ACTIVITY (3cr.)

Study of the literature... from one or more of the following areas: random graphs, random combinatorial structures, hypergeometric functions.

LIN7903 LE "TESTING" / TEST CONSTRUCTION (3cr.)

LIN7910 SÉMINAIRE I / SEMINAR I (3cr.)

LIN7911 SÉMINAIRE II / SEMINAR II (3cr.)

LIN7912 SÉMINAIRE III / SEMINAR III (3cr.)

LIN7913 SÉMINAIRE IV / SEMINAR IV (3cr.)

LIN7914 ACQUISITION DE LA LANGUE MATERNELLE I / FIRST LANGUAGE ACQUISITION I (3cr.)

LIN7920 ACQUISITION DE LA LANGUE SECONDE I / SECOND LANGUAGE ACQUISITION I (3cr.)

LIN7921 COURS DE PRATIQUE PSYCHOLINGUISTIQUE / PRACTICUM IN PSYCHOLINGUISTICS (3cr.)

LIN7922 RECHERCHE EN LINGUISTIQUE APPLIQUEE / RESEARCH IN APPLIED LINGUISTICS (3cr.)

LIN7923 LINGUISTIQUE APPLIQUEE À L'ENSEIGNEMENT DES LANGUES SECONDES / LINGUISTICS APPLIED TO SECOND LANGUAGE TEACHING (3cr.)

LIN7925 PROBLÈMES THÉORIQUES EN LINGUISTIQUE APPLIQUEE / THEORITICAL ISSUES IN APPLIED LINGUISTICS (3cr.)

LIN7930 PROBLÈMES DE LINGUISTIQUE THÉORIQUE I / TOPICS IN THEORETICAL LINGUISTICS I (3cr.)

LIN7931 PROBLÈMES DE LINGUISTIQUE THÉORIQUE II / TOPICS IN THEORETICAL LINGUISTICS II (3cr.)

LIN7932 SÉMINAIRE EN LINGUISTIQUE THÉORIQUE I / SEMINAR IN THEORETICAL LINGUISTICS I (3cr.)

LIN7933 SÉMINAIRE EN LINGUISTIQUE THÉORIQUE II / SEMINAR IN THEORETICAL LINGUISTICS II (3cr.)

LIN7940 ACQUISITION DE LA LANGUE SECONDE II / SECOND LANGUAGE ACQUISITION II (3cr.)

LIN7941 PSYCHOLINGUISTIQUE II / PSYCHOLINGUISTICS II (3cr.)

LIN7942 SOCIOLINGUISTIQUE II / SOCIOLINGUISTICS II (3cr.)

LIN7943 NEUROLINGUISTIQUE / NEUROLINGUISTICS (3cr.)
LIN7950 PROBLÈMES DE LINGUISTIQUE APPLIQUÉE I / TOPICS IN APPLIED LINGUISTICS I (3cr.)
LIN7951 PROBLÈMES DE LINGUISTIQUE APPLIQUÉE II / TOPICS IN APPLIED LINGUISTICS II (3cr.)
LIN7952 SÉMINAIRE EN LINGUISTIQUE APPLIQUÉE I / SEMINAR IN APPLIED LINGUISTICS I (3cr.)
LIN7953 SÉMINAIRE EN LINGUISTIQUE APPLIQUÉE II / SEMINAR IN APPLIED LINGUISTICS II (3cr.)
LIN7997 MÉMOIRE DE MAÎTRISE / M.A. RESEARCH PAPER
LIN8998 SÉMINAIRE DE DOCTORAT / DOCTORAL SEMINAR
LIN9998 EXAMEN DE CANDIDATURE DU DOCTORAT / PhD QUALIFYING EXAMINATION
LIN9999 RECHERCHE ET THÈSE DE DOCTORAT / PhD THESIS RESEARCH

Mathematics and Statistics (PhD)

Ottawa-Carleton Joint Program

General Information

Established in 1984, the Ottawa-Carleton Institute of Mathematics and Statistics (OCIMS) combines the research strengths of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Mathematics and Statistics.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in three main research fields: pure mathematics; applied mathematics; probability and statistics. Additional information is posted in the departmental website.

The Institute is a participating unit in the following collaborative programs: the Bioinformatics program (at the master’s level) and the Biostatistics program (at the master’s level).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs" (www.ocjip.ca) and the General Regulations of the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate program in mathematics and statistics is governed by the General Regulations of the Ottawa-Carleton Institute of Mathematics and Statistics (OCIMS) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a master’s in mathematics and statistics (or equivalent) with a minimum average of 75% (B+);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

Transfer from Master’s to PhD Program
Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Completion of two graduate courses (six credits) with a grade of A- or better in each;
2. Satisfactory progress in the research program;
3. Written recommendation by the supervisor and the advisory committee;
4. Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master’s. Following the transfer, all of the requirements of the doctoral program must be met.

**Collaborative Programs**

The Department of Mathematics and Statistics is a participating unit in the collaborative programs in Bioinformatics and in Biostatistics. Students should indicate in their initial application for admission that they wish to be accepted into the collaborative program. For further details, see the description of the program posted on the FGPS website.

## Program Requirements

### PhD Degree Requirements

The following requirements must be met:

1. 18 credits at the 5000 level or above in mathematics and statistics or in related disciplines approved by the Department of Mathematics and Statistics;
2. Successful completion of a comprehensive examination (MAT9998) within twelve months of the initial admission into the program;
3. Presentation and defense of a thesis (MAT9999) based on an original research carried out under the direct supervision of a faculty member of the Institute.

**Residence**

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

**Minimum Standards**

The passing grade in all courses is B. Students who fail two courses (equivalent to 6 credits), or the thesis proposal, or the comprehensive exam, or whose research progress is deemed unsatisfactory are required to withdraw.

**Duration of the program**

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

### Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les notes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l’Université d’Ottawa correspond à un cours de 0,5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.
MAT5105 (MATH5817) DISCRETE APPLIED MATHEMATICS I: GRAPH THEORY (3cr.)
Paths and cycles, trees, connectivity, Euler tours and Hamilton cycles, edge colouring, independent sets and cliques, vertex colouring, planar graphs, directed graphs. Selected topics from one or more of the following areas: algebraic graph theory, topological theory, random graphs.

MAT5106 (MATH5808) COMBINATORIAL OPTIMIZATION (3cr.)
Network flow theory and related material. Topics will include shortest paths, minimum spanning trees, maximum flows, minimum cost flows. Optimal matching in bipartite graphs.

MAT5107 (MATH 5819) DISCRETE APPLIED MATHEMATICS II: COMBINATORIAL ENUMERATION (3cr.)
Ordinary and exponential generating functions; product formulas; permutations; partitions; rooted trees; cycle index; WZ method. Lagrange Inversions; singularity analysis of generating functions and asymptotics. Selected topics from one or more of the following areas: random graphs, random combinatorial structures, hypergeometric functions.

MAT5121 (MATH 5009) INTRODUCTION TO HILBERT SPACE (3cr.)

MAT5122 (MATH 5003) BANACH ALGEBRAS (3cr.)

MAT5125 (MATH 5007) REAL ANALYSIS I (Measure theory and integration) (3cr.)
General measure and integral, Lebesgue measure and integration on R. Fubini's theorem, Lebesgue-Radon-Nikodym theorem, absolute continuity and differentiation, Lp-Spaces. Selected topics such as: Daniell-Stone theory. Prerequisite(s): Permission of the Program Director.

MAT5126 (MATH 5008) REAL ANALYSIS II (Functional analysis) (3cr.)

MAT5127 (MATH 5005) COMPLEX ANALYSIS (3cr.)

MAT5131 (MATH 5405) ORDINARY DIFFERENTIAL EQUATIONS (3cr.)

MAT5133 (MATH 5406) PARTIAL DIFFERENTIAL EQUATIONS (3cr.)
First-order equations, characteristics method, classification of second-order equations, separation of variables, Green's functions. Lp and Sobolev spaces, distributions, variational formulation and weak solutions, Lax-Milgram theorem, Galerkin approximation. Prerequisite: MAT 5125 (MATH 5007).

MAT5134 (MATH 5407) TOPICS IN DIFFERENTIAL EQUATIONS (3cr.)

MAT5141 (MATH 5107) ALGEBRA I (3cr.)
Groups, Sylow subgroups, finitely generated abelian groups. Rings, field of fractions, principal ideal domains, modules. Polynomial algebra, Euclidean algorithm, unique factorization. Prerequisites: MAT 3141 and MAT 3143.

MAT5142 (MATH 5109) ALGEBRA II (3cr.)
Field theory, algebraic and transcendental extensions, finite fields, Galois groups. Modules over principal ideal domains, decomposition of a linear transformation, Jordan normal form. Prerequisite: MAT 5141 (MATH 5107).

MAT5143 (MATH 5104) LIE ALGEBRAS (3cr.)

MAT5145 (MATH 5106) GROUP THEORY (3cr.)

MAT5146 (MATH 5103) RINGS AND MODULES (3cr.)

MAT5147 (MATH 5108) HOMOLOGICAL ALGEBRA AND CATEGORY THEORY (3cr.)

MAT5148 (MATH 5102) GROUP REPRESENTATIONS AND APPLICATIONS (3cr.)

MAT5150 (MATH 5201) TOPICS IN GEOMETRY (3cr.)

MAT5151 (MATH 5205) TOPOLOGY I (3cr.)
Topological spaces, product and identification topologies, countability and separation axioms, compactness, connectedness, homotopy, fundamental group, net and filter convergence. Prerequisites: MAT 3153 (MATH 3004).

MAT5152 (MATH 5206) TOPOLOGY II (3cr.)
Covering spaces, homology via the Eilenberg-Steenrod axioms, applications, construction of a homology functor. Prerequisites: MAT 3143 and MAT 5151 (MATH 3100 and MATH 5205).
MAT5155 (MATH 5208) DIFFERENTIABLE MANIFOLDS (3cr.)

MAT5158 (MATH 6104) LIE GROUPS (3cr.)

MAT5160 (MATH 5300) MATHEMATICAL CRYPTOGRAPHY (3cr.)
Analysis of cryptographic methods used in authentication and data protection, with particular attention to the underlying mathematics, e.g. Algebraic Geometry, Number Theory, and Finite Fields. Advanced topics on Public-Key Cryptography: RSA and integer factorization, Diffie-Hellman, discrete logarithms, elliptic curves. Topics in current research. Prerequisites: undergraduate honours algebra, including group theory and finite fields.

MAT5161 (MATH 5301) MATHEMATICAL LOGIC (3cr.)
A basic graduate course in mathematical logic. Propositional and Predicate logic, Proof theory, Gentzen's Cut-Elimination, Completeness, Compactness, Henkin models, model theory, arithmetic and undecidability. Special Topics (time permitting) depending on interests of instructor and audience. Prerequisites: honours undergraduate algebra, analysis and topology (or permission of the instructor).

MAT5162 (MATH 6807) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE (3cr.)
Foundations of functional languages, lambda calculi (typed, polymorphically typed, untyped), Curry-Howard Isomorphism, proofs-as-programs, normalization and rewriting theory, operational semantics, type assignment, introduction to denotational semantics of programs, fixed-point programming. Topics chosen from: denotational semantics for lambda calculi, models of programming languages, complexity theory and logic of computation, models of concurrent and distributed systems, etc. Prerequisites: honours undergraduate algebra and either topology or analysis. Some acquaintance with Logic useful.

MAT5163 (MATH 5305) ANALYTIC NUMBER THEORY (3cr.)

MAT5164 (MATH 5306) ALGEBRAIC NUMBER THEORY (3cr.)

MAT5165 (MATH 5605) THEORY OF AUTOMATA (3cr.)

MAT5167 (MATH/COMP 5807) FORMAL LANGUAGE AND SYNTAX ANALYSIS (3cr.)

MAT5168 (MATH 5202) HOMOLOGY THEORY (3cr.)

MAT5169 (MATH 5207) FOUNDATIONS OF GEOMETRY (3cr.)

MAT5170 (STAT 5708) PROBABILITY THEORY I (3cr.)
Probability spaces, random variables, expected values as integrals, joint distributions, independence and product measures, cumulative distribution functions and extensions of probability measures, Borel-Cantelli lemmas, convergence concepts, independent identically distributed sequences of random variables. Prerequisites: Permission of Program Director.

MAT5171 (MATH 5709) PROBABILITY THEORY II (3cr.)
Laws of large numbers, characteristic functions, central limit theorem, conditional probabilities and expectation, basic properties and convergence theorems for martingales, introduction to Brownian motion. Prerequisite: MAT 5170 (STAT 5708).

MAT5172 (STAT 5508) TOPICS IN STOCHASTIC PROCESSES (3cr.)

MAT5173 (STAT 5604) STOCHASTIC ANALYSIS (3cr.)
Brownian motion, continuous martingales and stochastic integration.

MAT5174 (STAT 5704) NETWORK PERFORMANCE (3cr.)
The course will focus on advanced techniques in performance evaluation of large complex networks. Topic may include classical queueing theory and simulation analysis; models of packet networks; loss and delay systems; blocking probabilities. Prerequisites: Some familiarity with probability and stochastic processes and queueing, or permission of the instructor.

MAT5175 (STAT 5506) ROBUST STATISTICAL INFERENCE (3cr.)

MAT5176 (STAT 5507) ADVANCED STATISTICAL INFERENCE (3cr.)
Pure significance tests; uniformly most powerful unbiased and invariant tests; asymptotic comparison of tests; confidence intervals; large sample theory of likelihood ratio and chi-square tests; likelihood inference; Bayesian inference. Topics such as empirical Bayes inference, fiducial and structural inference, resampling methods. Prerequisites: MAT 4170 or equivalent and MAT 5191.

MAT5177 (STAT 5500) MULTIVARIATE NORMAL THEORY (3cr.)

MAT5180 (MATH 5806) NUMERICAL ANALYSIS FOR DIFFERENTIAL EQUATIONS (3cr.)
Floating point arithmetic; numerical solution of ordinary differential equations; finite difference methods for partial differential equations; stability, consistency and convergence: von Neumann analysis, Courant-Friedrichs-Lewy condition, Lax theorem; finite element methods: boundary value problems and elliptic partial

**MAT5181 (STAT 5703) DATA MINING I (3cr.)**
Visualization and knowledge discovery in massive datasets; unsupervised learning: clustering algorithms; dimension reduction; supervised learning: pattern recognition, smoothing techniques, classification. Computer software will be used. *Prerequisite:* Permission of the Instructor.

**MAT5182 (STAT 5702) MODERN APPLIED / COMPUTATIONAL STATISTICS (3cr.)**
Resampling and computer intensive methods: bootstrap, jackknife with applications to bias estimation, variance estimation, confidence intervals, and regression analysis. Smoothing methods in curve estimation; Statistical classification and pattern recognition: error counting methods, optimal classifiers, bootstrap estimates of the bias of the misclassification error.

**MAT5185 (MATH 5408) ASYMPTOTIC METHODS OF APPLIED MATHEMATICS (3cr.)**

**MAT5187 (MATH 5403) TOPICS IN APPLIED MATHEMATICS (3cr.)**

**MAT5190 (STAT 5600) MATHEMATICAL STATISTICS I (3cr.)**
Statistical decision theory; likelihood functions; sufficiency; factorization theorem; exponential families; UMVU estimators; Fisher's information; Cramer-Rao lower bound; maximum likelihood and moment estimation; invariant and robust point estimation; asymptotic properties; Bayesian point estimation. *Prerequisites:* MAT 3172 and MAT 3375.

**MAT5191 (STAT 5501) MATHEMATICAL STATISTICS II (3cr.)**
Confidence intervals and pivots; Bayesian intervals; optimal tests and Neyman-Pearson theory; likelihood ratio and score tests; significance tests; goodness-of-fit tests; large sample theory and applications to maximum likelihood and robust estimation. *Prerequisite:* MAT 5190.

**MAT5192 (STAT 5502) SAMPLING THEORY AND METHODS (3cr.)**
Unequal probability sampling with and without replacement; unified theory of standard errors; prediction approach; ratio and regression estimation; stratification and optimal designs; multistage cluster sampling; double sampling; domains of study; post-stratification; non-response; measurement errors. Related topics. *Prerequisite:* (MATH 4502).

**MAT5193 (STAT 5503) LINEAR MODELS (3cr.)**
Theory of non-full-rank linear models: estimable functions, best linear unbiased estimators, hypothesis testing, confidence regions; multi-way classification; analysis of covariance; variance component models: maximum likelihood estimation, MINQUE, ANOVA methods. Miscellaneous topics. *Prerequisite:* MAT 4175 (MATH 4500) or MAT 5190 (STAT 5600).

**MAT5194 (STAT 5504) STOCHASTIC PROCESSES AND TIME SERIES ANALYSIS (3cr.)**

**MAT5195 (STAT 5505) DESIGN OF EXPERIMENTS (3cr.)**
Overview of linear model theory; orthogonality; randomized block and split plot designs; Latin square designs; randomization theory; incomplete block designs; factorial experiments; confounding and fractional replication; response surface methodology. Miscellaneous topics. *Prerequisites:* MAT 3375 and MAT 3376 or MAT 5190 (STAT 3505 and STAT 4500 or STAT 5600).

**MAT5196 (STAT 5509) MULTIVARIATE ANALYSIS (3cr.)**

**MAT5197 (STAT 5601) STOCHASTIC OPTIMIZATION (3cr.)**
Topics chosen from stochastic dynamic programming, Markov decision processes, search theory, optimal stopping. *Prerequisite:* STAT 3506 or MAT 4371.

**MAT5198 (MATH 5701) STOCHASTIC MODELS (3cr.)**
Markov systems, stochastic networks, queuing networks, spatial processes, approximation methods in stochastic processes and queuing theory. Applications to the modelling and analysis of computer-communications systems and other distributed networks.

**MAT5301 (MATH 5609) TOPICS IN COMBINATORIAL MATHEMATICS (3cr.)**

**MAT5303 (MATH 5801) LINEAR OPTIMIZATION (3cr.)**

**MAT5304 (MATH 5803) NONLINEAR OPTIMIZATION (3cr.)**

**MAT5307 (MATH 5804) TOPICS IN OPERATIONS RESEARCH (3cr.)**

**MAT5308 (MATH 5805) TOPICS IN ALGORITHM DESIGN (3cr.)**

**MAT5309 (MATH 6002) HARMONIC ANALYSIS ON GROUPS (3cr.)**
MAT5312 (MATH 6201) TOPICS IN TOPOLOGY (3cr.)

MAT5313 (MATH 6507) TOPICS IN PROBABILITY AND STATISTICS (3cr.)

MAT5314 (MATH 6508) TOPICS IN PROBABILITY AND STATISTICS (3cr.)

MAT5315 ADVANCED DESIGN OF SURVEYS (3cr.)

MAT5317 (STAT 5602) ANALYSIS OF CATEGORICAL DATA (3cr.)
Analysis of one-way and two-way tables of nominal data; multi-dimensional contingency tables, log-linear models; tests of symmetry, marginal homogeneity in square tables; incomplete tables; tables with ordered categories; fixed margins, logistic models with binary response; measures of association and agreement; applications biological.

MAT5318 (STAT 5603) RELIABILITY AND SURVIVAL ANALYSIS (3cr.)

MAT5319 (MATH 6507) TOPICS IN PROBABILITY AND STATISTICS (3cr.)

MAT5324 (MATH 5607) GAME THEORY (3cr.)

MAT5325 (MATH 5802) TOPICS IN INFORMATION AND SYSTEMS SCIENCE (3cr.)

MAT5326 (MATH 6008) TOPICS IN ANALYSIS (3cr.)

MAT5327 (MATH 6101) TOPICS IN ALGEBRA (3cr.)

MAT5328 (MATH 6008) TOPICS IN ANALYSIS (3cr.)

MAT5329 (MATH 6009) TOPICS IN ANALYSIS (3cr.)

MAT5330 (MATH 6102) TOPICS IN ALGEBRA (3cr.)

MAT5331 (MATH 6103) TOPICS IN ALGEBRA (3cr.)

MAT5341 (MATH5821) QUANTUM COMPUTING (3cr.)

MAT5343 MATHEMATICAL ASPECTS OF WAVELETS AND DIGITAL SIGNAL PROCESSING (3cr.)
Lossless compression methods. Discrete Fourier transform and Fourier-based compression methods. JPEG and MPEG. Wavelet analysis. Digital filters and discrete wavelet transform. Daubechies wavelets. Wavelet compression. Prerequisites: Linear algebra and Fourier series, or permission of the School or Department.

MAT5361 (MATH 6806) TOPICS IN MATHEMATICAL LOGIC (3cr.)

MAT5375 (STAT 5610) MATHEMATICAL STATISTICS (3cr.)
Limit theorems; sampling distributions; parametric estimation; concepts of sufficiency and efficiency; Neyman-Pearson paradigm, likelihood ratio tests; parametric and non-parametric methods for two-sample comparisons; notions of experimental design, categorical data analysis, the general linear model, decision theory and Bayesian inference. Prerequisites: MAT2121, (MAT2141 or MAT2542), MAT2375. Exclusion: Students in the MSc program cannot combine this course with MAT5190 (STAT5600) for credit towards the master’s program.

MAT5505 (MATH 5817) MATHEMATICIQUES DISCRÈTES APPLIQUÉES I : THÉORIES DES GRAPHES (3cr.)

MAT5506 (MATH 5818) OPTIMISATION COMBINATOIRE (3cr.)
Theorie des flots et thèmes voisins. On traitera parmi d'autres les sujets suivants : chemins minimaux, arbres générateurs de coût minimal, flots de coût maximal, flots de coût minimal. Couplage optimal dans les graphes bipartis.

MAT5507 (MATH 5819) MATHEMATICIQUES DISCRÈTES APPLIQUÉES II : ÉNUMÉRATION COMBINATOIRE
 Fonctions génératrices ordinaires et exponentielles; formules de produit; permutations; partitions; arborescences; indice de cycle; méthode WZ. Inversion de Lagrange; analyse des singularités des fonctions génératrices et leur comportement asymptotique. Sujets choisis parmi les thèmes suivants : graphes aléatoires,
structures combinatoires aléatoires, fonctions hypergéométriques.

MAT5521 (MATH 5009) INTRODUCTION AUX ESPACES HILBERTIENS (3cr.)

MAT5522 (MATH 5003) ALGÈBRES DE BANACH (3cr.)

MAT5525 (MATH 5007) ANALYSE RÉELLE I (Théorie des mesures et intégration) (3cr.)

MAT5526 (MATH 5008) ANALYSE RÉELLE II (Analyse fonctionnelle) (3cr.)
Espaces de Banach et de Hilbert, opérateurs linéaires bornés, espaces duals. Chapitres choisis parmi les suivants : topologies faibles, théorème d'Alaoglu, opérateurs compacts, calcul différentiel dans les espaces de Banach, théorèmes de représentation de Riesz. Préalable : MAT 5525 (MATH 5007).

MAT5527 (MATH 5005) ANALYSE COMPLEXE (3cr.)

MAT5531 (MATH 5405) ÉQUATIONS DIFFÉRENTIELLES ORDINAIRES (3cr.)

MAT5533 (MATH 5406) ÉQUATIONS AUX DÉRIVÉES PARTIELLES (3cr.)

MAT5534 (MATH 5407) ÉQUATIONS DIFFÉRENTIELLES : CHAPITRES CHOISIS (3cr.)

MAT5541 (MATH 5107) ALGÈBRE I (3cr.)

MAT5542 (MATH 5109) ALGÈBRE II (3cr.)
Théorie des corps, extensions algébriques et transcendantes, corps finis, groupes de Galois. Modules sur un anneau principal, décomposition d'une application linéaire, forme normale de Jordan. Préalable : MAT 5541 (MATH 5107).

MAT5543 (MATH 5104) ALGÈBRES DE LIE (3cr.)

MAT5545 (MATH 5106) THÉORIE DES GROUPES (3cr.)

MAT5546 (MATH 5103) ANNEAUX ET MODULES (3cr.)

MAT5547 (MATH 5108) ALGÈBRE HOMOLOGIQUE ET THÉORIE DES CATÉGORIES (3cr.)

MAT5548 (MATH 5102) REPRÉSENTATION DE GROUPES : APPLICATIONS (3cr.)

MAT5551 (MATH 5205) TOPOLOGIE I (3cr.)
Espaces topologiques; topologie produit et topologie quotient; axiomes de dénombrabilité et axiomes de séparation; espaces compacts, connexes; homotopie, groupe fondamental; convergence des filtres et des suites généralisées. Préalable(s) : MAT 3553 (MATH 3001).

MAT5552 (MATH 5206) TOPOLOGIE II (3cr.)
Revêtements, homologie (axiomes d'Eilenberg-Steenrod), applications, construction d'une théorie de l'homologie. Préalables : MAT 3543 et MAT 5551 (MATH 3100 et MATH 5205).

MAT5555 (MATH 5208) VARIÉTÉS DIFFÉRENTIELLES (3cr.)

MAT5558 (MATH 6104) GROUPES DE LIE (3cr.)

MAT5565 (MATH 5605) THÉORIE DES AUTOMATES (3cr.)

MAT5567 (MATH/COMP 5807) LANGUAGES FORMELS ET ANALYSE SYNTAXIQUE (3cr.)

MAT5568 (MATH 5202) HOMOLOGIE (3cr.)

MAT5570 (STAT 5708) THÉORIE DES PROBABILITÉS I (3cr.)
Espaces probabilisés, variables aléatoires, l'espérance mathématique définie comme une intégrale, lois conjointes, indépendance et mesure produit, répartitions et extensions de mesures de probabilité, lemmes de Borel-Cantelli, notions de convergence, suites de variables aléatoires indépendantes et équidistribuées. Préalables : MAT 3525 et MAT 3572 (MATH 3001, MATH 3002 et MATH 3500).

MAT5571 (STAT 5709) THÉORIE DES PROBABILITÉS II (3cr.)
Lois des grands nombres, fonctions caractéristiques, théorème-limite central, probabilité et espérance conditionnelles, propriétés élémentaires et théorèmes de convergence des martingales, introduction au mouvement brownien. Préalable : MAT 5570 (STAT 5708).

MAT5572 (STAT 5508) PROCESSUS STOCHASTIQUES : CHAPITRES CHOISIS (3cr.)

MAT5576 (STAT 5507) INFÉRENCE STATISTIQUE AVANCÉE (3cr.)
Tests de signification pure; tests uniformément les plus puissants sans biais et sans variance; comparaison asymptotique des tests; intervalles de confiance; théorie des grands échantillons et tests du carré chi; inférence de la vraisemblance; inférence de Bayes; inférence empirique de Bayes; induction fiduciaire et structurale; méthodes de répétition de l'échantillonnage. Préalables : MAT 4170 ou l'équivalent, et MAT 5191.

MAT5577 (STAT 5500) ANALYSE MULTIVARIÉE NORMALE (3cr.)

MAT5580 (MATH 5806) ANALYSE NUMÉRIQUE POUR LES ÉQUATIONS DIFFÉRENTIELLES (3cr.)
Arithmétique des nombres à virgule flottante; solution numérique des équations différentielles ordinaires; méthode des différences finies pour les équations aux dérivées partielles; stabilité, consistance et analyse; méthode de von Neumann, condition de Courant-Friedrichs-Lewy, théorème de Lax; méthode des éléments finis : problèmes aux limites et équations aux dérivées partielles elliptiques; méthodes Spectrale et Spectrale Pseudo. Préalables : MAT2724 et MAT3780.

MAT5591 (STAT 5501) INFÉRENCE STATISTIQUE (3cr.)

MAT5593 (STAT 5503) MODÈLES LINÉAIRES (3cr.)
Théorie des modèles linéaires des rangs non-exhaustifs : fonctions estimables, meilleurs estimateurs linéaires sans biais, vérification des hypothèses, régions de confiance; classification multidimensionnelle; analyse de la covariance; modèles de composantes de variance; méthode du maximum de vraisemblance; méthode MINQUE, ANOVA; sujets divers. Préalable : MAT 4175 (MATH 4500 ou STAT 5600).

MAT5595 (STAT 5505) PLAN D'EXPÉRIENCES (3cr.)
Aperçu de la théorie du modèle linéaire; orthogonalité; blocs complets avec randomisation totale, plans split plot; plans de carré latin; théorie du caractère aléatoire; plans de blocs incomplets; expériences factorielles; la théorie de la randomisation; les effets confondus et la réplication fractionnelle; méthodologie de la surface de réponse; sujets divers. Préalables : MAT 3375 et MAT 3376 (STAT 3505, STAT 4500 et STAT 5600).

MAT5596 (STAT 5509) ANALYSE MULTIVARIÉE (3cr.)
Cours visant à donner à l'étudiant la possibilité d'entreprendre de la recherche mathématique dans le contexte d'un projet en collaboration avec un organisme parrain des secteurs public ou privé. Inclut des séminaires sur des sujets pertinents au projet de l'étudiant. Note finale (S (satisfaisant) ou NS (non satisfaisant)) décidée par le professeur responsable du cours en consultation avec le superviseur du stage, fondée sur le contenu mathématique et sur la présentation orale et écrite des résultats. / Project-oriented course affording students the opportunity to undertake research in applied mathematics as a cooperative project with governmental or industrial sponsors. Project work and seminars on related topics. Grade (S (Satisfactory) or NS(Non-satisfactory)) to be assigned based upon the mathematical content as well as upon the oral and written presentation of results, and to be determined by the professor in charge of the course in consultation with the internship supervisor.

MAT5597 (STAT 5601) OPTIMISATION STOCHASTIQUE (3cr.)

MAT5598 (MATH 5701) MODÈLES STOCHASTIQUES (3cr.)

MAT5709 (MATH 6002) ANALYSE HARMONIQUE SUR LES GROUPE (3cr.)

MAT5712 (MATH 6201) TOPOLOGIE : CHAPITRES CHOISIS (3cr.)

MAT5713 (MATH 6507) THÉORIE DES PROBABILITÉS ET STATISTIQUE : CHAPITRES CHOISIS (3cr.)

MAT5714 (MATH 6508) THÉORIE DES PROBABILITÉS ET STATISTIQUE : CHAPITRES CHOISIS (3cr.)

MAT5715 PLANIFICATION DES SONDAGES (3cr.)

MAT5719 (MATH 6507) THÉORIE DES PROBABILITÉS ET STATISTIQUE : CHAPITRES CHOISIS (3cr.)

MAT5726 (MATH 6008) ANALYSE : CHAPITRES CHOISIS (3cr.)

MAT5727 (MATH 6101) ALGÈBRE : CHAPITRES CHOISIS (3cr.)

MAT5728 (MATH 6008) ANALYSE : CHAPITRES CHOISIS (3cr.)

MAT5729 (MATH 6009) ANALYSE : CHAPITRES CHOISIS (3cr.)

MAT5730 (MATH 6102) ALGÈBRE : CHAPITRES CHOISIS (3cr.)
Mechanical Engineering (PhD)

Ottawa-Carleton Joint Program

General Information

Established in 1983, the Ottawa-Carleton Institute for Mechanical and Aerospace Engineering (OCIMAE) combines the research strengths of the Department of Mechanical Engineering at the University of Ottawa and the Department of Mechanical and Aerospace Engineering at Carleton University.

The Institute offers graduate programs leading to the degrees of Master of Applied Science (MAsc), Master of Engineering (MEng) and Doctor of Philosophy (PhD) in Mechanical Engineering and in Advanced Materials and Manufacturing.

Members of the Institute are involved in six main research fields: thermal and fluid engineering; solid mechanics and design; materials and manufacturing; controls and robotics; biomedical engineering; aeronautical and space engineering. Further information is posted on the departmental websites.

Most of the courses in the graduate programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.
In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)” and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the FGPS website.

**Admission**

Admission to the graduate program in mechanical engineering is governed by the General Regulations of the Ottawa-Carleton Institute for Mechanical and Aerospace Engineering (OCIMAE) and by the "General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a master's degree in Mechanical or Aerospace Engineering or a related discipline;
2. Demonstrate a good academic research performance;
3. Provide at least two confidential letters of recommendation from professors who are familiar with the applicant’s work;
4. Provide a statement of purpose indicating their career goals and interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English. Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.

**Program Requirements**

**PhD Degree Requirements**

The requirements of this program are as follows:

1. Successful completion of a minimum of 9 course credits*;
2. Participation in the Mechanical and Aerospace Engineering departmental seminar series;
3. Successful completion of a thesis proposal (MCG9997) and a comprehensive examination (MCG9998);
4. Presentation and defense of a thesis (MCG9999) based on original research carried out under the direct supervision of a research faculty member in the Department.

*Students who have been permitted to transfer into the PhD program from a master's program will require 27 course credits for the PhD

**Residence**

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

**Minimum Standards**

The passing grade in all courses is 70% (B). Students who fail 6 credits, the thesis proposal, the comprehensive exam, the thesis, or whose progress is deemed unsatisfactory must withdraw from the program.

**Duration of the program**

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

**Courses**

Les étudiants peuvent, avec l'approbation de leur directeur de recherche ou du comité consultatif, choisir des cours supérieurs offerts dans l'une ou l'autre
université. Les cours du programme d'études supérieures sont énumérés ci-dessous. Les descriptions de cours figurent dans les sections relatives aux départements concernés dans les annuaires appropriés. Tous les cours durent une session. Les cours des deux départements sont identifiés par les préfixes suivants :

MCG 5XXX Département de génie mécanique, Université d'Ottawa

MAAJ XXXX Département de génie mécanique et aérospatial, Carleton University

Tous les cours énumérés ne sont pas offerts tous les ans.

In all programs, the student may choose graduate courses from either university with the approval of the Advisor or Advisory Committee. The available graduate courses are listed below. Course descriptions are to be found in the departmental section of the calendar concerned. All courses are of one session duration. Courses of each department are indicated by the prefix of the first number given as follows:

MCG 5XXXX Department of Mechanical Engineering, University of Ottawa

MAAJ XXXX Department of Mechanical and Aerospace Engineering, Carleton University

The following courses are not necessarily all given each year.

**Mécanique des solides et des matériaux / Solid Mechanics and Materials**

**MCG5101 (MAAJ 5001) THEORY OF ELASTICITY** (3cr.)

**MCG5102 (MAAJ 5002) ADVANCED STRESS ANALYSIS** (3cr.)
Solutions to special beam problems including beams on elastic foundations, curved beams, multi-span beams, etc., as well as some axisymmetric problems. The significance of assumptions is discussed and solution techniques including series solutions and energy methods are utilized.

**MCG5103 (MAAJ 5003) THEORY OF PERFECTLY PLASTIC SOLIDS** (3cr.)

**MCG5104 (MAAJ 5004) THEORY OF PLATES AND SHELLS** (3cr.)
A general coverage of various approaches to plate problems and the application of these methods to practical cases. A study of the theory of shells including deformation of shells without bending, stresses under various loading conditions, general theory of shells, shells forming surfaces of revolution.

**MCG5105 (MAAJ 5505) CONTINUUM MECHANICS** (3cr.)

**MCG5106 (MAAJ 5006) ADVANCED TOPICS IN ELASTICITY** (3cr.)

**MCG5107 (MAAJ 5507) ADVANCED DYNAMICS WITH APPLICATIONS** (3cr.)

**MCG5108 (MAAJ 5008) FINITE ELEMENT ANALYSIS** (3cr.)

**MCG5109 (MAAJ 5009) ADVANCED TOPICS IN FINITE ELEMENT ANALYSIS** (3cr.)
Finite elements and their solution techniques. Multilayered plate, shell and continua. Eigenvalue and transient analysis, material and geometric non-linearities.

**MCG5110 (MAAJ 5100) MICROMECHANICS OF SOLIDS (3cr.)**

**MCG5114 (MAAJ 5104) ANALYSIS AND DESIGN OF PRESSURE VESSELS (3cr.)**

**MCG5117 (MAAJ 5107) INTRODUCTION TO COMPOSITE MATERIALS (3cr.)**
Review of strengthening mechanism in metals and polymers. Fiber-reinforced composite materials: strengthening mechanism, prediction of strengths and moduli, specific properties, fracture mechanisms, toughness, fatigue, creep, effect of environment; fabrication methods and engineering applications. Laminates; mechanical properties and engineering applications.

**MCG5118 (MAAJ 5108) INTRODUCTION TO PLASTICITY (3cr.)**

**MCG5119 (MAAJ 5109) FRACTURE MECHANICS (3cr.)**

**MCG5126 (MAAJ 5206) DEFORMATION OF MATERIALS (3cr.)**
The deformation and fracture properties of metals, ceramics and polymers. Introduction to dislocation theory. Rheological models. Analysis and interpretation of constant strain rate, constant stress and stress relaxation tests in terms of the material structure.

**MCG5129 (MAAJ 5209) HOT WORKING OF METALS (3cr.)**
High temperature mechanical properties in metals. Types of recovery, recrystallization and precipitation in metals and their effects on hot strength and structure.
Hot rolling of metals. Selection of rolling schedules. Influence of as-rolled structures on room temperature tensile and fracture stresses, impact strength.

**MCG5137 (MAAJ 5307) SPECIAL STUDIES IN SOLID MECHANICS AND MATERIALS (3cr.)**

**MCG5138 (MAAJ 5308) ADVANCED TOPICS IN MECHANICAL ENGINEERING (3cr.)**

**MCG5180 (MAAJ 5800) FIBRE COMPOSITE MATERIALS (3cr.)**
Computer-automated manufacturing techniques. Advanced topics in composite design: lamination theory. Interlaminar stresses and free edge effects, laminae and laminate failure theories. Principles of non-destructive testing. Individual projects involving the design, manufacturing and testing of a fibre composite component or material. Limited enrolment. Prerequisite: MCG 5117 (MAAJ 5107) or permission of the Institute.

**MCG5181 (MAAJ 5801) ADVANCED VIBRATIONS (3cr.)**
Kinematics of vibrations, the single degree of freedom system, without and with damping, two degrees of freedom, several degrees of freedom, vibration of shafts, critical speeds, complex presentation, influence coefficients, matrix method, stability of solution, approximate methods.

**MCG5182 (MAAJ 5802) THEORY OF ELASTIC INSTABILITY (3cr.)**

**MCG7355 SPECIAL TOPICS IN ADVANCED MATERIALS (3cr.)**
Topics that may be covered include the following: nanocrystalline and amorphous materials; metals and ceramic-metal composites; functional materials; fibre-based engineering materials.

**Thermofluides / Thermofluids**

**MCG5111 (MAAJ 5101) GAS DYNAMICS (3cr.)**

**MCG5131 (MAAJ 5301) HEAT TRANSFER BY CONDUCTION (3cr.)**

MCG5132 (MAAJ 5302) HEAT TRANSFER BY CONVECTION (3cr.)

MCG5133 (MAAJ 5303) HEAT TRANSFER BY RADIATION (3cr.)

MCG5134 (MAAJ 5304) HEAT TRANSFER WITH PHASE CHANGE (3cr.)

MCG5136 (MAAJ 5306) SPECIAL STUDIES IN FLUID MECHANICS AND HEAT TRANSFER (3cr.)

MCG5141 (MAAJ 5401) STATISTICAL THERMODYNAMICS (3cr.)

MCG5151 (MAAJ 5501) LAMINAR FLOW THEORY (3cr.)
Derivation and exact solutions of the Navier-Stokes equations. Low Reynolds number flows, Stokes flow. Oseen flow, lubrication theory. Laminar boundary layers. Introduction to hydrodynamic stability.

MCG5152 (MAAJ 5502) THEORY OF TURBULENCE (3cr.)

MCG5155 (MAAJ 5505) INVISCID FLOW THEORY (3cr.)

MCG5156 (MAAJ 5506) MEASUREMENT IN FLUID MECHANICS (3cr.)

MCG5157 (MAAJ 5507) NUMERICAL COMPUTATION OF FLUID DYNAMICS AND HEAT TRANSFER (3cr.)

MCG5158 (MAAJ 5508) INDUSTRIAL FLUID MECHANICS (3cr.)
Application of simple flows to analysis of more complex systems. Pipe and duct systems, flow separation and control, aerosols, separation of particulates from flow, cavitation, unsteady flow.

MCG5161 (MAAJ 5601) ENVIRONMENTAL ENGINEERING (3cr.)

MCG5191 (MAAJ 5901) COMBUSTION IN PREMIXED SYSTEMS (3cr.)
Stoichiometry, thermo-chemistry, ignition, flame propagation, flame stabilization, diffusion flames, turbulent combustion, modelling.

MCG5192 (MAAJ 5902) COMBUSTION IN DIFFUSION SYSTEMS (3cr.)
Gaseous jet flames, combustion of liquid droplets, atomization, spray flames, coal combustion, fluidized bed combustion.

MCG5551 (MAAJ 5408) THÉORIE D'ÉCOULEMENT VISQUEUX (3cr.)

MCG5552 (MAAJ 5409) THÉORIE DE TURBULENCE (3cr.)
MCG5557 (MAAJ 5500) MÉTHODES NUMÉRIQUES EN MÉCANIQUE DES FLUIDES (3cr.)

Génie industriel - de la fabrication - et du design / Design - Manufacturing - Industrial Engineering

MCG5115 (MAAJ 5105) NON-LINEAR OPTIMIZATION (3cr.)

MCG5159 (MAAJ 5509) ADVANCED PRODUCTION PLANNING AND CONTROL (3cr.)

MCG5168 (MAAJ 5608) INDUSTRIAL ORGANIZATION (3cr.)

MCG5169 (MAAJ 5609) ADVANCED TOPICS IN RELIABILITY ENGINEERING (3cr.)

MCG5170 (MAAJ 5700) CAD/CAM (3cr.)
The design process. Structure of computer aided drafting software. Analysis and optimization software. Software integration. Parametric design. Major group design project which integrates concepts from all major areas of mechanical engineering. Exclusion: May not be taken for credit with MCG4322.

MCG5171 (MAAJ 5701) APPLIED RELIABILITY THEORY (3cr.)

MCG5172 (MAAJ 5702) INTRODUCTION TO MANAGEMENT OF AUTOMATION (ROBOTICS AND NUMERICAL CONTROLS) (3cr.)

MCG5173 (MAAJ 5703) SYSTEMS ENGINEERING AND INTEGRATION (3cr.)
Introduction to modelling methods employed for the planning and design of sub-systems and complex systems. Discrete and continuous time, lumped and distributed parameters models. State estimation. Parameters identification. Discretization and stochastic effects. Technological systems modelling and simulation examples.

MCG5176 (MAAJ 5706) INDUSTRIAL CONTROL SYSTEMS (3cr.)
Concept, analysis and design of classical and modern industrial control systems. Computer based control systems for robotics, automation, manufacturing and instrumentation applications. Design project of industrial control and automation systems. Not accessible to students who have taken MCG 4108.

MCG5177 (MAAJ 5707) ROBOT MECHANICS (3cr.)
Robotics overview. Transformations. Basics of robot kinematics, statics and dynamics. Introduction to practical robots, control and programming. Project in analysis, design or application of manipulators. Not accessible to students who have taken MCG 4132.

MCG5178 (MAAJ 5708) ADVANCED TOPICS IN CAD/CAM (3cr.)
Overview of totally integrated CAD/CAM systems. Details of design and manufacturing software tools. Methods of linking design and manufacturing tools to form an integrated CAD/CAM system. Students will undertake projects which will provide them with a "hands on" experience.

MCG5179 (MAAJ 5709) MANUFACTURING SYSTEM ANALYSIS (3cr.)

MCG5184 MECHATRONICS (3cr.)
Models for passive and active components for electro-mechanical systems. Network representation of signals and energy transmission and conversion. Selection of sensors and actuators for the control of mechanical systems. Modelling and simulation for the design of mixed dynamic systems. Precludes additional credit for MCG 4136.
MCG5185 (MAAJ 5805) MULTIVARIABLE DIGITAL CONTROL (3cr.)

MCG5186 (MAAJ 5806) NON-LINEAR DISCONTINUOUS DYNAMICS AND CONTROL (3cr.)

Cotes de cours généraux / General Course Codes

MCG6000 RAPPORT EN GÉNIE MÉCANIQUE / MECHANICAL ENGINEERING REPORT (9cr.)

MCG6998 PROJET / PROJECT (6cr.)
Projet en génie mécanique ou en matériaux avancés et fabrication dirigé par un professeur approuvé par le directeur des études supérieures et donnant lieu à la rédaction d'un rapport approfondi (30-40 pages approx.). Noté S (satisfaisant) ou NS (non satisfaisant) par le directeur du projet et un autre professeur nommé par le directeur des études supérieures en génie mécanique. Le projet est normalement complété en une session d'études à temps plein. Préalable : approbation du directeur des études supérieures en génie mécanique. / Project in mechanical engineering or in advanced materials and manufacturing supervised by a professor approved by the director of graduate studies and leading to the writing of an in-depth report (approx. 30-40 pages). Graded S (satisfactory) or NS (not satisfactory) by the supervisor and by another professor appointed by the director of graduate studies in mechanical engineering. The project can normally be completed in one session of full-time study. Prerequisite: approval of director of graduate studies in mechanical engineering.

MCG7999 THÈSE DE MAÎTRISE / MASe THESIS

MCG9997 PRÉPARATION DU PROJET DE THÈSE DE DOCTORAT / PREPARATION FOR PhD THESIS PROPOSAL
À la suite de la réussite à l'examen de synthèse, inscription requise de tous les candidats au doctorat jusqu'à ce que le projet de thèse soit accepté par le Comité consultatif. / Following completion of the comprehensive examination, registration required for all PhD candidates until the thesis proposal is accepted by the Advisory Committee.

MCG9998 PRÉPARATION À L'EXAMEN GÉNÉRAL DE DOCTORAT / PREPARATION FOR PhD COMPREHENSIVE EXAMINATION
Inscription requise de tous les candidats au doctorat jusqu'à la réussite à l'examen de synthèse. / Registration required for all PhD candidates until the comprehensive examination is passed.

MCG9999 THÈSE DE DOCTORAT / PhD THESIS

Department of Mechanical and Aerospace Engineering Carleton University
Not all of the following courses are offered in a given year. For an up-to-date statement of course offerings, please consult the Registration Instructions and Class Schedule booklet published in the summer. Carleton University course numbers (in parentheses) follow the University of Ottawa course number.

MCG5300 (MECH 5000) FUNDAMENTALS OF FLUID DYNAMICS (3cr.)
Differential equations of motion. Viscous and inviscid regions. Potential flow: superposition; thin airfoils; finite wings; compressibility corrections. Viscous flow: thin shear layer approximation; laminar layers; transition; turbulence modelling. Convective heat transfer: free versus forced convection; energy and energy integral equations; turbulent diffusion. Also offered at the undergraduate level, with different requirements, as AERO 4302, for which additional credit is precluded.

MCG5301 (MECH 5001) THEORY OF VISCOUS FLOWS (3cr.)
Navier-Stokes and boundary layer equations; mean flow equations for turbulent kinetic energy; integral formulations. Stability, transition, turbulence, Reynolds stresses; separation. Calculation methods, closure schemes. Compressibility, heat transfer, and three-dimensional effects.

MCG5303 (MECH 5003) INCOMPRESSIBLE NON-VISCOUS FLOW (3cr.)
The fundamental equations and theorems for non-viscous fluid flow; solution of two-dimensional and axisymmetric potential flows; low-speed airfoil and cascade theory; wing lifting-line theory; panel methods.

MCG5304 (MECH 5004) COMPRESSIBLE NON-VISCOUS FLOW (3cr.)
Steady isentropic, frictional, and diabatic flow; shock waves; irrotational compressible flow, small perturbation theory and similarity rules; second-order theory and unsteady, one-dimensional flow.

MCG5308 (MECH 5008) EXPERIMENTAL METHODS IN FLUID MECHANICS (3cr.)
Fundamentals of techniques of simulation of fluid dynamic phenomena. Theoretical basis, principles of design, performance and instrumentation of ground test facilities. Applications to aerodynamic testing.
MCG5309 (MECH 5009) ENVIRONMENTAL FLUID MECHANICS RELATING TO ENERGY UTILIZATION (3cr.)
Characteristics of energy sources and emissions into the environment. The atmosphere; stratification and stability, equations of motion, simple winds, mean flow, turbulence structure and dispersion near the ground. Flow and dispersion in groundwater, rivers, lakes and oceans. Physical and analytical modelling of environmental flows.

MCG5310 (MECH 5100) PERFORMANCE AND ECONOMICS OF AIRCRAFT (3cr.)
 Aircraft performance analysis with emphasis on factors affecting take-off, landing and economic performance; high lift schemes; operating economics.

MCG5311 (MECH 5101) DYNAMICS AND AERODYNAMICS OF FLIGHT (3cr.)
Static stability theory. Euler's equations for rigid body motion; the linearized equations of motion; stability derivatives and their estimation. Longitudinal and lateral dynamic response of an aircraft to control and disturbance. Also offered at the undergraduate level, with different requirements, as AERO 4308, for which additional credit is precluded.

MCG5314 (MECH 5104) GROUND TRANSPORTATION SYSTEMS AND VEHICLES (3cr.)
Performance characteristics, handling and directional stability, ride comfort and safety of various types of ground vehicle systems including road vehicles, terrain-vehicle systems, guided transport systems, and advanced ground transport technology.

MCG5315 (MECH 5105) ORBITAL MECHANICS AND SPACE CONTROL (3cr.)
Orbital dynamics and perturbations due to the Earth's figure, the sun, and the moon with emphasis on mission planning and analysis. Rigid body dynamics applied to transfer orbit and on-orbit momentum management and control of spacecraft. Effects of flexible structures on a spacecraft control system.

MCG5121 (MECH 5106) SPACE MISSION ANALYSIS AND DESIGN (3cr.)
Review of solar system and space exploration. Space mission design and geometry. Analysis of orbit design, transfers, interplanetary trajectories. Effect of environment on spacecraft design. Space propulsion and launch vehicle design. Launch sequence, windows, cost. Reusable launch systems. Also offered at the undergraduate level, with different requirements, as AERO 4802.

MCG5317 (MECH 5107) EXPERIMENTAL STRESS ANALYSIS (3cr.)

MCG5321 (MECH 5106/MECH 5201) METHODS OF ENERGY CONVERSION (3cr.)
Technical, economic and environmental aspects of present and proposed large-scale systems of energy conversion.

MCG5122 (MECH 5202) SMART STRUCTURES (3cr.)

MCG5330 (MECH 5300) ENGINEERING ACOUSTICS (3cr.)
Review of acoustic waves in compressible fluids; acoustic pressure, intensity and impedance; physical interpretation and measurement; transmission through media; layers, in-homogeneous media, solids; acoustic systems; rooms, ducts, resonators, mufflers, properties of transducers; microphones, loudspeakers, computational acoustics.

MCG5331 (MECH 5301) AEROACOUSTICS (3cr.)
The convected wave equation; theory of subsonic and supersonic jet noise; propeller and helicopter noise; fan and compressor noise; boundary layer noise, interior noise; propagation in the atmosphere; sonic boom; impact on environment.

MCG5332 (MECH 5302) INSTRUMENTATION TECHNIQUES (3cr.)
An introduction for the non-specialists to the concepts of digital and analog electronics with emphasis on data acquisition, processing and analysis. Topics covered include operational amplifiers, signal processing, digital logic systems, computer interfacing, noise in electronic systems. Hands-on sessions illustrate theory and practice.

MCG5334 (MECH 5304) COMPUTATIONAL FLUID DYNAMICS OF COMPRESSIBLE FLOWS (3cr.)
Solution techniques for parabolic, elliptic and hyperbolic equations developed for problems of interest to fluid dynamics with appropriate stability considerations. A staged approach to solution of full Euler and Navier-Stokes equations is used. Grid generation techniques appropriate for compressible flows are introduced.

MCG5344 (MECH 5400) GAS TURBINE COMBUSTION (3cr.)
This course covers two major topics: combustion fundamentals and gas turbine combustor design. Combustion fundamentals include fuel evaporation, chemistry of combustion, chemical kinetics and emission formation and introduction to computational combustion modeling. Combustor design addresses the interrelationship between operational requirements and combustion fundamentals. Precludes additional credit for MECH 5800 (MCG 5480) when MECH 5800 was offered with this topic.

MCG5341 (MECH 5401) TURBOMACHINERY (3cr.)
Types of machines. Similarity; performance parameters; characteristics; cavitation. Velocity triangles. Euler equation: impulse and reaction. Radial pumps and
compressors: analysis, design and operation. Axial pumps and compressors: cascade and blade-element methods; staging; off-design performance; stall and surge. Axial turbines. Current design practice. Also offered at the undergraduate level, with different requirements, as MECH 4305, for which additional credit is precluded.

**MCG5342 (MECH 5402) GAS TURBINES** (3cr.)

**MCG5343 (MECH 5403) ADVANCED THERMODYNAMICS** (3cr.)
The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics. The third topic includes an introduction to statistical thermodynamics.

**MCG5347 (MECH 5407) CONDUCTIVE AND RADIATIVE HEAT TRANSFER** (3cr.)
Analytical, numerical and analog solutions to steady-state and transient conduction heat transfer in multi-dimensional systems. Radiative heat exchange between black, grey, non-grey diffuse and specular surfaces, including effects of athermanous media.

**MCG5348 (MECH 5408) CONVECTIVE HEAT AND MASS TRANSFER** (3cr.)
Analyses between heat, mass and momentum transfer. Forced and free convection relations for laminar and turbulent flows analytically developed where possible and otherwise deduced from experimental results, for simple shapes and in heat exchangers. Mass transfer theory and applications.

**MCG5350 (MECH 5500) ADVANCED VIBRATION ANALYSIS** (3cr.)
General theory of discrete multi-degree-of-freedom vibrating systems. Emphasis on numerical techniques of solving complex vibrating systems, with selected applications from aeronautical, civil, and mechanical engineering.

**MCG5125 (MECH 5501) ADVANCED DYNAMICS** (3cr.)
Developing and applying the governing equations of motion for discrete and continuous mechanical systems. Includes Newton-Euler and Lagrangian formulations; classical and finite element approaches for continuous systems; and linear stability, frequency response, and propagation solution methods. Precludes additional credit for MECH 5500.

**MCG5352 (MECH 5502) OPTIMAL CONTROL SYSTEMS** (3cr.)

**MCG5353 (MECH 5503) ROBOTICS** (3cr.)
The history of and introduction to robotics methodology. Robots and manipulators; homogeneous transformation, kinematic equations, solving kinematic equations, differential relationships, motion trajectories, dynamics. Control; feedback control, compliance, servomotors, actuators, external and internal sensors, grippers and vision systems. Microprocessors and their application to robot control. Programming.

**MCG5354 (MECH 5504) GUIDANCE, NAVIGATION AND CONTROL** (3cr.)

**MCG5355 (MECH 5505) STABILITY THEORY AND APPLICATIONS** (3cr.)
Fundamental concepts and characteristics of modern stability definitions. Sensitivity and variational equations; linear variational equations; phase space analysis; Lyapunov's direct method. Autonomous and nonautonomous systems; stability in first approximation; the effect of force type on stability; frequency method.

**MCG5356 (MECH 5506) NEURO AND FUZZY CONTROL** (3cr.)

**MCG5124 (MECH 5507) ADVANCED KINEMATICS** (3cr.)
Algebraic-geometry applications: kinematic calibration of serial and in-parallel robots; kinematic synthesis of planar, spherical, spatial mechanisms. Various DH-parametrisations, Jacobian formulations. Topics in: projective geometry; Cayley-Klein geometries; Plücker line coordinates; Gröbner bases; Grassmannians; kinematic mapping; Burmester theory. Emphasis on practical applications.

**MCG5361 (MECH 5601) CREATIVE PROBLEM SOLVING AND DESIGN** (3cr.)
Problem-solving processes and how they can be applied in engineering design. Emphasis on learning methodologies rather than accumulating information. Techniques can be successfully applied in any engineering speciality. (Also offered as IDES 5301)

**MCG5362 (MECH 5602) FAILURE PREVENTION (FRACTURE MECHANICS AND FATIGUE)** (3cr.)
Design of engineering structures to ensure against failure due to fatigue or brittle fracture. Nature of fatigue and brittle fracture; selection of suitable material, geometry, and inspection procedures for the load and environmental conditions.

MCG5381 (MECH 5603) LIGHTWEIGHT STRUCTURES (3cr.)

MCG5364 (MECH 5604) COMPUTATIONAL METALLURGY (3cr.)

MCG5365 (MECH 5605) FINITE ELEMENT ANALYSIS I (3cr.)
An introduction to the finite element methodology, with emphasis on applications to heat transfer, fluid flow and stress analysis. The basic concepts of Galerkin's method, interpolation, numerical integration, and isoparametric elements are taught using simple examples.

MCG5366 (MECH 5606) FINITE ELEMENT ANALYSIS II (3cr.)
Time marching heat flow problems with linear and nonlinear analysis. Static plasticity. Time-dependent deformation problems; viscoplasticity, viscoelasticity, and dynamic analysis. Isoparametric elements and numerical integration are used throughout.

MCG5367 (MECH 5607) THE BOUNDARY ELEMENT (BEM) METHOD (3cr.)
Integral equations. The BEM for potential theory and for elastostatics in two-dimensions. Boundary elements and numerical integration schemes. Practical applications.

MCG5368 ADVANCED ENGINEERING MATERIALS (3cr.)
The physical metallurgy of important engineering metals and alloys: analytical techniques, crystallography and structure of alloys, dislocation interactions and dissociation, metallurgical thermodynamics and transformations and strengthening mechanisms. Highlights the physical phenomena controlling the properties. Prerequisite: MECH 2700 or the equivalent.

MCG5123 (MECH 5609) MICROSTRUCTURE AND PROPERTIES OF MATERIALS (3cr.)
Essential microstructural features of metals and alloys: crystal structure, dislocations, grain boundaries. The importance of these features in controlling mechanical properties is emphasized. Analytical techniques observing microstructure in metals and other materials: TEM, SEM, electron diffraction, spectrometry. Precludes additional credit for MECH 5804.

MCG5345 (MECH 5700) SURFACES AND COATINGS (3cr.)
Surface characteristics of solid materials and surface degradation/failure mechanisms including wear, fretting, oxidation, corrosion, and erosion are introduced. Coating methods including PVD, CVD, laser, thermal spray and electrochemical deposition are discussed in the context of failure prevention measures.

MCG5374 (MECH 5704) INTEGRATED MANUFACTURING CIMS (3cr.)
Topics essential to CIMS including computer graphics, geometric modelling, numerically controlled machining, and flexible manufacturing. The fundamental data structures and procedures for computerization of engineering design, analysis and production. Also offered at the undergraduate level, with different requirements, as MECH 4704, for which additional credit is precluded.

MCG5375 (MECH 5705) CAD/CAM (3cr.)

MCG5480 (MECH 5800) SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING (3cr.)

MCG5489 (MECH 5801) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
Topics will vary from year to year.

MCG5483 (MECH 5802) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)

MCG5488 (MECH 5803) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)

MCG5482 (MECH 5805) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)

MCG5486 (MECH 5806) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING (3cr.)
MECH5909 MASc THESIS

MCG598 (MECH 5908) INDEPENDENT ENGINEERING STUDY (3cr.)

Students pursuing a master's degree by course work carry out an independent study, analysis, and solution of an engineering problem or design project. The results are given in the form of a written report and presented at a departmental seminar. Carried out under the general direction of a faculty member.

MECH6909 PhD THESIS

Other Courses of Particular Interest

Biomedical Engineering

BMG5300

Chemical Engineering

CHG8188

Civil and Environmental Engineering

CIVE 5101, CIVE 5102, CIVE 5103, CIVE 5204, CIVE 5304, CIVE 5602

Mathematics and Statistics

MATH 4806, MATH 5806

Physics

PHYS 4407, PHYS 5101

Systems and Computer Engineering

SYSC 5001, SYSC 5004, SYSC 5005, SYSC 5401, SYSC 5402, SYSC 5502, SYSC 5503

Microbiology and Immunology (PhD)

The Department of biochemistry, microbiology and immunology located in the Faculty of Medicine offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Biochemistry.

The objective of the program is to prepare candidates for a career in university teaching and research. Graduate students are actively involved in laboratory research, course work, and presentation of research seminars. Thus, they acquire autonomy in conducting research and in preparing publications. The program creates a stimulating and challenging environment which will allow students to achieve excellence in research. Graduates of the program must demonstrate research skills and credibility as professionals in their area of research.

Members of the Department are involved in three main research fields: general biochemistry, molecular biology, and, nutrition and metabolism.

Further information is posted on the departmental website.

The Department is a participating unit in the following collaborative programs: the bioinformatics program (at the master’s level) and the human and molecular genetics program (at the master’s and doctoral levels).

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

Admission

Admission to the graduate program in microbiology and immunology is governed by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applications are evaluated based on the following criteria:
1. Be the holder of a master’s degree in microbiology or immunology (or equivalent) with a minimum average of B+ (75%) calculated in accordance with the FGPS guidelines;
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Transfer from Master’s to PhD Program

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Successful completion of the seminar and all the core courses required for the master’s program;
2. Satisfactory progress in the research program;
3. Written recommendation by the supervisor and the advisory committee;
4. Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master’s. Following transfer, all of the requirements of the doctoral program must be met: the doctoral seminar (MIC8240 to MIC8245), six credits of course work, the comprehensive exam (MIC9998), a pre-thesis seminar (MIC 9997) and the thesis (MIC9999).

Program Requirements

PhD Degree Requirements

The following requirements must be met:

1. Six credits of graduate courses including at least 3 credits at the 8000-level, approved by the Department;
2. Enrollment in the seminar courses (MIC8240 to MIC8245), which involve the presentation of a seminar and regular attendance at the departmental seminars;
3. Successful completion of a comprehensive examination (MIC9998);
4. Presentation of a pre-thesis seminar (MIC9997) in the eight months preceding the submission of the PhD thesis;
5. Presentation and defense of a thesis (MIC9999) based on original research carried out under the direct supervision of a research faculty member in the Department.

Note: The Department may require students to take additional courses, depending on their backgrounds.

Residence

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

Duration of the program

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

MIC5100 HOST/PATHOGEN INTERACTIONS AND MOLECULAR IMMUNOLOGY (3cr.)
This course will examine current issues in microbiology/immunology. Topics to be chosen to allow discussion across the broad areas of virology, immunology and bacteriology. Within each of the modules, the focus will be on host-pathogen interactions at the molecular level, how microorganisms utilize, modify or disrupt host cell functions, including immune cell functions and immune responses, to establish infection and cause diseases, or on immunological diseases which may have an infectious component. Prerequisite: At least one undergraduate course in microbiology and/or immunology and one course in molecular biology, or permission of the course coordinator.

MIC5366 MSc SEMINAR (3cr.)
Attendance at two half-day symposia with guest speakers, attendance and participation in the annual BMI Student Symposium and BMI Posters Day, attendance at BMI seminars relevant to Microbiology and Immunology. Students must present at least one poster and one oral presentation during the course of their program. Graded S/NS

MIC7999 THÈSE DE MAÎTRESE / Msc THESIS
Avant la soutenance de sa thèse, il faut que chaque étudiant donne un séminaire portant sur ses recherches au Département / Prior to defending their thesis, each student will be required to present a formal seminar about their research to the department.

MIC8122 ADVANCED TOPICS IN IMMUNOLOGY (3cr.)
Focus on cellular immunology, including thymocyte maturation, induction and regulation of cellular responses, immune responses to pathogens, immunological memory, tolerance. Student assessments to be conducted by two methods: Weekly assessment of student presentations and participation in class discussions; assessment of take-home assignments such as completion of a research grant on a topic covered in the course. To be offered alternate years subject to sufficient demand. Prerequisite: MIC 5124 or equivalent.

MIC8124 / BCH8109 ADVANCED TOPICS IN CELL DEATH (3cr.)
Molecular mechanisms of cell death. Particular attention to be paid to role of aberrant cell death in human disease. Offered in the Fall of odd numbered years.

MIC8125 SPECIAL TOPICS IN MICROBIOLOGY AND IMMUNOLOGY (3cr.)
Discussion of current topics in Microbiology and Immunology. Topics to vary from year to year depending on the interest of faculty members offering the course and students. Student assessments to be conducted by two methods: Weekly assessment of student presentations and participation in class discussions; assessment of take-home assignments such as completion of a research grant on a topic covered in the course. Prerequisite: Permission of the course coordinator.

MIC8126 IMMUNOCHEMISTRY (3cr.)
Focus is on antigen structure of protein and carbohydrate antigens, receptor structure of B cells and T cells, structure of MHC molecules, accessory molecules and cytokine receptors and cell signalling pathways induced by the antigen and cytokine receptors. Student assessments to be conducted by two methods: Weekly assessment of student presentations and participation in class discussions; assessment of take-home assignments such as completion of a research grant on a topic covered in the course. To be offered alternate years subject to sufficient demand. Prerequisite: MIC 5124 or equivalent.

MIC8129 CURRENT TOPICS IN HAEMATOPOIETIC STEM CELLS AND IMMUNE DEVELOPMENT (3cr.)
This course will focus on the haematopoietic system that gives rise to the many cell types of the immune system. Topics to be covered include the developmental processes of embryonic stem cell differentiation into mesoderm and then into haematopoietic and non-haematopoietic progenitors; development of adult haematopoietic and immune systems; symmetric and asymmetric division of cells; intrinsic transcription factors and extracelluar microenvironment factors regulating cell fate; immunological aspects of stem-cell based therapy; new technologies and their use in the field, and experimental design. Prerequisite: At least one undergraduate course in immunology or cell biology, or permission of the course coordinator.

MIC8236 ADVANCED TOPICS IN VIROLOGY (3cr.)
An in-depth presentation of current topics in virological research. Topics will vary from year to year. To be offered every alternate year subject to sufficient demand. Prerequisite: MIC 5326 or equivalent.

MIC8238 ADVANCED TOPICS IN BACTERIOLOGY - MECHANISMS OF PATHOGENESIS (3cr.)
Recent advances and current topics in selected areas of bacteriology with emphasis on mechanisms of pathogenesis. Students present and discuss journal articles. Offered every alternate year subject to sufficient demand. Prerequisite: MIC 5224 or its equivalent.

MIC8366 PhD SEMINAR (3cr.)
Attendance at two half-day symposia with guest speakers, attendance and participation in the annual BMI Student Symposium and BMI Poster Day, attendance at BMI seminars relevant to Microbiology and Immunology. Students will present a poster in their first and every alternate year, and an oral presentation the second and every alternate year until they have permission to write their thesis. Graded S/NS

MIC8401 ADVANCED TOPICS IN BACTERIAL GENETICS (3cr.)
Microbial genetic and genomic methods: origin, purpose and functioning. Analysis and use of genomes to study bacterial pathogenesis and host-microbe interactions.

MIC8500 SPECIAL TOPICS IN HEALTH-RELATED ENVIRONMENTAL MICROBIOLOGY (3cr.)
Recent advances and current topics in selected areas of health-related environmental microbiology. Topics reflect student interest. Offered in alternate years subject to sufficient demand. Prerequisite: MIC 5500 or equivalent.
MIC8700 BIOLOGY AND PATHOGENESIS OF HIV INFECTION (3cr.)
Biology and pathogenesis of Human Immunodeficiency Virus (HIV) infection. Genetics, replication, structure, regulation of gene expression, immunopathogenesis, antiviral therapy and vaccine development. Offered in alternate years subject to sufficient demand. Prerequisite: BCH 3170 or equivalent and permission of instructor.

MIC9997 SÉMINAIRE DE RECHERCHE/RESEARCH SEMINAR
À l'intention des étudiants faisant de la recherche en vue de l'obtention du doctorat. Un séminaire, fondé sur les résultats originaux de leur recherche, doit être présenté par les étudiants au cours de l'avant-dernière ou de la dernière session d'inscription précédant la soumission de la thèse de doctorat. For students doing research leading to the PhD. A seminar based on the student's original results, to be presented during the last two academic sessions prior to submission of the PhD thesis.

MIC9998 EXAMEN DE SYNTHÈSE (DOCTORAT) / COMPREHENSIVE EXAMINATION (PhD)

MIC9999 THÈSE DE DOCTORAT / PhD THESIS

Ministry (DMin)

By virtue of the federation of Saint Paul University with the University of Ottawa, the Faculty of Theology at Saint Paul University offers graduate programs leading to degrees conferred jointly by the senates of both universities.

These programs operate within the framework of the regulations of Saint Paul University and of the Faculty of Graduate and Postdoctoral Studies of the University of Ottawa.

The Doctor of Ministry is an applied research degree program designed to give professionals a deeper appreciation of the plurality of forms and understandings of ministry. It assists students in developing knowledge and appropriate methodologies for the advanced critical study of ministry through applied research. Graduates will be equipped to discern and promote the forms of collaborative and transformational ministry best suited to the human values, cultural expressions, and multiple dynamics of their given context.

The proposed Doctor of Ministry program envisions the role of professionals in ministry as facilitating the public activity of Christians, who form a ministering community and work hand-in-hand with women and men of other faiths to serve the wider society. Ministry is carried out through a variety of institutional structures located within distinctive ecclesial, ecumenical, multi-faith, social, and cultural contexts.

The Doctor of Ministry combines the resources of theological study and reflection with the methodologies of the social sciences to equip leaders with the skills needed for critical practicum research and the generation of new knowledge. The combined resources of the Faculties of Theology and of Human Sciences support the interdisciplinary character of the Doctor of Ministry degree.

The program is offered in English and in French.

Admission

Admission Requirements

To be admitted to the D.Min. program, the candidate must:

- hold a Master in Pastoral Theology or equivalent, with an average of B+ or better. Candidates with master’s degrees in Theology, Religious Education, or other related disciplines must have completed 60 credits in theology plus 30 credits of graduate-level study in a related field (e.g., pastoral counselling, religious education, etc.), with a component of relevant supervised field experience.
- provide proof of five years of sustained professional experience in ministry.
- master one of the two official languages of the University and have a passive knowledge (ability to follow lectures and read) of the other.
- One of the following is required to demonstrate language proficiency in the second official language:
  - a certificate of competency from the Alliance Française
  - a score of 4.5 in the CANTEST or TESTCAN administered by the University of Ottawa
  - a minimum score of at least 550 in the written version of the Test of English as a Foreign Language (TOEFL) or 213 in the computer version
  - a minimum score of 6.5 in the International English Language Testing System (IELTS)
- provide two confidential letters of reference from experienced professionals in the applicant’s area of ministry attesting to the applicant’s skills in pastoral practice and suitability for the program. One of these letters must be from a supervisor in the applicant’s ministry context, indicating support for his or her program of study and an appreciation for the need for stable placement, insofar as possible, during the period of study.
- write a letter indicating the goal of his program of studies and area of research interest.
- have an interview with members of the Admissions Committee.

Residence and Time Limit
The program is considered a full-time program of study and all students must complete at least six sessions of full-time registration. Even though students may not be physically on-campus throughout this period and on-campus instruction will be offered in intensive two-week modules, students are required to follow a schedule of readings and assignments and to engage in on-going research based on their professional practice of ministry. All degree requirements should normally be completed within four years from the date of first registration in the program. The maximum time allowed is six years.

**Student Transfers from Other Universities**

Students registering in the Doctor of Ministry program at Saint Paul University after having completed graduate courses at other universities may be granted the equivalent of up to two optional courses (6 credits) of advanced standing for successfully completed courses that pertain to the course of study in the Doctor of Ministry. Courses must have been completed within the past five years.

**Program Requirements**

**Degree Requirements**

The Doctor of Ministry is a 33 credit program which includes:

1. **Core Courses (12 credits)**
   
   The following four courses are compulsory:
   
   IPA7120 METHODS FOR APPLIED RESEARCH (3cr.)
   IPA7121 THE SOCIAL AND CULTURAL CONTEXT OF MINISTRY (3cr.)
   THO7191 METHODS OF THEOLOGICAL REFLECTION (3cr.)
   THO7192 THE ECUMENICAL AND INTER-RELIGIOUS CONTEXT OF MINISTRY (3cr.)

2. **Elective Courses (6 credits)**
   
   Students must complete two elective courses, one of which must be selected from the following list:
   
   THO7196 BIBLE AND CONTEMPORARY CHRISTIAN IDENTITY (3cr.)
   THO7197 ETHICAL ISSUES IN THE PRACTICE OF MINISTRY (3cr.)
   THO7198 THEOLOGIES AND PRACTICE OF MINISTRY (3cr.)
   THO7199 THE DYNAMICS OF FAITH (3cr.)

3. **Research Practicum (12 credits)**
   
   Year One:
   IPA8210 RESEARCH PRACTICUM I (6cr.)
   
   Year Two:
   IPA8211 RESEARCH PRACTICUM II (6cr.)

4. **Comprehensive Examination (THO 9998)**

5. **Thesis Project Presentation (THO 8998) (3 cr.)**

6. **Thesis (THO 9999)**

**Courses**

**IPA7120 METHODS FOR APPLIED RESEARCH (3cr.)**

Research methodologies and their application to the study of the context and practice of ministry. Understanding and planning the research process. Qualitative, quantitative, and action-based methods in data gathering and analysis. The use of social-scientific methods in theology. Research ethics, especially as it pertains to research with human subjects.

**IPA7121 THE SOCIAL AND CULTURAL CONTEXT OF MINISTRY (3cr.)**

Social-scientific analysis of the society in which the religious community exists. The relationship of the religious community with the wider social, cultural and civil community and its role within that community. The structures of the religious community and their functioning, especially in reference to authority, interaction, freedom, and growth. Study of the needs, hopes, and aspirations of the religious community and society at large, and of the resources (material and personal) needed to respond to those needs, and the obstacles to be overcome.
IPA7520 MÉTHODES DE RECHERCHES APPLIQUÉES (3cr.)

IPA7521 LE CONTEXTE SOCIAL ET CULTUREL DU MINISTÈRE (3cr.)
Analyse sociale-scientifique de la société dans laquelle la communauté de foi est insérée. Le rapport entre la communauté religieuse et le milieu social, culturel et civil et le rôle qu'elle joue dans ce milieu. Les structures de la communauté religieuse et son fonctionnement, particulièrement en référence à l'autorité, à l'interaction, à la liberté et à la croissance. Espoirs et aspirations de la communauté religieuse et de la société, et les ressources (matérielles et personnelles) nécessaires à leur réalisation, et les obstacles à surmonter.

IPA8210 RESEARCH PRACTICUM I (6cr.)
Application of the appropriate methods of social-scientific analysis and theological reflection to the work of the ministry practitioner and his or her community of insertion. Identification of key issues, resources, and strategies to sustain the development of holistic human and faith communities.

IPA8211 RESEARCH PRACTICUM II (6cr.)
Development and implementation of an appropriate research design to explore an identified research question in depth. Test and evaluate the implementation of new models and approaches of ministry. Work towards the precise formulation of a hypothesis that will form the basis of the doctoral thesis project.

IPA8610 PRACTICUM DE RECHERCHE I (6cr.)
Application des méthodes d'analyse sociale scientifique et de réflexion théologique appropriées à la pratique professionnelle du ministère et à la communauté dans son milieu d'insertion. Identification des questions clés, des ressources et des pratiques qui favorisent la croissance des communautés humaines et des communautés de foi holistiques.

IPA8611 PRACTICUM DE RECHERCHE II (6cr.)
Élaboration et implantation d'un plan de recherche pour étudier en profondeur une question de recherche précise. Tester et évaluer la mise en pratique de nouvelles approches ou de nouveaux modèles de ministère. Formulation précise d'une hypothèse qui deviendra la base du projet de thèse doctorale.

TH07191 METHODS OF THEOLOGICAL REFLECTION (3cr.)
Theories and models of theological reflection. Principles for the selection of appropriate methods and their application in the critical analysis and interpretation of the context and practice of pastoral ministry.

TH07192 THE ECUMENICAL AND INTER-RELIGIOUS CONTEXT OF MINISTRY (3cr.)
Critical examination of the impact of theological and religious pluralism on the context and practice of ministry. Investigation of particular issues, authors or trends related to the theory and practice of ecumenical and inter-religious collaboration and dialogue.

TH07196 BIBLE AND CONTEMPORARY CHRISTIAN IDENTITY (3cr.)
Exploration of the interaction of the Bible and contemporary Christian identity: the dialogue between Bible, church, and society. The Bible and world religions. Recent approaches to interpretation and the rise of fundamentalism.

TH07197 ETHICAL ISSUES IN THE PRACTICE OF MINISTRY (3cr.)
Critical reflection on ethical issues arising in diverse contexts of ministry. Theoretical, methodological, and theological dimensions of these. Religious traditions and public debates on contemporary ethical questions.

TH07198 THEOLOGIES AND PRACTICE OF MINISTRY (3cr.)
Critical examination of the biblical roots and historical evolution of the structures for ministry in the life of the Church. Recent theological developments giving rise to new forms of lay and ordained ministries. Identifying the operative theologies of ministry in diverse faith communities and their consonance with stated theology and mission. Evaluating their capacity to respond to issues arising from the contemporary social, ecumenical, and interreligious context.

TH07199 THE DYNAMICS OF FAITH (3cr.)
Various social-scientific understandings of faith development in the human person and faith communities. Critical study of different theories of faith development and of the inner dynamics of religious communities. Evaluation of the coherence between the stated faith development objectives and the means to attain them.

TH07591 MÉTHODES DE RÉFLEXION THÉOLOGIQUE (3cr.)
Théories et modèles de réflexion théologique. Les principes pour la sélection d'une méthode appropriée et pour sa mise en œuvre dans l'analyse critique et l'interprétation du contexte et de la pratique du ministère pastoral.

TH07592 LE CONTEXTE ECUMÉNIQUE ET INTER-RELIGIEUX DU MINISTÈRE (3cr.)
Étude critique de l'impact du pluralisme théologique et religieux sur le contexte et la pratique du ministère. Examen de questions choisies, d'auteurs et de tendances récentes liés à la théorie et à la pratique de collaboration et de dialogue ecuménique et interreligieux.

TH07596 BIBLE ET IDENTITÉ CHRÉTIENNE AUJOURD'HUI (3cr.)
Exploration de l'interaction entre la Bible et l'identité chrétienne contemporaine. Le dialogue entre la Bible, l'Église et la société. La Bible et les grandes religions.
Those students must have completed the four core master's courses with a CGPA of at least 8.0 and submit the following documents to the student's suitability for the program.

The students engage in creative thinking, critical appraisal and synthesis of scholarly work in their field of thesis provided they meet the following conditions:

- **IPA8211 RESEARCH PRACTICUM II**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MIC8236 ADVANCED TOPICS IN VIROLOGY**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **CIVE 5101, CIVE 5102, CIVE 5103, CIVE 5204, CIVE 5304, CIVE 5602**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MCG5314 (MECH 5104) GROUND TRANSPORTATION SYSTEMS AND VEHICLES**: The objective of these programs is to help the student develop skills in methodology and critical analysis, and theoretical and practical knowledge. To acquire these abilities, students read the scientific literature; they carry out experiments in the laboratory and analyze the generated data and their results; and they present them in the form of research seminars or posters.

- **MCG5483 (MECH 5802) SPECIAL TOPICS IN MECHANICAL ENGINEERING AND AEROSPACE ENGINEERING**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MCG5345 (MECH 5700) SURFACES**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5121 (MATH 5009) INTRODUCTION TO HILBERT SPACE**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5122 (MATH 5003) BANACH ALGEBRAS**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5125 (MATH 5007)**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5127 (MATH 5005)**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5162 (MATH 6807)**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5171 (MATH 5709)**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5177 (STAT 5500)**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5178 (STAT 5501)**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5533 (MATH 5406)**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT5558 (MATH 6104)**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT9997 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **MAT9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD PRELIMINARY EXAMINATION**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

- **TH0998 THÈSE / THESIS**: The course covers three major topics: review of fundamentals from a consistent viewpoint, properties and equations of state, and applications and special topics.

**Neuroscience (PhD)**

The Department of Cellular and Molecular Medicine is located in the Faculty of Medicine and offers graduate programs leading to a Master of Science degree (MSc) or to a doctoral (PhD) degree in neuroscience.

The Department of Cellular and Molecular Medicine is located at the Health Sciences Center of the University of Ottawa. Through its cross-appointed and adjunct members, the Department has research affiliations with the following institutes: the Loeb Research and University of Ottawa Heart Institutes at the Ottawa Hospital (Civic Campus), the Royal Ottawa Hospital, the Canadian Red Cross, Health Canada, National Research Council and the Department of National Defense.

The objective of these programs is to help the student develop skills in methodology and critical analysis, and theoretical and practical knowledge. To acquire these abilities, students read the scientific literature; they carry out experiments in the laboratory and analyze the generated data and their results; and they present them in the form of research seminars or posters.

Graduates of the program will acquire autonomy in conducting research and in preparing scholarly publications and grant applications. A comprehensive set of courses, state-of-the-art research facilities and outstanding research opportunities ensures a career in neuroscience.

The Department is a participating unit in the collaborative program in human and molecular genetics at the master's and the doctoral levels.

Most of the courses in these programs are offered in English. Research activities can be conducted either in English, French or both, depending on the language used by the professor and the members of his or her research group.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**

Admission to the graduate program in neuroscience is governed by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applications are evaluated based on the following criteria:

1. Be the holder of a master’s degree in science with a minimum average of B+ (75%) calculated in accordance with the FGPS guidelines;
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.
Transfer from Master’s to PhD Program

Outstanding students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Satisfactory progress in the research program;
2. Written recommendation by the supervisor and the advisory committee;
3. Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master’s. Following transfer, all of the requirements of the doctoral program must be met: the doctoral seminar (NSC8325), six credits of course work (including either NSC5102 or NSC5104), the comprehensive exam (NSC9998) and the thesis (NSC9999).

Program Requirements

PhD Degree Requirements

The following requirements must be met:

1. Six credits of graduate courses including either NSC 5102 or NSC 5104 or equivalent, approved by the Department;
2. Enrollment in the seminar course (NSC 8325S), which involves the presentation of a seminar and regular attendance at the departmental seminars;
3. Successful completion of a comprehensive examination (NSC9998) in the form of either a defended MRC-style grant application or an oral examination on selected topics within the field;
4. Presentation and defense of a thesis (NSC9999) based on original research carried out under the direct supervision of a research faculty member in the Department.

Note: The Department may require students to take additional courses, depending on their backgrounds.

Residence

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the initial registration in the program.

Duration of the program

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Courses

NSC5102 CELLULAR AND MOLECULAR NEUROSCIENCE (3cr.)
The molecular and cellular properties of neurons. Emphasis to be placed on the molecular basis of electrical activity of neurons and chemical synaptic transmission.

NSC5104 SYSTEMS NEUROSCIENCE (3cr.)
Structure and function of representative components of the nervous system to be presented in an integrated and comprehensive manner, emphasizing a reductionist approach to the study of neural networks and their behavioural output. Prerequisites: PHS 3240 or equivalent or permission of the program director.

NSC5106 MOLECULAR PSYCHIATRY (3cr.)
Study of genetic and neurochemical bases of mental illnesses using transgenic and gene knockout mouse models, animal behavioural paradigms, in vivo imaging. Gene therapy approaches in psychiatry; influence of environmental stressors. Prerequisites: PHS 3240 or BIO 3170/BIO 3570 or PSY 3301/PSY 3701 or equivalent or permission of the program director.

NSC7100 NEUROTRANSMISSION AND NEUROMODULATION (3cr.)
Molecular and cell biology of neurotransmission including the identity, actions and mechanisms of neurotransmitters and neuromodulators. Use of computer simulations to explore the complex interactions between synaptic input and the electrical architecture of neurons.
Nursing (PhD)

The goal of the doctoral program in nursing is to prepare scientists capable of conducting innovative research that results in new and significant contributions to nursing knowledge. The students engage in creative thinking, critical appraisal and synthesis of scholarly work in their field of interest using a wide range of philosophical, theoretical and methodological perspectives.

Admissions are for full-time students only. To be considered as having full-time status, students must register to a minimum of 6 credits per session and must be geographically available and visit the campus regularly. The core courses in the program are offered in English but several of the possible elective courses are offered in French. In accordance with University of Ottawa policy, students can write exams, course assignments and theses in either English or French. The program is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS), which are available on the Website.

The PhD program consists of three fields:
1) Evidence informed decision making in nursing and health care; 2) sociopolitical, educational and historic contexts of nursing; and 3) nursing practice and delivery systems.

Graduate Diploma in Health Services and Policy Research

The Doctoral program and the MSc in nursing program (thesis option) offer a Graduate Diploma in Health Services and Policy Research that permits students in the Master’s or Doctoral program to be sufficiently competent to carry out independent policy-relevant health services research. Although they may have acquired some of these competencies within the master of science and doctoral program in nursing, the Diploma permits them to tailor their education to ensure that they have the relevant and sufficient competencies needed to engage in high quality research in this field. Diploma recipients have the knowledge and skills to contribute to improved accessibility, quality, effectiveness, and efficiency of health services for Ontarians and all Canadians. They work as effective partners with policy-makers to ensure that newly created information is shared with relevant decision-makers and is used to help create a healthier, more productive population. To obtain relevant information, consult the following web site:
http://www.grad.uottawa.ca/programs/certificates/health_services_policy_research.html
Admission

Candidates for the PhD in Nursing will be considered for admission under the general regulations of the Faculty of Graduate and Postdoctoral Studies. Applicants must have completed an honors baccalaureate degree and a master's degree in nursing or a related discipline (e.g., education, health administration, psychology) with a minimum overall average of 75% (B+). Students intending to include a clinical practice component in their research must be registered as nurses in the jurisdiction where the clinical component of the research will take place.

Several key areas of knowledge are required: research methods, statistics, and nursing theory. Applicants who do not have a master's degree in nursing and/or whose knowledge of research methods or statistics is deficient may be asked to take qualifying courses such as NSG 5130 (Development of knowledge and theory in nursing as a discipline), EDU 6101 (Methods and Interpretation in Quantitative Research II), or NSG 5140 (Research methods in nursing). Those who require more than two such courses must complete them prior to admission. Those requiring two or less may be allowed to take them after admission to the program. However, these courses would be additional to the 18 credits required of all students in the program.

Research competence can be demonstrated either through the completion of a master's thesis or through projects completed during nursing practice or as part of a non-thesis program. Non-thesis students must present a dossier that demonstrates their research skills. The dossier might include research reports, publications in peer-reviewed journals, program development and evaluation reports, abstracts, presentations, etc. The proposed thesis supervisor will provide a written evaluation of the dossier to the admissions committee, who will make the final decision about the student's suitability for the program.

Proficiency in English is required. Information on language requirements and tests can be found in Section A-3.e) of the General Regulations of the FGPS.

Application Deadline

To find the application deadline, please check the "program-specific requirements" under Application Procedures and Information at the following address: www.grad.ualberta.ca/apply. Applications received after that date may be considered on an exceptional basis.

Documents required for admission to the PhD in Nursing Program

The following documents are to be submitted to the Academic Assistant of the Faculty of Health Sciences (Karen Littlejohn, Room 204, Roger Guindon Hall, 451 Smyth Road, Ottawa, Ontario, K1H 8M5):

1. The official "Application for Admission On-line - Graduate Studies " form;
2. Official transcripts of all previous undergraduate and graduate studies;
3. Three letters of recommendation. One may be from a clinical supervisor, and at least two must be academic references that address your potential for doctoral studies as indicated by your research and leadership;
4. An up-to-date curriculum vitae;
5. Narrative statement (maximum 3 pages or 900 words) describing: a) How the PhD in Nursing will enable you to achieve your career goals; b) A brief description of your proposed research project including a statement of the research problem, justification of the research project, its relevance for the nursing profession and an overview of the study design.
6. A signed letter from a potential thesis supervisor supporting your application and indicating willingness to supervise your research.

Transfer from Master’s to PhD program

For exceptional students enrolled in the University of Ottawa MScN program, it will be possible to request a transfer into the PhD program. Those students must have completed the four core master’s courses with a CGPA of at least 8.0 and submit the following documents to the graduate studies committee of the school of Nursing:

1. Two letters of recommendation. One may be from a clinical supervisor, and at least one must be academic reference that address the candidate's potential for doctoral studies as indicated by their research and leadership;
2. An up-to-date curriculum vitae;
3. Narrative statement (maximum 3 pages or 900 words) describing: a) How the PhD in Nursing will enable you to achieve your career goals; b) A brief description of the proposed research project including statement of the research problem, justification of research project, relevance for the nursing profession and an overview of the study design.
4. A signed letter from a potential thesis supervisor supporting the student’s application and indicating willingness to supervise the potential candidate’s research.

The transfer must take place by the end of the fourth session of study at the latest. The application deadline for such a transfer is the first Monday of May.

Program Requirements
PhD Degree Requirements

Residency (full-time registration) for six sessions or two years at the beginning of the program.

Four core courses (12 credits):

1. NSG7100 Theoretical and philosophical perspectives in nursing (3cr.)
2. NSG7102 Research methods / design problems in nursing (3cr.)
3. Advanced Qualitative or Quantitative research analysis techniques (Based on student’s need) (3cr.)
4. NSG7110 Doctoral seminar (3cr.)

Two electives (6 cr.)

Electives may be chosen from graduate courses relevant to nursing. Other courses may be selected with permission from the Director of Graduate Studies provided space is available. Students are responsible for ensuring that they have taken any prerequisites prior to registering in the courses chosen.

NSG9998 Examen de synthèse / Comprehensive examination
NSG9999 Thèse de doctorat / PhD thesis


Courses

Les cours décrits ici ne sont pas nécessairement offerts chaque année. / The following courses are not necessarily offered every year.

NSG5130 DEVELOPMENT OF KNOWLEDGE AND THEORY IN NURSING AS A DISCIPLINE (3cr.)
Prevailing nursing conceptualizations and their links to practice, research and education. Historical development and structure of contemporary nursing knowledge. Critique of middle-range theories appropriate to the study of nursing phenomena.

NSG5140 RESEARCH METHODS IN NURSING (3cr.)
Critical appraisal of research in nursing. Methodological issues related to research problem conceptualization; design selection; sampling; instrument development; data management and analysis. Creation of a nursing research proposal. Prerequisite: NSG 5130.

NSG5192 STATISTICAL ANALYSIS IN NURSING (3cr.)
Introduction to the planning, analysis and interpretation of quantitative research in nursing including: analysis of inferential statistics; analysis of variance and covariance; and linear regression.

NSG5210 ADVANCED NURSING PRACTICE IN PRIMARY HEALTH CARE (6cr.)
Nurses’ role in advanced nursing practice. Theoretical foundations, concepts and strategies in primary health care. Clinical practicum as consultant, educator, researcher, leader and clinician in primary health care. Prerequisite or corequisite: NSG 5130.

NSG5220 ADVANCED NURSING PRACTICE IN TERTIARY HEALTH CARE (6cr.)
Nurses’ role in advanced nursing practice. Theoretical foundations, concepts and strategies associated with caring for patients and their families in complex care situations. Clinical practicum as consultant, educator, researcher, leader and clinician in tertiary health care settings. Prerequisite or corequisite: NSG 5130.

NSG5350 PATHOPHYSIOLOGY FOR THE NURSE PRACTITIONER (3cr.)
Examine theoretical and practice related concepts in pathophysiology as a basis for advanced nursing practice. Explore alterations in physiological function with an emphasis on age-related, acute, episodic, and chronic conditions found in primary health care practice. Seminar: 3 hours/week. Course for PHCNP students only.

NSG5360 ROLES AND RESPONSIBILITIES OF THE NURSE PRACTITIONER (3cr.)
Compare and contrast advanced practice nursing and related frameworks to develop, integrate, sustain, and evaluate the role of the nurse practitioner within primary health care. Critically analyze and develop strategies to implement advanced practice nursing competencies with a focus on the community. Seminar: 3 hours/week. Course for PHCNP students only.

NSG5370 ADVANCED HEALTH ASSESSMENT AND DIAGNOSIS I (3cr.)
Analyze and critique concepts and frameworks essential to advanced health assessment and diagnosis using clinical reasoning skills. Apply clinical, theoretical
and research knowledge in comprehensive and focused health assessment for the individual client’s diagnostic plan of care. Course for PHCNP students only.
Prerequisite or co-requisite: NSG5350.

NSG5375 ADVANCED HEALTH ASSESSMENT AND DIAGNOSIS II (3cr.)
Integrate knowledge and apply conceptual frameworks integral to advanced health assessment and diagnosis in advanced nursing practice. Demonstrate initiative, responsibility, and accountability in complex decision making for individuals, groups, and/or families within the nurse practitioner scope of practice based on current research findings. Seminar: 3 hours per week. Clinical: 6 hours per week. Course for PHCNP students only. Prerequisite: NSG5370.

NSG5380 THERAPEUTICS IN PRIMARY HEALTH CARE I (3cr.)
Critically appraise and interpret concepts and frameworks integral to pharmacotherapy, advanced counseling, and complementary therapies for common conditions across the lifespan. Develop, initiate, manage, and evaluate therapeutic plans of care that incorporate client values and acceptability, goals of therapy, analysis of different approaches, pharmacotherapeutic principles. Course for PHCNP students only. Prerequisite or co-requisite: NSG5370.

NSG5385 THERAPEUTICS IN PRIMARY HEALTH CARE II (3cr.)
Integrate conceptual frameworks and evidence underlying the study of pharmacotherapy, advanced counseling, and complementary therapies for complex client situations. Demonstrate substantive initiative, responsibility, and accountability in complex decision making. Course for PHCNP students only. Prerequisite: NSG5380. Co-requisite: NSG5375.

NSG5401 INTEGRATIVE PRACTICUM (12cr.)
Synthesize the competencies essential to advanced nursing practice to provide primary health care for clients across the life span. Demonstrate autonomy, decision-making, and critical analysis of organizational and system issues that influence scope of practice, professional accountability, and outcomes. Course for PHCNP students only. Prerequisites: NSG 5350, NSG 5360, NSG 5370, NSG 5375, NSG 5380 and NSG 5385.

NSG5530 ÉTUDE DE LA DISCIPLINE INFIRMIÈRE (3cr.)
Historique du développement de la discipline infirmière et de l’organisation de son corps de connaissances. Conceptions dominantes et leurs liens avec la recherche, la pratique et la formation dans la discipline. Critique de théories de niveau intermédiaire utiles à l’explication de phénomènes propres à la discipline.

NSG5540 MÉTHODOLOGIE DE LA RECHERCHE EN SCIENCES INFIRMIÈRES (3cr.)

NSG5592 ANALYSE STATISTIQUE EN SCIENCES INFIRMIÈRES (3cr.)
Introduction à la planification, l’analyse et l’interprétation des résultats de recherche de type quantitatif en sciences infirmières incluant ce qui suit : analyse de statistiques inférentielles, analyse de variance et de covariance, régression linéaire.

NSG5610 SOINS INFIRMIERS DE NIVEAU AVANCÉ EN SOINS DE SANTÉ PRIMAIRE (6cr.)

NSG5620 SOINS INFIRMIERS DE NIVEAU AVANCÉ EN MILIEU DE SOINS TERTIAIRES (6cr.)

NSG5750 PHYSIOPATHOLOGIE POUR INFIRMIÈRES ET INFIRMIERS PRATICIENS (3cr.)
Examen des concepts théoriques et pratiques liés à la physiopathologie comme fondement de la pratique de niveau avancé des soins infirmiers. Exploration des changements aux fonctions physiologiques en mettant l’accent sur les modifications liées à l’âge, aux troubles aigus, épisodiques et chroniques rencontrés dans la pratique en soins de santé primaires. Cours pour étudiantes CSSPIIP seulement. Séminaire : 3 heures / semaine.

NSG5760 RÔLES ET RESPONSABILITÉS DES INFIRMIÈRES ET INFIRMIERS PRATICIENS (3cr.)
Comparaison et mise en contraste des cadres de référence en pratique de soins infirmiers de niveau avancé et d’autres cadres connexes afin de développer, d’intégrer, de soutenir, et d’évaluer le rôle de l’infirmière et de l’infirmier praticiens en soins de santé primaires. Analyse critique et élaboration de stratégies pour la mise en œuvre de compétences en pratique de soins infirmiers de niveau avancé axés sur la communauté. Cours réservé aux étudiantes en soins de santé primaires. Séminaire : 3 heures / semaine.

NSG5770 FORMATION AVANCÉE EN ÉVALUATION DE LA SANTÉ ET DIAGNOSTIC I (3cr.)

NSG5775 FORMATION AVANCÉE EN ÉVALUATION DE LA SANTÉ ET DIAGNOSTIC II (3cr.)
Intégration des connaissances et application des cadres conceptuels comme partie intégrante à l’évaluation de la santé et au diagnostic dans la pratique des soins infirmiers de niveau avancé. Initiative, sens de responsabilité et responsabilisation dans la prise de décisions complexes à l’égard d’individus, de groupes et de...

NSG5780 MÉTHODES THÉRAPEUTIQUES EN SOINS DE SANTÉ PRIMAIRE I (3cr.)

NSG5785 MÉTHODES THÉRAPEUTIQUES EN SOINS DE SANTÉ PRIMAIRE II (3cr.)

NSG5801 STAGE D’INTÉGRATION (12cr.)
Synthèse des compétences essentielles à la pratique des soins infirmiers de niveau avancé afin de dispenser des soins de santé primaires aux clients à tous les âges de la vie. Autonomie, prise de décision et analyse critique à l’égard des enjeux organisationnels et systémiques qui exercent une influence sur l’étendue de la pratique, la responsabilisation professionnelle et les résultats attendus. Cours pour étudiantes CSSPIIP seulement. Préalables : NSG 5750, NSG 5760, NSG 5770, NSG 5775, NSG 5780 et NSG 5785.

NSG6115 DESIGN OF MULTIPLE INTERVENTIONS IN COMMUNITY HEALTH (3cr.)
Theoretical basis for the design and evaluation of multistrategy and multi-level community health programs. Key design issues including synergies among interventions, intervention adaptation for contextual environment and implementation barriers. Integrated theories, planning tools and evaluation strategies to be discussed, using multiple intervention case studies. Prerequisites: NSG 5130; NSG 5210 (or NSG 5220); NSG 5140; or equivalents.

NSG6124 CLINICIAN ROLE IN ADVANCED NURSING PRACTICE (3cr.)
Theoretical and practice issues related to the advanced practice role in direct care. Examination of concepts related to clinician role function, models of care delivery for complex health problems. The clinical practicum provides an opportunity to strengthen the clinician role in direct care, consultation, and leadership in an area of specialization.

NSG6133 DECISION MAKING IN CLINICAL PRACTICE (3cr.)
Examination of decision models as they relate to decision making at the patient, practitioner, and policy maker levels. Study of the patient decision making process. Exploration of decision support strategies and evaluation of practitioner’s decision support skills.

NSG6134 EDUCATOR'S ROLE IN ADVANCED NURSING PRACTICE (3cr.)

NSG6135 PALLIATIVE/END OF LIFE CARE: AN INTERPROFESSIONAL APPROACH (3cr.)
Philosophy and practice of palliative/end of life care across the lifespan and in diverse health settings. Critical examination of theory, research, practice and policy issues related to care of individuals and families facing life threatening illness. Exploration of concepts of death, dying, bereavement within health care systems, culture, and society and through an interprofessional approach. Prerequisite: Permission of Program Director.

NSG6150 HISTORICAL CONTEXT IN NURSING PRACTICE (3cr.)
Historical context for selected nursing practice topics and leadership styles. Nursing and health care from the 19th to the late 20th century from a feminist and social history stand point. Perspectives and patterns of explanation for past nursing practices. Appraisal of primary and secondary sources, methods and theoretical approaches.

NSG6160 POLICY, POLITICAL ACTION AND CHANGE IN HEALTH CARE (3cr.)
Policy analysis, political action, organization and change theories. Acquisition of advanced nursing practice skills in policy and organizational analysis, application of change theory, lobbying, negotiating and strategizing.

NSG6401 INTERVENTION DESIGN IN ADVANCED NURSING PRACTICE (6cr.)
Utilisation of theory and evidence based practices relevant to a clinical field and to program evaluation. Clinical practicum structured around the design, implementation, and evaluation of interventions. Prerequisites: NSG 5210 or NSG 5220, or NSG 5360 (for primary health care nursing practice students only) and NSG 5140.

NSG6524 RÔLE DE CLINICIENNE DE L’INFIRMIÈRE EN PRATIQUE DE NIVEAU AVANCÉ (3cr.)
Éléments théoriques et enjeux liés à l’actualisation du rôle de clinicienne. Examen des concepts et des modèles de prestation des soins utilisés auprès des clients nécessitant des soins complexes. Le stage permet de consolider le rôle de clinicienne, consultante et leader dans un domaine de spécialisation.
NSG6533 PRISE DE DÉCISIONS EN SITUATION CLINIQUE (3cr.)
Examen des modèles de décision au niveau de la prise de décisions du patient, de l'intervenant et des prises de positions politiques. Étude du processus décisionnel du patient. Exploration des décisions entourant les stratégies de soutien et évaluation des compétences du praticien.

NSG6534 RÔLE D'ÉDUcatrice DE L'INfirmière EN PRATIQUE DE NIVEAU AVANCÉ. (3cr.)

NSG6535 SOINS PALLIATIFS ET DE FIN DE VIE : UNE APPROCHE INTERPROFESSIONNELLE. (3cr.)
Philosophie et pratique des soins palliatifs et de fin de vie, au long de l'existence et dans divers milieux de santé. Examen critique de la théorie, la recherche, la pratique et les problématiques d’ordre politique associées aux soins des personnes et des familles aux prises avec une maladie mortelle. Exploration des concepts de mort, d’agonie et de deuil dans les systèmes de soins de santé, la culture et la société et selon une approche interprofessionnelle. Préalable : permission de la directrice du programme.

NSG6550 CONTEXTE HISTORIQUE EN SCIENCES INFIRMIÈRES (3cr.)

NSG6560 POLITIQUE, ACTION POLITIQUE ET CHANGEMENT EN SOINS DE SANTÉ (3cr.)
Analyse des politiques, action politique et théories de l’organisation et du changement. Développement d’habiletés nécessaires à l’infirmière en pratique de niveau avancé en regard de l’analyse politique et organisationnelle, l’application de la théorie du changement, le lobbying, la négociation et la formulation de stratégies.

NSG6801 DEVIS D'INTERVENTIONS EN PRATIQUE DES SOINS INFIRMIERS DE NIVEAU AVANCÉ (STAGE) (6cr.)
Utilisation de la théorie et des évidences systématiques pertinentes au domaine de spécialisation choisi et à l’évaluation de programme. Stage structuré autour de la planification, de l’exécution et de l’évaluation d’une intervention clinique. Préalables : NSG 5610 ou NSG 5620, ou NSG 5760 (pour étudiantes en soins de santé primaires seulement) et NSG 5540.

NSG6998 THÈMES EN SCIENCES INFIRMIÈRES / SPECIAL TOPICS IN NURSING (3cr.)
La recherche et l'expertise dans certains secteurs de spécialisation des soins infirmiers. Peut comporter un practicum. Thèmes à approuver au préalable par la Direction du programme. / Research and advanced practice in a specialized area of nursing. May include a clinical practicum. Program approval required for topic selection.

NSG6999 ÉTUDES DIRIGÉES / DIRECTED STUDY (3cr.)
Approfondissement des connaissances dans un domaine d'intérêt particulier, avec l'approbation du programme. / Study of an area of particular interest in greater depth. Program approval is required.

NSG7100 THEORETICAL AND PHILOSOPHICAL PERSPECTIVES IN NURSING (3cr.)
Critical analysis of nursing knowledge development and the influence on nursing research and practice. Comparison and contrast of theories and philosophies in nursing with an emphasis on substantive areas of nursing that are of interest to the student. (Course is reserved for PhD students)

NSG7102 RESEARCH METHODS / DESIGN PROBLEMS IN NURSING (3cr.)
In-depth coverage and critical analysis of challenges associated with research methods to answer nursing research questions. Thorough appraisal of design pitfalls and sampling issues arising from the complexity and unpredictability of human subjects, measurement issues and special analytic techniques. (Course is reserved for PhD students.)

NSG7103 DECISION MAKING IN NURSING (3cr.)
Analysis and synthesis of decision and change models at client, practitioner and policy maker levels. In-depth exploration of selected conceptual, methodological, and design challenges to improve decision-making capacities of populations or to promote uptake of evidence-based nursing practices. (Course is reserved for PhD students.)

NSG7104 EVALUATING COMPLEX NURSING INTERVENTIONS (3cr.)
Discussion of design issues associated with complex interventions. Exploration of strategies for developing, implementing, and evaluating programs targeted to changing multiple levels of health care. Analysis of models, evidence, and policies appropriate to intervention design and examination of barriers to effective change. (Course is reserved for PhD students.)

NSG7110 DOCTORAL SEMINAR (3cr.)
Focus is to support students' thesis research through readings and seminars on relevant topics such as proposal writing, conceptual frameworks, ethics, methods, procedures and statistical analysis. Students present drafts of their work in oral and written format for critique. Prerequisites: NSG 7100, NSG 7102 and EDU 7193 or EDU 8190 or equivalent.

NSG7999 THÈSE DE MAÎTRISE / MASTER'S THESIS
Pathology and Experimental Medicine (PhD) (Collaborative)

The Faculty of Medicine offers graduate programs leading to the doctoral (PhD) degrees in several disciplines.

The objective of the Pathology and Experimental Medicine collaborative program is to provide graduate students with the knowledge and skills to examine the basic mechanisms of disease pathology, and to develop new strategies for prevention and treatment. The degree awarded specifies the primary program and indicates “specialization: Pathology and Experimental Medicine.”

The program operates within the framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS), which are posted on the FGPS website.

**Participating Programs**

The primary participating programs are:

- The PhD in Cellular and Molecular Medicine of the Department of Cellular and Molecular Medicine.
- The PhD in Biochemistry of the Department of Biochemistry, Microbiology and Immunology.
- The PhD in Microbiology and Immunology of the Department of Biochemistry, Microbiology and Immunology.
- The PhD in Neuroscience of the Department of Cellular and Molecular Medicine.

**Admission**

Admission to the collaborative program in Pathology and Experimental Medicine is governed by the «General Regulations» of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Candidates must indicate in their application for admission form that they wish to be accepted in the collaborative program.

To be accepted into the collaborative program students must:

- Be admitted to one of the programs participating in the collaborative program;
- Provide at least one letter of recommendation from a professor who is willing and available to act as thesis supervisor;
- Be sponsored into the collaborative program by a faculty member, normally the thesis supervisor, who must be a member of the Pathology and Experimental Medicine program.

**Program Requirements**

The requirements of both the primary program and those of the collaborative program must be met.

The requirements specific to the collaborative program are as follows:

1. One course (3 credits) in the primary program;
2. One Pathology and Experimental Medicine specialization course (3 credits);
3. Successful completion of the Pathology and Experimental Medicine seminar course;
4. Successful completion of the Comprehensive Examination as required by the respective primary program;
5. Preparation and defense of a thesis under the supervision of a professor who is a member of the Pathology and Experimental Medicine program. The thesis must be relevant to the focus of the Pathology and Experimental Medicine program. At least one of the examiners must be a member of the Pathology and Experimental Medicine collaborative program.

**Thesis Advisory Committee (TAC)**
The composition of the Thesis Advisory Committee (TAC) and the frequency of committee meetings follow the regulations of the respective primary program. At least one member of the TAC, in addition to the thesis supervisor, must be part of the Pathology and Experimental Medicine collaborative program.

Transfer from MSc to PhD
The regulations for transfer from MSc to PhD without being required to write a master’s thesis are those in effect in the student’s primary program.

Courses

**NSC8101 ADVANCED TOPICS IN NEUROPATHOLOGY** (3cr.)
General histopathological responses of central and peripheral nervous tissue to pathological stimuli including hypoxic-ischemic, traumatic, inflammatory/infectious, demyelinating and toxic. Emerging topics in neurology and neuropathology including the following: the pathology and pathogenesis of protein-based neurodegenerative disorders, the emerging family of RNA-mediated neurological disorders, mendelian and non-mendelian genetic diseases of the nervous system (including the role of microRNA in neurological disease), advances in diseases of skeletal muscle, advances in the molecular pathogenesis of Central Nervous System tumours, and advances in metabolic/mitochondrial/storage diseases.

**PEM8112**

**PEM5366**

**PEM8366**

**CMMS01 THE PATHOLOGICAL BASIS OF DISEASE** (3cr.)
Introductory Course for Non-Medical Graduate Students in the Life Sciences. This course will consist of a brief introduction to pathology describing the manifestation of disease at the macroscopic and microscopic level. This will be followed by (i) A description of various types of microscopy and methodology, (ii) Concepts in flow cytometry, tissue/cell fractionation, (iii) Histo-cytochemistry and immunohisto-cytochemistry, (iv) Normal cells and tissues, (vi) The general pathology of cells and tissues including hyperplasia, aplasia, atrophy, hyperplasia, metaplasia, dysplasia, neoplasia, storage diseases, extracellular space pathologies, necrosis and apoptosis. Blood vessel and cardiac pathologies will be covered as well as concepts in neopathology, organ/system specific pathologies and genetic diseases.

**CMMS105 INTRODUCTION TO CANCER BIOLOGY** (3cr.)
An introduction to the biology of cancer. Major topics in cancer biology include the following: tumor suppression/oncogenes; apoptosis in cancer; cell immortalization and senescence; genomic instability; multistep tumorigenesis/inflammation in cancer; biology of angiogenesis; rational therapies.

**CMMS315 CELLULAR AND MOLECULAR BASIS OF CARDIOVASCULAR FUNCTION/DYSFUNCTION** (3cr.)
Mechanism of failing heart and cardiovascular system, its associated functions and associated conditions. Therapies for restoring function. Topics include: regulation of heart development, cell signaling, cellular and molecular mechanisms of atherosclerosis and heart disease, hormonal regulation, hypertension, bioenergetics, cardiovascular genomics and genetics, cell therapy, and regenerative medicine.

**CMMS8105 ADVANCED TOPICS IN CANCER BIOLOGY** (3cr.)
Advanced study of recent developments in the field of cancer biology with emphasis on cellular and molecular aspects. Specific topics to be covered include: angiogenesis, apoptosis, cancer genetics, cell signaling, genetic instability, oncogenes and tumour suppressors.

**BC1H8107 ADVANCED TOPICS IN STRUCTURE AND FUNCTION OF PLASMA LIPOPROTEINS** (3cr.)
Recent advances in our knowledge of the plasma lipoproteins with a special emphasis on their role in the etiology of atherosclerosis. The subject will be introduced by an overview of the general structural properties of lipoproteins which will be followed by detailed discussion of the structure, metabolism and genetics of the apolipoproteins, the proteins and enzymes that modify lipoproteins and cell surface lipoprotein receptors. Other topics will include cholesterol homeostasis, plasma cholesterol transport and disorders of lipoprotein metabolism.

**Philosophy (PhD)**

The Department of Philosophy offers MA (with or without thesis) and PhD programs in Philosophy. The programs are offered in English and French.

The Department participates in the following collaborative programs: women’s studies (at the master’s level) and Canadian studies (at the PhD level), which make it possible for students to obtain a specialization in either domain.

The program is governed by the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).
Admission

Admission Requirements

Candidates are admitted to the PhD on the basis of an MA in Philosophy with a minimum "B+" average. In addition, for those enrolled in the MA in Philosophy, the Department offers an accelerated entrance to the PhD after completing, with a minimum "A-" average, six courses and a major research paper; normally these requirements can be fulfilled within twelve months. Students accepted into the PhD by this accelerated route do not require an MA.

An application dossier must include official transcripts, two letters of recommendation, a description of the intended field of research, and a sample of written work. For candidates wishing to enter the PhD without an MA the application dossier must include a detailed statement of research plans.

Language Requirements

Proficiency in both French and English is strongly encouraged so that students may take advantage of the full range of activities - lectures, personal contacts, and courses - available in the Department (graduate courses are normally not duplicated in the two languages).

Collaborative Program in Canadian Studies at the PhD Level

The Department of Philosophy is a participating unit in the Collaborative program in Canadian Studies at the PhD level. This program has been established for students wishing to enrich their training in Philosophy by including an interdisciplinary component in Canadian Studies. The Canadian Studies Seminar (CDN 6910) fits into the departmental course requirements and does not add to the number of courses required for the PhD in Philosophy.

To be admitted to the program, students must be registered in, or have successfully completed, at least one graduate course in Philosophy with Canadian content. The mention "Specialization in Canadian Studies" will be added to the diploma of students who pass the CDN 6910 Seminar and successfully defend a thesis on a Canadian topic in Philosophy.

For further details, please consult the Canadian Studies Website of the Faculty of Graduate and Postdoctoral Studies.

Program Requirements

Degree Requirements

The PhD program consists of six (one-session) courses, comprehensive exams, an approved thesis project, and a thesis, including defence.

Doctoral candidates must also complete a proficiency requirement in the second official language. This requirement can be completed in one of three ways:

- Passing (50%) the FLS 1000 exam; OR
- Completing 6 credits of FLS courses at your level (as determined by the Official Languages and Bilingualism Institute); OR
- Successfully completing a Philosophy graduate seminar given in French. (N.B. As per University regulations, students may write examinations and papers in the official language of their choice.)

Doctoral students must have sufficient mastery of languages to complete their research project; that is, they must be capable of studying texts in the original language and be able to check translations.

Residence

Students in the PhD program must spend at least six sessions (not necessarily consecutive) in residence as full-time students.

Time Limit

The Department encourages full-time PhD students to complete the degree requirements within three years, although a fourth year may be necessary in some instances.

Courses

Liste des cours supérieurs offerts par le Département. Pour de plus amples renseignements, consulter les listes paraissant trois mois avant le début de la session d'automne. Les cours prévus pour l'année scolaire en question y sont détaillés.
List of graduate courses offered by the Department. For more information consult the detailed syllabi available three months before the fall session, where students will find the list of courses offered in that particular academic year.

PHI5319 AESTHETICS I (3cr.)
PHI5377 AESTHETICS II (3cr.)
PHI5378 AESTHETICS III (3cr.)
PHI5331 ANCIENT PHILOSOPHY I (3cr.)
PHI5349 ANCIENT PHILOSOPHY II (3cr.)
PHI5350 ANCIENT PHILOSOPHY III (3cr.)
PHI5332 MEDIAEVAL PHILOSOPHY I (3cr.)
PHI5351 MEDIAEVAL PHILOSOPHY II (3cr.)
PHI5352 MEDIAEVAL PHILOSOPHY III (3cr.)
PHI5333 MODERN PHILOSOPHY I (3cr.)
PHI5353 MODERN PHILOSOPHY II (3cr.)
PHI5354 MODERN PHILOSOPHY III (3cr.)
PHI5334 ANGLO AMERICAN PHILOSOPHY I (3cr.)
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PHI5356 ANGLO AMERICAN PHILOSOPHY III (3cr.)
PHI5335 FRENCH PHILOSOPHY I (3cr.)
PHI5357 FRENCH PHILOSOPHY II (3cr.)
PHI5358 FRENCH PHILOSOPHY III (3cr.)
PHI5336 GERMAN PHILOSOPHY I (3cr.)
PHI5359 GERMAN PHILOSOPHY II (3cr.)
PHI5360 GERMAN PHILOSOPHY III (3cr.)
PHI5341 LOGIC AND PHILOSOPHY OF SCIENCE I (3cr.)
PHI5361 LOGIC AND PHILOSOPHY OF SCIENCE II (3cr.)
PHI5362 LOGIC AND PHILOSOPHY OF SCIENCE III (3cr.)
PHI5342 EPISODEMEOLOGY I (3cr.)
PHI5363 EPISODEMEOLOGY II (3cr.)
PHI5364 EPISODEMEOLOGY III (3cr.)
PHI5343 METAPHYSICS I (3cr.)
PHI5365 METAPHYSICS II (3cr.)
PHI5366 METAPHYSICS III (3cr.)
### Courses

**Courses**

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PHI5763 ÉPISTÉMOLOGIE ET PHILOSOPHIE DES SCIENCES II (3cr.)
PHI5764 ÉPISTÉMOLOGIE ET PHILOSOPHIE DES SCIENCES III (3cr.)
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PHI5769 PHILOSOPHIE MORALE II (3cr.)
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PHI5772 PHILOSOPHIE SOCIALE ET POLITIQUE III (3cr.)
PHI5747 PHILOSOPHIE DE LA RELIGION I (3cr.)
PHI5773 PHILOSOPHIE DE LA RELIGION II (3cr.)
PHI5774 PHILOSOPHIE DE LA RELIGION III (3cr.)
PHI5748 PHILOSOPHIE DE L'HISTOIRE I (3cr.)
PHI5775 PHILOSOPHIE DE L'HISTOIRE II (3cr.)
PHI5776 PHILOSOPHIE DE L'HISTOIRE III (3cr.)
PHI6101 SELECTED PROBLEMS I (3cr.)
PHI6102 SELECTED PROBLEMS II (3cr.)
PHI6103 SELECTED PROBLEMS III (3cr.)
PHI6501 THÈMES ET PROBLÈMES DE PHILOSOPHIE I (3cr.)
PHI6502 THÈMES ET PROBLÈMES DE PHILOSOPHIE II (3cr.)

PHI6503 THÈMES ET PROBLÈMES DE PHILOSOPHIE III (3cr.)

PHI6904 ÉTUDE DIRIGÉE/DIRECTED STUDY (3cr.)
Travail à préparer sous la direction d’un membre du corps professoral du département. Préalable : permission du comité des études supérieures. / Paper to be prepared under the direction of a professor in the department. Prerequisite: Permission of the Graduate Studies Committee.

PHI6999 RECHERCHE DIRIGÉE (M.A.) / DIRECTED RESEARCH (MA)

PHI7999 RECHERCHE ET THÈSE DE MAÎTRISE / MA THESIS RESEARCH

PHI8995 MÉMOIRE DE RECHERCHE (Ph.D.) / MAJOR RESEARCH PAPER (PhD)

PHI8998 EXAMEN DE CANDIDATURE (Ph.D.) / CANDIDACY-EXAMINATION (PhD)

PHI9999 RECHERCHE ET THÈSE DE DOCTORAT / PhD THESIS RESEARCH

Physics (PhD)

Ottawa-Carleton Institute for Physics

Established in 1983, the Ottawa-Carleton Institute for Physics (OCIP) combines the research strengths of the University of Ottawa and Carleton University. The Institute offers graduate programs leading to the master’s (MSc) and doctoral (PhD) degrees in Physics.

Research facilities are shared between the two campuses. Students have access to the professors, courses and facilities at both universities; however, they must register at the “home university” of the thesis supervisor.

Members of the Institute are engaged in research in different fields of Physics: condensed matter; high energy and biological physics; medical physics; photonics. Additional information is posted in the departmental website.

Particularly for the medical physics program, research supervision may be provided by members of other institutions in the area such as hospitals, cancer clinics and government laboratories.

Most of the requirements of these programs must be fulfilled in English. A very good knowledge of this language is therefore required.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the "Regulations and Procedures for Joint Graduate Programs (www.ocjip.ca)" and the General Regulations of the graduate faculty at the two universities. The General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa are posted on the website of the FGPS.

Admission

Admission to the graduate program in Physics is governed by the General Regulations of the Ottawa-Carleton Institute for Physics (OCIP) and by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Applications are evaluated based on the following criteria:

1. Be the holder of a master's degree in Physics (or equivalent) with a minimum average of 70% (B);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor.

Note: The choice of supervisor will determine the primary campus location of the student. It will also determine which university awards the degree.
Transfer from master's to PhD program

Students enrolled in the MSc program may be allowed to transfer to the PhD program without being required to write a master's thesis provided they meet the following conditions:

1. Achievement of an A- average in the last two years of undergraduate studies;
2. Completion of at least two graduate courses (6 credits) with a grade of A- or better in each;
3. Satisfactory progress in the research program;
4. Written recommendation by the supervisor;
5. Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master's. Following the transfer, all of the requirements of the doctoral program must be met: a total number of 18 credits of graduate coursework (MSc+PhD); the comprehensive exam (PHY9998) to be completed within 12 months of the transfer; participation in the departmental seminar series; and a thesis.

Program Requirements

The following requirements must be met:

1. 12 credits at the 5000 level or above in physics or in related disciplines approved by the Department of Physics. Students must take PHY5355 or PHY5170 as one of these courses if not already completed at the master's level;
2. Successful completion of a comprehensive examination (PHY9998) within twelve months of the initial admission into the program;
3. Presentation and defense of a thesis (PHY9999) based on an original research carried out under the direct supervision of a faculty member of the Institute.

The Department may require students to take additional courses depending on their backgrounds.

Residence

All students must complete a minimum of six sessions of full-time registration. In the case of transfer to the PhD, the residency period is nine full-time sessions from the initial registration in the program.

Minimum Standards

The passing grade in all courses is B. Students who fail 6 credits, or the comprehensive exam, or whose research progress is deemed unsatisfactory are required to withdraw from the program.

Duration of the program

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Courses

Tous les cours ne sont pas nécessairement offerts chaque année. Les cours sont offerts dans la langue dans laquelle ils sont décrits.

Les cotes de cours entre parenthèses sont celles de la Carleton University. Un cours de 3 crédits à l'Université d'Ottawa correspond à 0.5 crédit à la Carleton University.

Not all of the listed courses are given each year. The course is offered in the language in which it is described.

Course codes in parentheses are for Carleton University. A 3-credit course at the University of Ottawa is equivalent to a 0.5-credit course at Carleton University.

Physique de la matière condensée / Condensed Matter Physics
PHY5100 (PHYJ 5401) SOLID STATE PHYSICS I (3cr.)
interaction. Optical properties.

PHY5110 (PHYJ 5402) SOLID STATE PHYSICS II (3cr.)

PHY5151 (PHYJ 5403) TYPE I & II SUPERCONDUCTORS (3cr.)

PHY5167 (PHYJ5291) ADVANCED TOPICS IN MEDICAL PHYSICS (3cr.)
Topics may include medical imaging physics, cancer therapy physics, medical biophysics, or radiation protection and health physics. Topics vary from year to year. Prerequisites: PHY 5161 (PHYS 5203) plus, as appropriate to the topic offered, at least one of PHY 5112 (PHYS 5204), PHY 5164 (PHYS 5206), PHY 5165 (PHYS 5207); or permission of the Department.

PHY5320 (PHYJ 5508) INTRODUCTION TO THE PHYSICS OF MACROMOLECULES (3cr.)
The chemistry of macromolecules and polymers; random walks and the static properties of polymers; experimental methods; the Rouse model and single chain dynamics; polymer melts and viscoelasticity; the Flory-Huggins theory; the reptation theory; computer simulation algorithms; biopolymers and copolymers.

PHY5347 (PHYJ 5509) PHYSICS, CHEMISTRY AND CHARACTERIZATION OF MINERAL SYSTEMS (3cr.)
The materials science of mineral systems such as the network and layered silicates. In-depth study of the relations between mineralogically relevant variables such as atomic structure, crystal chemistry, site populations, valence state populations, crystallization conditions, etc. Interpretation and basic understanding of key characterization tools such as microprobe analysis, Mössbauer spectroscopy, x-ray diffraction and optical spectroscopy.

PHY5362 (PHYJ 5006) COMPUTATIONAL METHODS IN MATERIAL SCIENCES (3cr.)
Introduction to modern computational techniques used in material science research. Classical molecular dynamics, classical and quantum Monte Carlo methods, plane-wave based electronic band structure calculations, Carr-Parrinello quantum molecular dynamics. Applications to condensed matter systems: basic simulation techniques, force-field based methods in the study of thermodynamic and physical properties of solids, first-principles quantum mechanical methods.

PHY5380 (PHYJ 5407) SEMICONDUCTOR PHYSICS I (3cr.)
Brillouin zones and band theory. E-k diagram, effective mass tensors, etc. Electrical properties of semiconductors.

PHY5381 (PHYJ 5408) SEMICONDUCTOR PHYSICS II: OPTICAL PROPERTIES (3cr.)

PHY5384 (PHYJ 5308) PHYSICS OF FIBER OPTIC SYSTEMS (3cr.)

PHY5387 (PHYJ 5504) PHYSICS OF MATERIALS (3cr.)
Microscopic characteristics related to the physical properties of materials. Materials families: metals and alloys, ceramics, polymers and plastics, composites, layered materials, ionic solids, molecular solids, etc. Specific materials groups. Equilibrium phase diagrams and their relation to microstructure and kinetics. Experimental methods of characterization. Interactions and reactions. Prerequisite: PHY 4382 or-equivalent. Cannot be combined for credit with PHY 4387.

PHY5781 (PHYJ 5408) PHYSIQUE DES SEMICONDUCTEURS II : PROPRIÉTÉS OPTIQUES (3cr.)

PHY5922 (PHYJ 5507) ADVANCED MAGNETISM (3cr.)
Study of some of the experimental and theoretical aspects of magnetic phenomena found in ferro-, ferri-, antiferro-magnetic and spin glass materials. Topics of current interest in magnetism. Prerequisite: PHY 4385 or equivalent.

PHY5951 (PHYJ 5409) PHYSIQUE DE BASSE TEMPÉRATURES / LOW TEMPERATURE PHYSICS II (3cr.)

PHY6371 (PHYJ 5404) TOPICS IN MÖSSBAUER SPECTROSCOPY (3cr.)
Experimental techniques used to measure Mössbauer spectra. Physics of the Mössbauer effect: recoilless emission/absorption, anisotropic Debye-Waller
factors, second order Doppler shifts, etc. Mössbauer lineshape theory with static and dynamic hyperfine interactions. Distributions of static hyperfine parameters. Physics of the hyperfine parameters: origin of the hyperfine field, transferred and super transferred fields, calculations of electric field gradients, etc. Applications of Mössbauer spectroscopy to various areas of solid state physics and materials science.

**PHY6382 (PHYJ 6406) PHYSICS OF SEMICONDUCTOR SUPERLATTICES (3cr.)**
Fundamental physics of two-dimensional quantized semiconductor structures. Electronic and optical properties of superlattices and quantum wells. Optical and electronic applications. This course is intended for students registered for the Ph.D. in semiconductor physics research. *Prerequisite: Advanced undergraduate or graduate course in solid state physics.*

**PHY6782 (PHYJ 6407) PHYSIQUE DES SUPER-RÉSEAUX À SEMICONDUCTEURS (3cr.)**

**Physique des particules, nucléaire et atomique / Particle, Nuclear and Atomic Physics**

**PHY5966 (PHYJ 5601) EXPERIMENTAL TECHNIQUES OF NUCLEAR AND ELEMENTARY PARTICLE PHYSICS (3cr.)**
A course intended for students interested in high energy experimental physics. Large accelerators for charged particles. Particle detectors: nuclear emulsion, bubble chamber, spark chamber, Vertex detectors and calorimeters etc. Study of properties of elementary particles through analysis of experimental results.

**PHY5967 (PHY 5602) ELEMENTARY PARTICLE PHYSICS / PHYSIQUE DES PARTICULES (3cr.)**

**PHY8164 (PHY 5604) INTERMEDIATE NUCLEAR PHYSICS (3cr.)**

**PHY8260 ADVANCED NUCLEAR PHYSICS (6cr.)**

**PHY8165 (PHY 6601) PARTICLE PHYSICS PHENOMENOLOGY (3cr.)**

**PHY8166 (PHY 6602) ADVANCED TOPICS IN PARTICLE PHYSICS PHENOMENOLOGY (3cr.)**

**Photonique / Photonics**

**PHY5318 (PHY 5318) MODERN OPTICS (3cr.)**
Electromagnetic wave propagation; reflection, refraction; Gaussian beams; guided waves. Laser theory: stimulated emission, cavity optics, gain and bandwidth, atomic and molecular lasers. Mode locking, Q switching. Diffraction theory, coherence, Fourier optics, holography, laser applications. Optical communication systems, nonlinear effects: devices, fibre sensors, integrated optics. Also offered at the undergraduate level, with different requirements, as PHYS 4208 for which additional credit is precluded. *Prerequisite: permission of the Department.*

**PHY5330 (PHY 5330) FIBER OPTICS COMMUNICATIONS (3cr.)**

**PHY5331 (PHY 5331) FIBER OPTICS SENSORS (3cr.)**

**PHY5332 (PHY 5332) NONLINEAR OPTICS (3cr.)**
Nonlinear optical susceptibility; wave equation description of nonlinear optics processes: second harmonic generation, intensity dependent refractive index, sum-and frequency-generation, parametric amplification; quantum mechanical theory of nonlinear optics; Brillouin and Raman scattering; the electro-optic effect; nonlinear fibre optics and solitons.

**PHY5333 (PHY 5333) MODE LOCKED LASERS (3cr.)**

**Physique médicale / Medical Physics**

**PHY5161 (PHY 5203) MEDICAL RADIATION PHYSICS (3cr.)**
Physical foundation of, and recent developments in, transmission x-ray imaging, computerized tomography, nuclear medicine, magnetic resonance imaging, and ultrasound, for the imaging physics specialist. Imaging system performance: contrast, resolution, modulation transfer function, signal-to-noise ratio, detective
accordance with University of Ottawa regulations, all students have the option of writing exams, course assignments and theses in either English or French. The fundamentals of political economy as an approach to studying political phenomena. Canada's place in the global economy, intergovernmental relations, and foreign policy. The study of international organizations, the United Nations, and the European Union. The role of transnational corporations and non-governmental organizations in global politics. Theoretical and methodological approaches to the analysis of political systems, including political theory, public administration, and comparative politics. The political economy of multinational corporations. The analysis of current issues affecting political forces in Canada: parties, groups and movements. The exact topic is announced at the beginning of the session. It is offered once every two weeks over two consecutive sessions. It deals with the challenges of designing a thesis proposal and writing the thesis itself. Reserved for master's students. It integrates methodological and theoretical contributions of the two fields. The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program. Residence at the University of Ottawa is required for at least four semesters. The program is open to anyone holding a Bachelor's degree with a major or minor in Political Science or a related field, or an equivalent degree. To be admitted, candidates must provide evidence of their knowledge and skills in Political Science and related fields. The Department of Political Science offers a range of graduate courses that provide a solid foundation in the field of political science. The list includes courses in political theory, public administration, comparative politics, international relations, and political economy. The courses offered reflect the research interests of the faculty and the diversity of political science as a discipline. The Department also offers a number of seminars and workshops that provide opportunities for in-depth study and discussion of current issues in political science. The Department's graduate programs are designed to prepare students for careers in academia, government, international organizations, and other professional fields. The programs include coursework, research, and a thesis or dissertation. The faculty members are active researchers in a variety of areas, including political theory, public administration, comparative politics, international relations, and political economy. The Department maintains close links with other departments and programs at the University of Ottawa, as well as with similar programs at other universities in Canada and abroad. The Department is committed to providing a high-quality education and to promoting excellence in research.
The study of health inequities, defined as disparities in health status that are avoidable and unfair, focuses on the higher burden of disease in developing countries.

The University of Ottawa's faculties of Health Sciences and Medicine, in collaboration with the faculties of Social Sciences, and Law (Common comparée. Studies the relationship between the exercise of power, the legal system and various systems of governance. The approach may be historical or thematic. The

Residence
• POL9999 THÈSE DE DOCTORAT / PhD THESIS
• Two seminars (3 credits each) chosen from: POL 7102, POL 7103, POL 7104, POL 7105, POL 7106, POL 7107, POL 7108, POL 7109, POL 7110, of the student's background.

To be accepted into the collaborative program, students must be already registered in at least one graduate course in political science with University of Ottawa policy, examinations, assignments and the research paper or thesis may be written in either English or French. Two options Passage de radiations à travers la matière. Structure nucléaire et systématique. Désintégrations alpha et beta. Interaction entre deux nucléons. Introduction aux

Constantes optiques et théorie de la dispersion. Absorption optique, réflexion et structure de bandes. Seuil d'absorption et excitons. Absorption due au réseau, PHY5781 (PHYJ 5408) PHYSIQUE DES SEMICONDUCTEURS II : PROPRIÉTÉS OPTIQUES

PHY5722 PHYSIQUE BIOLOGIQUE


Optical constants and dispersion theory. Optical absorption, reflection, and band structure. Absorption at band edge and excitons. Lattice, defect and free-

PHY5322 BIOLOGICAL PHYSICS (3cr.) Biological phenomena studied using techniques of physics. Key components of cells. Physical concepts relevant to cellular phenomena: Brownian dynamics, fluids, suspensions, entropy driven phenomena, chemical forces and self-assembly. Biological molecules. Enzymes. Molecular motors. Nerve impulses. Also offered, with different requirements, as PHY 4322. Exclusion: PHY 4322.

PHY5347 (PHYJ 5509) PHYSICS, CHEMISTRY AND CHARACTERIZATION OF MINERAL SYSTEMS (3cr.)
The materials science of mineral systems such as the network and layered silicates. Indepth study of the relations between mineralogically relevant variables such as atomic structure, crystal chemistry, site populations, valence state populations, crystalization conditions, etc. Interpretation and basic understanding of key characterization tools such as microprobe analysis, M"ossbauer spectroscopy, x-ray diffraction and optical spectroscopy.

**PHY5362 (PHYJ 5006) COMPUTATIONAL METHODS IN MATERIAL SCIENCES** (3cr.)
Introduction to modern computational techniques used in material science research. Classical molecular dynamics, classical and quantum Monte Carlo methods, plane-wave based electronic band structure calculations, Carr-Parminello quantum molecular dynamics. Applications to condensed matter systems: basic simulation techniques, force-field based methods in the study of thermodynamic and physical properties of solids, first-principles quantum mechanical methods.

**PHY5380 (PHYJ 5407) SEMICONDUCTOR PHYSICS I** (3cr.)
Brillouin zones and band theory. E-k diagram, effective mass tensors, etc. Electrical properties of semiconductors.

**PHY5381 (PHYJ 5408) SEMICONDUCTOR PHYSICS II: OPTICAL PROPERTIES** (3cr.)

**PHY5384 (PHYJ 5308) PHYSICS OF FIBER OPTIC SYSTEMS** (3cr.)

**PHY5387 (PHYJ 5504) PHYSICS OF MATERIALS** (3cr.)
Microscopic characteristics related to the physical properties of materials. Materials families: metals and alloys, ceramics, polymers and plastics, composites, layered materials, ionic solids, molecular solids, etc. Specific materials groups. Equilibrium phase diagrams and their relation to microstructure and kinetics. Experimental methods of characterization. Interactions and reactions. **Prerequisite: PHY 4382 or equivalent. Cannot be combined for credit with PHY 4387.**

**PHY5495 (PHYS 5905) PHYSICS IN MODERN TECHNOLOGY WORK TERM**
Practical experience for students in the physics in modern technology stream. Satisfactory / not satisfactory grade, to be based on the grades obtained for the written and oral reports as well as on the evaluations of the employer. **Prerequisites: Acceptance in the physics in modern technology stream of the MSc program and permission of the Department.**

**PHY5722 PHYSIQUE BIOLOGIQUE** (3cr.)

**PHY5781 (PHYJ 5408) PHYSIQUE DES SEMICONDUCTEURS II : PROPRIÉTÉS OPTIQUES** (3cr.)

**PHY5895 STAGE EN PHYSIQUE DE LA TECHNOLOGIE MODERNE**
Expérience pratique pour les étudiants dans l'option physique de la technologie moderne. Note, Satisfaisant ou Non satisfaisant, basée sur l'évaluation de l'employeur et les rapports écrits et oraux décrits lors du projet de stage. Préalables : être accepté dans l'option physique de la technologie moderne du programme de maîtrise et permission du département.

**PHY5922 (PHYJ 5507) ADVANCED MAGNETISM** (3cr.)
Study of some of the experimental and theoretical aspects of magnetic phenomena found in ferro-, ferri-, antiferro-magnetic and spin glass materials. Topics of current interest in magnetism. **Prerequisite: PHY 4385 or equivalent.**

**PHY5951 (PHYJ 5409) PHYSIQUE DE BASSE TEMPÉRATURES / LOW TEMPERATURE PHYSICS II** (3cr.)

**PHY6371 (PHYJ 5404) TOPICS IN MÖSSBAUER SPECTROSCOPY** (3cr.)
Experimental techniques used to measure M"ossbauer spectra. Physics of the M"ossbauer effect: recoilless emission/absorption, anisotropic D"ebeye-Waller factors, second order Doppler shifts, etc. M"ossbauer lineshape theory with static and dynamic hyperfine interactions. Distributions of static hyperfine parameters. Physics of the hyperfine parameters: origin of the hyperfine field, transferred and supertransferred fields, calculations of electric field gradients, etc. Applications of M"ossbauer spectroscopy to various areas of solid state physics and materials science.
PHY6382 (PHYJ 6406) PHYSICS OF SEMICONDUCTOR SUPERLATTICES (3cr.)
Fundamental physics of two-dimensional quantized semiconductor structures. Electronic and optical properties of superlattices and quantum wells. Optical and electronic applications. This course is intended for students registered for the Ph.D. in semiconductor physics research. Prerequisite: Advanced undergraduate or graduate course in solid state physics.

PHY6782 (PHYJ 6407) PHYSIQUE DES SUPER-RÉSEAUX À SEMICONDUCTEURS (3cr.)

De plus, les cours suivants peuvent être suivis pour crédits au niveau supérieur à la discrétion du directeur du département de physique. Toutefois, un seul de ces cours pourra être crédité pour la maîtrise ou le doctorat :

In addition, the following courses may be taken for credit at the graduate level at the discretion of chairperson of the Physics Department. However, only one such course may be counted toward the credits required for the master's or doctoral degree:

PHY4327 APPLICATIONS OF INTEGRATED CIRCUITS IN PHYSICS (3cr.)
A course designed to introduce students having no formal background of electronics to the use of integrated circuits in designing laboratory apparatus. Both digital and analogue circuits will be covered. Topics are chosen from counters, gates, wave-shaping, microcomputers, D/A and A/D conversion, op amps, filters, lock-in amplifiers, and phase locked loops. This course is offered in alternate years.

PHY4335 PHYSICS OF CONTINUOUS MEDIA (3cr.)

PHY4346 GENERAL RELATIVITY (3cr.)
An introduction to the mathematical techniques and experimental tests of the general theory of relativity. This course is offered in alternate years.

PHY4361 APPLIED NUCLEAR PHYSICS (3cr.)

PHY4362 SUBATOMIC PHYSICS I (3cr.)
The passage of radiations through matter. Nuclear structure and systematics. Alpha decay, Beta decay, Two-nucleon interaction. Introduction to elementary particles.

PHY4368 SUBATOMIC PHYSICS II (3cr.)
Properties of leptons, quarks and hadrons. The fundamental interactions, conservation laws, invariance principles and quantum numbers. Resonances in hadron-hadron interactions. Three body phase space. Dalitz plots. Quark model of hadrons, mass formulae. Weak interactions, parity violation, decay of neutral kaons, CP violation, Cabibbo theory.

PHY4370 QUANTUM MECHANICS (3cr.)

PHY4385 SOLID STATE PHYSICS (3cr.)

PHY4387 PHYSICS OF MATERIALS (3cr.)

PHY4395 ASTROPHYSICS (3cr.)
**PHY4730 COURS AVANCÉ DE DYNAMIQUE** (3cr.)
Mechanics advanced: formulations of Lagrange and Hamilton; transformations canonical; theory of Hamilton-Jacobi. Relativity: transformations of Lorentz; analysis tensoriel; mechanics classique relativiste.

**PHY4762 PHYSIQUE SUBATOMIQUE I** (3cr.)

**PHY4770 MÉCANIQUE QUANTIQUE** (3cr.)

**PHY4785 PHYSIQUE DE L'ÉTAT SOLIDE** (3cr.)

**Political Science (PhD)**

The School of Political Studies offers graduate programs leading to the degrees of Master of Arts (MA) and PhD in political science. The MA program is offered both full- and part-time whereas the PhD program is offered full-time only. The programs are offered in French and English. All students, regardless of the language selected for the majority of their courses, must take at least one course in French. In accordance with University of Ottawa policy, examinations, assignments and the research paper or thesis may be written in either English or French. Two options are available for the MA, the MA with thesis and the MA with research paper. The programs operate under the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) which can be accessed at www.grad.uOttawa.ca.

**Admission**

1. To be admitted to the PhD program, candidates must hold a master's degree in political science (or the equivalent) with a minimum average of 75% (B+) calculated in accordance with FGPS guidelines. Exceptional students in the master's program at the University of Ottawa may, under certain conditions (see "Transfer from master's to PhD"), be allowed to transfer to the PhD without being required to write a master's thesis.

2. An active knowledge of French and English is essential. All students admitted will have to take at least one of their courses in French, and all students must be capable of reading texts in English and French. Students must indicate in their application the language in which they plan to take the majority of their courses. Those students who plan to study mainly in English will have to demonstrate in their application an active knowledge of English. All students whose first language is other than English or French must provide proof in their application of their level of competence in both languages. The School of Political Studies reserves the right to require a language test for either language.

**Fields**

The program offers the three following fields:

a) International relations;
b) Canadian and Quebec politics;
c) Political thought and the analysis of ideologies;
d) Comparative politics;
e) Women and politics;
f) Environmental politics;
g) Political economy;
h) Citizenship, diversity and migration.

**Additional requirements**

The requirements outlined above are a minimum. The School of Political Studies reserves the right to add any course considered essential in light of the student's background.

**Collaborative program in Canadian Studies at the PhD level**

The School of Political Studies is one of the participating units in the collaborative PhD program in Canadian Studies. This program was created to enable students to enrich their education in their political science by adding the interdisciplinary dimension of Canadian Studies. The Seminar in Canadian Studies (CDN 6010) is recognized by the School of Political Studies towards the requirements of the PhD degree. Thus students registered in the collaborative program do not have to take an additional course.

To be accepted into the collaborative program, students must be already registered in at least one graduate course in political science with Canadian content, or have already passed such a course. The degree of those who have successfully completed the interdisciplinary seminar...
For more information, please refer to the description of the Canadian Studies collaborative program on the Website of the Faculty of Graduate and Postdoctoral Studies.

**Program Requirements**

**Degree Requirements**

- One course chosen (6 credits each) from:

  POL 9200 THEORIES AND PROBLEMS IN INTERNATIONAL POLITICAL ECONOMY (6cr.)
  POL 9218 THEORIES AND PROBLEMS IN COMPARATIVE POLITICS (6cr.)
  POL 9219 THEORIES AND PROBLEMS IN CANADIAN POLITICAL ECONOMY (6cr.)
  POL 9220 THEORIES AND PROBLEMS IN ANALYSIS OF POLITICAL IDEOLOGIES (6cr.)

- POL 9310 COMPREHENSIVE EXAMINATION IN THE MAJOR FIELD

- Two seminars (3 credits each) chosen from: POL 7102, POL 7103, POL 7104, POL 7105, POL 7106, POL 7107, POL 7108, POL 7109, POL 7110, POL 7111, POL 7112, POL 7113, POL 7114, POL 7115, POL 7116, POL 7117;

- POL 7366 DOCTORAL METHODOLOGY SEMINAR (3 cr.)

- POL 9320 COMPREHENSIVE EXAMINATION IN THE MINOR FIELD

- POL 9350 THESIS PROPOSAL

- POL 9999 THÈSE DE DOCTORAT / PhD THESIS

**POL 9310, POL 9320, POL 9350 and POL 9999 are graded on a satisfactory (S) or not satisfactory (NS) basis.**

Students are required to maintain a minimum average of 75% (B+) during their PhD program. Those who receive a grade lower than 75% (B+) in two courses or more will be required to withdraw.

All students must successfully complete at least one course given in French.

To continue in the program, students must pass both comprehensive examinations (the major and the minor). In accordance with the general regulations of the Faculty of Graduate and Postdoctoral Studies, any student who fails the major or minor comprehensive examination has the right to one retake. A student who is unsuccessful on the second attempt has to withdraw.

Comprehensive examinations are aimed at proving basic knowledge in the fields of study. The major field comprehensive examination usually takes place towards the end of the third session of registration in the program. The minor field comprehensive examination usually takes place at the end of the fourth session of registration in the program.

The thesis proposal must be approved by the thesis committee. A student whose proposal is not accepted on the first submission may be allowed to submit it a second time. A student whose proposal is rejected a second time must withdraw from the program.

**Residence**

All full-time students must complete a minimum of six sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the initial registration in the program.

**Courses**

POL 5106 SELECTED TOPICS IN POLITICAL SCIENCE (3cr.)

POL 5123 CANADIAN POLITICS (3cr.)
Presentation and analysis of a contemporary issue in Canadian politics.

POL 5506 THÈMES CHOISIS EN SCIENCE POLITIQUE (3cr.)
POL5523 POLITIQUE CANADIENNE (3cr.)
Présentation et analyse d’un enjeu contemporain dans la politique canadienne.

POL6100 ANALYSIS OF INTERNATIONAL AND COMPARATIVE POLITICS (3cr.)
Introduction to the major analytical frameworks in international and comparative politics, and critical comparative analysis of them. Analysis of the methodological and theoretical contributions of the two fields.

POL6101 RESEARCH METHODS IN POLITICAL SCIENCE (3cr.)
Examination of the methodological approaches used in political analysis, including the epistemological issues surrounding these approaches. A portion of the seminar deals with the challenges of designing a thesis proposal and writing the thesis itself. Reserved for master’s students.

POL6118 CORE SEMINAR IN COMPARATIVE POLITICS (3cr.)
Critical study of the principal theoretical approaches in comparative politics, the debates about them and the different methodological frameworks in comparative politics.

POL6119 ANALYSIS OF THE CANADIAN POLITICAL SYSTEM (3cr.)
Presentation of the major analytical frameworks in Canadian politics and critically compares them. An analysis of the methodological and theoretical contributions of this field.

POL6120 THEMATIC ANALYSIS OF MODERN POLITICAL THOUGHT (3cr.)
Examination of certain themes related to the birth and development of modern political thought, with reference to the history of political ideas. For example, the course explores the origins and development of the modern state, including how the relationship between politics and religion, and between politics and the economy, has changed.

POL6500 ANALYSE POLITIQUE INTERNATIONALE ET COMPARÉE (3cr.)
L'objectif de ce cours est de présenter les principaux schémas d'analyse en politique internationale et comparée, et de les relier de façon critique. Il s'agira d'une analyse des apports méthodologiques et théoriques dans les deux champs d'étude.

POL6501 LA MÉTHODE EN SCIENCE POLITIQUE (3cr.)

POL6519 ANALYSE DU SYSTÈME POLITIQUE CANADIEN (3cr.)
L'objectif de ce cours est de présenter les principaux schémas d'analyse en politique canadienne et de les relier de façon critique. Il s'agira d'une analyse des apports méthodologiques et théoriques.

POL6520 IDÉOLOGIE ET THÉORIE POLITIQUE (3cr.)
L'objectif de ce cours est de présenter certaines thématiques liées à la naissance et au développement de la pensée politique moderne. Référence à l'histoire des idées politiques. Il sera question, par exemple, de thématiques telles les origines et le développement de l'État moderne, l'évolution des rapports entre le religieux et le politique, et entre l'économique et le politique.

POL6999 PROJET DE THÈSE / THESIS PROPOSAL

POL7102 SELECTED TOPICS IN INTERNATIONAL AND COMPARATIVE POLITICS (3cr.)

POL7103 SELECTED TOPICS IN POLITICAL THOUGHT (3cr.)

POL7104 SELECTED TOPICS IN CANADIAN POLITICS (3cr.)

POL7105 POWER, LAW AND SYSTEMS OF GOVERNANCE (3cr.)
Studies the relationship between the exercise of power, the legal system and various systems of governance. The approach may be historical or thematic. The exact topic is announced at the beginning of the session.

POL7106 SUBJECTIVITY AND INTERSUBJECTIVITY (3cr.)
Study of the foundations and the nature of subjectivity and intersubjectivity. The approach may be historical or thematic. The exact topic is announced at the beginning of the session.

POL7107 ORIGINS AND FEATURES OF MODERN POLITICAL THOUGHT (3cr.)
Study of the authors, schools of thought and ideologies that constitute modernity. The exact topic is announced at the beginning of the session.
POL7108 IDEOLOGY AND SOCIAL TRANSFORMATION (3cr.)
Study of the relationship between political thought to social change and to the practices of social movements. The approach may be historical or thematic. The exact topic is announced at the beginning of the session.

POL7109 GOVERNANCE AND GLOBALIZATION (3cr.)
Analysis of institutions and practices of regulation at the international level in the context of globalization. Study of major trends in national and international governance, including forces of resistance. Case studies.

POL7110 INTERNATIONAL POLITICAL ECONOMY (3cr.)
Analysis of the political aspects of the international economy and how economic issues affect societies and international politics. Case studies. Examination of historical and contemporary theoretical approaches.

POL7111 SPACE AND TERRITORIALITY (3cr.)
Analysis of issues relating to the production, control and use of space in world order. Study of diverse contemporary theories concerning space and territoriality.

POL7112 SECURITY AND CONFLICT: CONTEMPORARY ISSUES (3cr.)
Analysis of the causes, mechanisms and consequences of inter-state conflicts (wars, crises) and/or intra-state conflicts (civil war, secession). Examination of relevant theoretical literature.

POL7113 CITIZENSHIP AND IDENTITY (3cr.)
Analysis of contemporary citizenship and identity issues in Canada. The approach may be historical or thematic, and the exact topic is announced at the beginning of the session.

POL7114 CONSTITUTION AND INSTITUTIONS (3cr.)
Analysis of constitutional and institutional issues in contemporary Canadian politics. The exact topic is announced at the beginning of the session.

POL7115 POLITICAL PARTIES AND MOVEMENTS (3cr.)
Analysis of current issues affecting political forces in Canada: parties, groups and movements. The exact topic is announced at the beginning of the session.

POL7116 PUBLIC POLICY (3cr.)
Analysis of current public-policy issues in Canada. The exact topic is announced at the beginning of the session.

POL7117 INTER-FIELD SEMINAR (3cr.)
In this seminar, taught by at least two professors, students examine a topic that draws on knowledge from at least two of the program’s fields of study (political thought, Canadian politics, international politics). The exact topic is announced at the beginning of the session.

POL7119 CREATION AND TRANSFORMATION OF STATES AND POLITICAL REGIMES (3cr.)
Study of theories of state-building and transformation (including strategies of adaptation within a context of globalisation; issues of state collapse), as well as the study of democratic and authoritarian regimes and their transformations (transition, consolidation, collapse), in a comparative perspective.

POL7120 COMPARATIVE POLITICAL ECONOMY (3cr.)
Study of theoretical approaches concerning the evolution of power relations between states and markets in different regions of the world; of the political economy of social movements; of political struggles regarding socio-economic inequalities. The emphasis will be on the political economy of both developing states and of highly industrialised countries.

POL7121 COMPARATIVE POLITICS OF IDENTITIES (3cr.)
Study of theories concerning identity (primordialism, instrumentalism, constructivism) and of the role of ethnic, national, religious, linguistic and gender identities in political processes (violence, accommodation among different identity groups, management of diverse identities by the state).

POL7122 SPECIAL TOPICS IN COMPARATIVE POLITICS (3cr.)
Topics to covered in rotation: Africa, Latin America, Asia, Middle East and former Soviet bloc (and possibly Western Europe/United States)

POL7366 DOCTORAL METHODOLOGY SEMINAR (3cr.)
Advanced reflection on the methodological aspects and issues of thesis research (methods of inquiry, practical considerations, data analysis, interpretation of results, etc.). Students acquire the knowledge needed to design and formulate the thesis proposal. This seminar is reserved for PhD students in Political Science. It is offered once every two weeks over two consecutive sessions.

POL7502 THÈMES CHOISIS EN POLITIQUE INTERNATIONALE ET COMPARÉE (3cr.)

POL7503 THÈMES CHOISIS EN PENSEE POLITIQUE (3cr.)

POL7504 THÈMES CHOISIS EN POLITIQUE CANADIENNE (3cr.)
POL7505 POUVOIR, DROIT ET RÉGIMES POLITIQUES (3cr.)
Étude des rapports entre l'exercice du pouvoir, le système du droit et les différents régimes politiques. L'approche adoptée peut être historique ou thématique. L'objet d'étude spécifique sera présenté en début de session.

POL7506 SUBJECTIVITÉ ET INTERSUBJECTIVITÉ (3cr.)
Étude des fondements et de la nature de la subjectivité et de l’intersubjectivité. L’approche adoptée peut être historique ou thématique. L’objet d’étude spécifique sera présenté en début de session.

POL7507 ORIGINE ET NATURE DE LA PENSÉE POLITIQUE MODERNE (3cr.)
Étude d’auteurs, de courants de pensée ou d’idéologies qui sont constitutifs de la modernité. L’objet d’étude spécifique sera présenté en début de session.

POL7508 TRANSFORMATIONS SOCIALES ET IDÉOLOGIES (3cr.)
Étude de la pensée politique dans son rapport à l’évolution des sociétés, aux dynamiques sociales et à l’action des courants et mouvements organisés. L’approche adoptée peut être historique ou thématique. L’objet d’étude spécifique sera présenté en début de session.

POL7509 GOUVERNANCE ET MONDIALISATION (3cr.)
Analyse des institutions et des pratiques de régulation politique à l’échelle internationale dans le contexte de la mondialisation. Étude des grands courants de changement de la gouvernance nationale et internationale, y compris les forces de résistance. Études de cas.

POL7510 ÉCONOMIE POLITIQUE INTERNATIONALE (3cr.)

POL7511 ESPACE ET TERRITORIALITÉ (3cr.)
Analyse des enjeux reliés à la production, au contrôle et à l’utilisation de l’espace dans l’ordre mondial. Étude de diverses approches théoriques contemporaines qui abordent les enjeux de l’espace et de la territorialité.

POL7512 SÉCURITÉ ET CONFLITS: ENJEUX CONTEMPORAINS (3cr.)
Analyse des causes, mécanismes et conséquences des conflits inter-étatiques (guerres, crises) et/ou intra-étatiques (guerres civiles, sécessions). Exploration de corpus théoriques pertinents.

POL7513 CITOYENNETÉ ET IDENTITÉS (3cr.)
Analyse d’enjeux contemporains en matière de citoyenneté ou d’identités au Canada. L’approche adoptée peut être historique ou thématique. L’objet d’étude spécifique sera présenté en début de session.

POL7514 CONSTITUTION ET INSTITUTIONS (3cr.)
Analyse d’enjeux constitutionnels ou institutionnels dans la politique canadienne contemporaine. L’objet d’étude spécifique sera présenté en début de session.

POL7515 FORCES POLITIQUES (3cr.)
Analyse d’enjeux contemporains touchant les forces politiques au Canada : partis, groupes et mouvements. L’objet d’étude spécifique sera présenté en début de session.

POL7516 POLITIQUES PUBLIQUES (3cr.)
Analyse d’enjeux contemporains en matière de politiques publiques au Canada. L’objet d’étude spécifique sera présenté en début de session.

POL7517 SÉMINAIRE INTER-PROFILS (3cr.)
Dans ce séminaire, animé par au moins deux professeurs, sera examiné un objet d’études qui fait appel à des compétences relevant d’au moins deux des profils de l’École (pensée politique, politique canadienne, relations internationales). L’objet d’étude spécifique sera présenté en début de session.

POL7519 CONSTRUCTIONS ET TRANSFORMATIONS DES ÉTATS ET DES RÉGIMES POLITIQUES (3cr.)
Étude des théories portant sur la construction historique des États et leurs transformations (adaptation dans un contexte de mondialisation; effondrement des États), de même que les régimes démocratiques et autoritaires et leurs transformations (transition, consolidation, effondrement), le tout dans une perspective comparée.

POL7520 ÉCONOMIE POLITIQUE COMPARÉE (3cr.)
Étude des approches théoriques portant sur l’évolution des rapports de force entre les États et les marchés dans les différentes régions du monde; sur l’économie politique des mouvements sociaux; sur les luttes politiques autour des inégalités socio-économiques. L’accent sera mis aussi bien sur l’économie politique des États en développement, que sur celle des pays fortement industrialisés.

POL7521 POLITIQUE COMPARÉE DES IDENTITÉS (3cr.)
Études des théories relatives aux identités (primordialisme, instrumentalisme, constructivisme) et du rôle des identités ethniques, nationales, religieuses, linguistiques et de genre dans les processus politiques (violence, accommodement identitaire, gestion de la diversité identitaire par l’État).

POL7522 THÈMES CHOISIS EN POLITIQUE COMPARÉE (3cr.)
POL.7766 SÉMINAIRE DOCTORAL DE MÉTHODOLOGIE (3cr.)
Réflexion approfondie sur les questions liées à la dimension méthodologique du travail de thèse. Modes d'investigation, organisation matérielle de la recherche, interprétation des données, appréciation des résultats, etc. Développement des connaissances nécessaires pour concevoir et formuler le projet de thèse. Ce séminaire est réservé aux étudiants du doctorat en science politique. Il est offert une fois par deux semaines sur deux sessions consécutives.

POL.7979 MÉMOIRE / RESEARCH PAPER (6cr.)

POL.7989 THÈSE DE MAÎTRISE / MA THESIS (12cr.)

POL.8100 DIRECTED READINGS (3cr.)

POL.8500 LECTURES DIRIGÉES (3cr.)

POL.9200 THEORIES AND PROBLEMS IN INTERNATIONAL POLITICAL ECONOMY (6cr.)
Evolution of theories and concepts in political economy as an approach to studying international affairs. Examination of various schools of thought. The comprehensive examination in the major field is held at the end of the course.

POL.9218 THEORIES AND PROBLEMS IN COMPARATIVE POLITICS (6cr.)
Study of the evolution of theories, concepts and methods in comparative politics as an approach to studying domestic politics and transnational influences, including states, regimes and institutions; the politics of identity; and political economy. The comprehensive examination in the major field is held at the end of the course.

POL.9219 THEORIES AND PROBLEMS IN CANADIAN POLITICAL ECONOMY (6cr.)
The fundamentals of political economy as an approach to studying political phenomena. Canada’s place in the global economy, intergovernmental relations, social movements and changes in the forms of federal intervention are among the topics covered. The comprehensive examination in the major field is held at the end of the course.

POL.9220 THEORIES AND PROBLEMS IN ANALYSIS OF POLITICAL IDEOLOGIES (6cr.)
Examination of key ideological movements (key questions, main concepts, major texts). Analysis of theories on the formation and transformation of ideologies. Contemporary ideological dynamics. The comprehensive examination in the major field is held at the end of the course.

POL.9310 COMPREHENSIVE EXAMINATION IN THE MAJOR FIELD

POL.9320 COMPREHENSIVE EXAMINATION IN THE MINOR FIELD

POL.9350 THESIS PROPOSAL

POL.9600 THÉORIES ET PROBLÈMES EN ÉCONOMIE POLITIQUE INTERNATIONALE (6cr.)
Évolution des théories et des concepts de l'économie politique en tant qu'approche servant à l'étude de la réalité internationale. Examen de différentes écoles de pensée. L'examen de synthèse dans le domaine majeur se tiendra à la fin du cours.

POL.9618 THÉORIES ET PROBLÈMES EN POLITIQUE COMPARÉE (6cr.)
Étude de l'évolution des théories, concepts et méthodes de la politique comparée en tant qu’approche servant à l’étude de phénomènes politiques internes aux États ainsi qu’à l’étude des influences transnationales, notamment : États, régimes et institutions : identités en politique : économie politique. L'examen de synthèse dans le domaine majeur se tiendra à la fin du cours.

POL.9619 THÉORIES ET PROBLÈMES EN ÉCONOMIE POLITIQUE CANADIENNE (6cr.)
Fondements de l'économie politique en tant qu'approche servant à l'étude des phénomènes politiques internes. Le Canada dans l'économie mondiale, les relations intergouvernementales, les mouvements sociaux et l'évolution des formes d'intervention de l'État fédéral. L'examen de synthèse dans le domaine majeur se tiendra à la fin du cours.

POL.9620 THÉORIES ET PROBLÈMES EN ANALYSE DES IDEOLOGIES POLITIQUES (6cr.)
Les principaux mouvements idéologiques: problématiques, concepts et œuvres. Analyse des théories de la formation et de la transformation des idéologies. La dynamique contemporaine des idéologies. L'examen de synthèse dans le domaine majeur se tiendra à la fin du cours.

POL.9710 EXAMEN DE SYNTHÈSE DU DOMAINE MAJEUR

POL.9720 EXAMEN DE SYNTHÈSE DU DOMAINE MINEUR

POL.9750 PROJET DE THÈSE

POL.9999 THÈSE DE DOCTORAT / PhD THESIS
Population Health (PhD)

The University of Ottawa's faculties of Health Sciences and Medicine, in collaboration with the faculties of Social Sciences, and Law (Common Law Section) and the Telfer School of Management offer a transdisciplinary doctoral program in population health, under the auspices of the Faculty of Graduate and Postdoctoral Studies (FGPS). The program is modeled around a framework which encompasses population health issues, determinants and causes of illness, design of multi-component interventions, health care delivery systems, and health policy. Unique in Canada, the program draws on a wide range of disciplines, both basic and applied. It brings together the insights of social, biological, clinical, organizational, and political sciences; and the strengths of quantitative and qualitative methods. Its transdisciplinary approach recognizes the inherent complexity of many health problems and seeks to assemble and mobilize all pertinent scientific and scholarly disciplines.

The population health doctoral program is closely linked to the University's Institute of Population Health, which brings together ten faculties within the University (Graduate and Postdoctoral Studies, Medicine, Health Sciences, Science, Social Sciences, Law (Common Law Section), Telfer School of Management, Engineering, Arts, and Education). The Institute is composed of Telfer School of Management, Engineering, Arts, and Education. The Institute is composed of fourteen research centres: Canadian Cochrane Network and Centre, Centre for Global Health, Centre for Multiple Interventions, Centre for Research on Educational and Community Services, CIET, Cochrane Health Equity Field and Campbell Equity Methods Group, Cochrane Musculoskeletal Group, EPOC, Family Medicine, GAP-Santé, Immigrant & International Health, McLaughlin Centre for Population Health Risk Assessment, Réseau de recherche interdisciplinaire sur la santé des francophones en situation minoritaire (RISf), Women’s Health Research Unit.

The doctoral program is designed to meet the needs of a wide variety of candidates, such as health professionals; epidemiologists and biostatisticians; social and behavioural scientists, health administrators, and lawyers with an interest in population health; environmental scientists interested in the health sector; biologists with an interest in human population health. Students are encouraged to apply the science of their individual background disciplines to issues of population health. They acquire a broad knowledge of population health through courses and the comprehensive examination, and pursue in-depth study in an area of specialization within the population health framework. The four fields of the program are the following: health determinants, global and local health inequities, health interventions and policies, and health risk and resiliency.

The population health doctoral program participates in one interdisciplinary initiative: the graduate diploma in health services and policy research. For information on the diploma program, please check under that heading in the graduate program list on FGPS website.

Population Health PhD Interdisciplinary Program

1. Health determinants
2. Global and local health inequities
3. Health interventions and Policies
4. Health Risk and Resiliency

Health determinants
This field studies the unequal distribution of health status of a population by examining the multiple determinants and their interactions as social, political, physical environments; personal and collective health practices; individual capacity and coping skills; human biology; early childhood development; and health services.

Global and local health inequities
The study of health inequities, defined as disparities in health status that are avoidable and unfair, focuses on the higher burden of disease in developing countries, and on the impact of globalization processes on health within and amongst all countries.

Health Interventions and Policies/Interventions et politiques de santé
Focus on the examination of multi-level and intersectoral interventions to address population health issues and to reduce inequalities and inequities in health. The filed concentrates on the elaboration, planning, implementation and evaluation of different levels of interventions and policies.

Health Risk and Resiliency
Analyses health risks from a broad spectrum of hazards, including those of technological (toxicants), environmental (extreme weather events), infectious (SARs), and social origin (bioterrorism). Examines how populations and decision makers understand and respond to risks, with particular attention to risk assessment, communication, and management.

Admission

Students are admitted under the general regulations of the Faculty of Graduate and Postdoctoral Studies. The minimum requirement is a master's degree, with an A- or equivalent average, in a field related to population health (for example, epidemiology, human kinetics, audiology, physiotherapy, nursing, law, environmental studies, sociology, psychology, biology). An applicant whose master’s degree did not include a thesis must demonstrate the ability to undertake an independent research project.

Several key areas of knowledge are required of applicants: health sciences, social or behavioural sciences, advanced research methods, graduate level statistics and epidemiology. Those who are missing three or more of these key areas must successfully complete prerequisite courses prior to admission. Students deficient in two or fewer of these knowledge areas may be offered the opportunity to take a course or courses as co-
requisites. These courses would be additional to the 18 credits required of all students in the program.

Applicants must have an active knowledge of either English or French, and a passive knowledge of the other language. Passive knowledge is defined as both oral and reading comprehension ability. As part of the application process, students are required to complete a second language test. For international students, the Faculty of Graduate and Postdoctoral Studies English language requirements also apply.

### Language of the Program

The core courses are offered in a bilingual format which requires students' passive understanding of both official languages. Students may express themselves orally in either official language. Several of the suggested elective courses are offered in both English and French. In addition, students may be allowed to take directed readings courses (a maximum of two) in either language, depending on the availability of professors. In accordance with University of Ottawa regulations, all students have the option of writing exams, course assignments and theses in either English or French.

### Program Requirements

#### Degree Requirments

1. Students must successfully complete a minimum of 18 graduate credits of course work as follows:

   Compulsory courses: nine credits

   POP8910 PARADIGMES SCIENTIFIQUES EN SANTÉ DES POPULATIONS / SCIENTIFIC PARADIGMS IN POPULATION HEALTH (3cr.)

   POP8920 MÉTHODES DE RECHERCHE EN SANTÉ DES POPULATIONS / INVESTIGATIVE METHODS IN POPULATION HEALTH (3cr.)

   POP8930 INTERVENTIONS EN SANTÉ DES POPULATIONS / POPULATION HEALTH INTERVENTIONS (3cr.)

   and

   Electives: nine credits

   Nine other graduate credits related to the student's area of specialization. These are assigned following deliberations by the graduate program committee. Any prerequisites must be completed prior to taking the assigned electives.

2. Residency (full-time registration) for six sessions (two years)

   POP9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION

   POP9997 PROJET DE THÈSE / THESIS PROPOSAL

   POP9999 THÈSE DE DOCTORAT / PhD THESIS

### Courses

**POP8900 ÉTUDES DIRIGÉES EN SANTÉ DES POPULATIONS / DIRECTED STUDIES IN POPULATION HEALTH (3cr.)**

Cours traitant des domaines de connaissance stipulés comme corequis pour le programme de doctorat en santé des populations. Le choix du sujet nécessite l'approbation du comité du programme. Préalable: Approbation de l'unité scolaire. / Course content to cover one of the defined corequisite knowledge areas for the Population Health PhD Program. Program approval required for topic selection. Prerequisite: Approval of the Academic Unit.

**POP8910 PARADIGMES SCIENTIFIQUES EN SANTÉ DES POPULATIONS / SCIENTIFIC PARADIGMS IN POPULATION HEALTH (3cr.)**

Cours traitant des épistémologies qui s'offrent à une science de la santé des populations. Examen du processus d'élaboration de théories et de leur application selon les disciplines pertinentes. Étude des concepts, modèles théoriques, philosophies et raisonnement causal dans le domaine de la santé des individus et des populations. Cours illustré par des discussions sur les inégalités sociales et les facteurs déterminants de la santé / Exploration and discussion of alternative foundations for a science of population health. Review of theory construction and application in contributing disciplines. Concepts, theoretical models, philosophies and causal thinking in individual and population health. Themes to be illustrated through a discussion of determinants and inequalities in health.
POP9820 MÉTHODES DE RECHERCHE EN SANTÉ DES POPULATIONS / INVESTIGATIVE METHODS IN POPULATION HEALTH (3cr.)
Méthodes de recherche utilisées selon les disciplines : points communs et différences. Critique de l'information actuelle sur la santé des populations; intégration de méthodes quantitatives et qualitatives pour analyser les questions complexes de santé des populations; stratégies pour incorporer les données à la planification et à la prise de décision centrées sur les résultats. Préalable : POP 8910 et corequis POP 8930 / Investigation of research methods used by contributing disciplines, their commonalities and distinctions. Critique of existing population health information; integration of qualitative and quantitative methods for analyzing complex population health issues; strategies for incorporating results into evidence-based planning and decision-making. Prerequisite: POP 8910 and corequisite POP 8930.

POP9830 INTERVENTIONS EN SANTÉ DES POPULATIONS / POPULATION HEALTH INTERVENTIONS (3cr.)
Analyse des modes d'intervention qui peuvent avoir un effet sur la santé des populations. Influences du contexte sur les méthodes de promotion de la santé, prévention des maladies et gestion des risques pour les individus et les populations ainsi que leurs interactions. Établissement d'équipes interdisciplinaires et de partenariats intersectoriels. Changements durables dans les systèmes, y compris la réforme des soins de santé et le développement de politiques. Préalables : POP 8910 et corequis POP 8920 / Examination of approaches to influence population health. Contextual influences on, and interactions between individual and population health approaches for health promotion, disease prevention, and risk management. Process for establishing transdisciplinary teams and intersectoral partnerships. Sustainable systems change including health care reform and policy development. Prerequisites: POP 8910 and corequisite POP 8920.

POP9840 STAGE EN POLITIQUE DE SANTÉ DES POPULATIONS / POPULATION HEALTH POLICY PRACTICUM (3cr.)
Stage de trois mois permettant aux étudiants d'être en contact et d'avoir des discussions en classe avec des décideurs au niveau des politiques nationales; stage se déroulant habituellement sous la responsabilité de deux mentors, un chercheur associé à l'Université et un décideur. Examen des préalables et des procédés de formulation pour la mise en place et l'évaluation des politiques de santé des populations. Analyse et dépouillement des résultats de la recherche et communication aux décideurs clés des conclusions pertinentes. Préparation et critique de notes de synthèse, présentation d'un séminaire et rédaction d'un rapport évalué par le chercheur associé à l'Université. Préalables : POP 8910, POP 8920 et POP 8930 / Three-month practicum providing opportunities for interactions and class discussions with policy makers in a national policy setting, usually with co-mentors, one being a university-based researcher, the other a policy maker. Examination of prerequisites and processes for formulating, implementing and evaluating population health policies. Analysis and distillation of research findings and communication of relevant conclusions to key policy makers. Preparation and critique of briefing notes, presentation of a seminar and submission of a report to be evaluated by the university-based researcher. Prerequisites: POP 8910, POP 8920 and POP 8930.

POP9850 THÈMES CHOISIS EN SANTÉ DES POPULATIONS / SPECIAL TOPICS IN POPULATION HEALTH (3cr.)
Thèmes variables selon les intérêts des étudiants et des professeurs. Préalable : Approbation de l'unité scolaire. / Topics vary depending on student and professorial interests. Prerequisite: Approval of the Academic Unit.

POP9997 PROJET DE THÈSE / THESIS PROPOSAL
Les étudiants, encadrés par leur directeur et leur co-directeur (s'il y a lieu) et un comité approuvé par la direction du programme, rédigent leur projet de thèse, le présentent et défendent oralement. Après la réussite de la défense orale, ils doivent obtenir l'approbation du comité d'éthique (si nécessaire) avant d'entamer la collecte de données. Règle générale, le projet de thèse est défendu vers le milieu de la deuxième année et au plus tard à la fin de la sixième session d'inscription au programme. Un étudiant qui échoue à la première tentative peut se voir accorder la permission de la répéter une seule fois. L'échec de la deuxième tentative mène à une note NS (non satisfaisant) et au retrait de l'étudiant du programme. Préalable : POP 9998. / Students write their thesis proposal under the guidance of their thesis supervisor and co-supervisor if applicable and then present and defend it orally. After passing the oral defence, student must obtain ethics approval (if required) before proceeding to data collection. The proposal will normally have been defended towards the middle of the second year and, at the latest, by the end of the sixth session of registration in the program. A student who is unsuccessful on the first attempt may be allowed to repeat it once. Failure on the second attempt leads to a grade of NS (not satisfactory) and withdrawal from the program. Prerequisite: POP 9998.

POP9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION
Préalables : POP 8910, POP 8920 et POP 8930. / Prerequisites: POP 8910, POP 8920 and POP 8930.

POP9999 THÈSE DE DOCTORAT / PhD THESIS
Préalable : POP 9997. / Prerequisite: POP 9997.

Cours au choix / Electives
La liste qui suit présente une sélection de cours de 2e et 3e cycles pouvant être choisis par les étudiants du programme. D'autres cours peuvent être ajoutés à condition d'obtenir la permission du Comité de programme. Pour une liste complète des cours approuvés, veuillez consulter le site internet du programme.

The following graduate courses can be taken by students in the population health program. Other courses may be added with the permission of the program committee. For a complete list of approved courses, please consult the program website.

APA5104 SPORT AND PHYSICAL ACTIVITY IN CANADIAN LIFE (3cr.)
Sociological analysis of sport and physical activity. Socio-historical determinants of sport and physical activity. Emphasis on the organizational structure of sport and physical activity, ideologies, and current practices. Different themes may also be examined: sociology of sport organizations, social movements, and social problems.

APA5305 POLICY ANALYSIS OF SPORT AND PHYSICAL ACTIVITY IN CANADA (3cr.)
Critical examination of the role of government in policy development. An analysis of sport and physical activity policies as related to amateur and professional sport organizations in Canada as well other organizations involved in sport and physical activity in the public and private sectors.

**APA5309 PERFORMANCE ENHANCEMENT, QUALITY LIVING AND MENTAL TRAINING CONSULTATION (3cr.)**
Presentation of current material in applied sport psychology, mental training consulting, and performance and life enhancement. Discussion of mental skills used at developmental and high performance levels. Application of mental skills related to personal excellence.

**APA5504 SPORT ET ACTIVITÉ PHYSIQUE DANS LA VIE CANADIENNE (3cr.)**

**APA5705 POLITIQUE CANADIENNE EN MATIÈRE DE SPORT ET D'ACTIVITÉ PHYSIQUE (3cr.)**
Analyse critique du rôle de l'État dans le développement des politiques en matière de sport et d'activité physique. Analyse de ces politiques dans le contexte des différents organismes de sport amateur et professionnel au Canada de même que des autres organismes du secteur public et privé ouvrant dans le domaine du sport et de l'activité physique.

**APA6905 THÈMES CHOISIS / SELECTED TOPICS (3cr.)**
Analyse critique et discussion des recherches récentes publiées dans le domaine de l'intervention et de la psychologie du sport, de l'activité physique et de la santé. A critical analysis and discussion of recent theoretical and empirical papers presented and published in intervention as well as in psychology of sport, physical activity and health.

**DCL5305 FEMINIST ANALYSIS OF LAW (3cr.)**
Exploration of feminist perspectives, theories and themes and the application of these to particular problems or issues. Development of techniques for analyzing social meaning of law.

**DCL5505 ANALYSE FÉMINISTE DU DROIT (3cr.)**
Statut juridique, droits et obligations des femmes dans les domaines de la santé, de la famille, du travail, de la criminalité, de la fiscalité, du commerce, etc. Analyse critique du droit à partir d'une perspective féministe. Étude des différentes théories féministes du droit.

**DCL5721 PERSPECTIVES FÉMINISTES DU DROIT (3cr.)**

**DCL7306 LEGAL PERSPECTIVES ON CYBERFEMINISM (3cr.)**
This course analyses issues relating to application of feminist principles to the legal regulation of communication technologies. Topics covered include the gendered dynamics of networked capitalist society; women's relationships with communication technologies; technology's potential impact on equality for women; and questions surrounding whether and how to legally regulate communication technologies.

**ECO5136 (ECON 5307) LABOUR ECONOMICS (3cr.)**
Selected topics in the areas of human resources, wage determination and Canadian labour policy. The topics will vary from year to year depending on the interests of the professor and the students. Prerequisites: ECO 3152, ECO 3153.

**ECO5556 ÉCONOMIE DU TRAVAIL (3cr.)**
Thèmes choisis dans les domaines des ressources humaines, la détermination des salaires et la politique économique canadienne concernant le marché du travail. Les sujets traités sont appelés à varier d'une année à l'autre selon les intérêts du professeur et des étudiants.

**ECO6108 ECONOMIC SYSTEM DESIGN (3cr.)**
Deterministic dynamic optimization methods: economic and managerial applications of the maximum principle of Pontryagin and of dynamic programming. Discrete time stochastic dynamic optimization methods: Bayesian and Markovian decision theory, measures of risk-aversion and risk, portfolio theory, elements of search theory, applications of discrete time stochastic control to economics.

**ECO6508 ANALYSE ET CONTRÔLE DES SYSTÈMES ÉCONOMIQUES DYNAMIQUES (3cr.)**
Méthodes déterministes d'optimisation dynamique : applications économiques et managériales du principe du maximum de Pontryagin et de la programmation dynamique. Méthodes stochastiques d'optimisation dynamique temps discret : théorie de la décision Bayésienne et Markovienne, mesures de l'aversion au risque et du risque, théorie des portefeuilles, éléments de théorie de l'aléatoire, applications économiques de la théorie du contrôle stochastique en temps discret.

**EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)**
Exploration of the concepts and strategies, methods of instruction in health education; examination of how instruction supports student learning.

**EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION (3cr.)**
Examination of theory for current practices related to curriculum design in health professions.

**EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION (3cr.)**
Study of the impact of computer technology on communication and instructional techniques for health professions education; exploration of distance education, on-line learning, and low and high fidelity simulation.
EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
Exploration of the assessment formats used to evaluate the domains of clinical competence in health care professional training at both the undergraduate and postgraduate levels; analysis of written and oral examinations, oral and performance-based testing.

EDU5399 DEVELOPMENT OF ASSESSMENT AND EVALUATION INSTRUMENTS (3cr.)
Skill and performance assessment; strategies for developing assessment instruments; interpretation and communication of evaluation results.

EDU5602 STRATÉGIES D’ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ (3cr.)
Études des concepts, des stratégies et des enjeux de la formation des professionnels de la santé. Examen de la manière dont les pratiques d'enseignement favorisent l'apprentissage des étudiants.

EDU5661 CONCEPTION DE PROGRAMMES EN ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ (3cr.)
Étude des fondements et des pratiques en matière de conception de programmes d'études pour les professionnels de la santé.

EDU5686 TECHNOLOGIE EN ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ (3cr.)
Étude de l'impact de la technologie de l'information sur la communication et des stratégies d'enseignement dans la formation des professionnels de la santé. Exploration de l'apprentissage à distance, de l'apprentissage en ligne ainsi que des simulations à basse et haute-fidélité.

EDU5698 STRATÉGIES D’ÉVALUATION DES APPRENTISSAGES DANS LE DOMAINE DE LA SANTÉ (3cr.)
Étude des modèles utilisés pour évaluer les domaines de compétence clinique au cours de la formation des professionnels de la santé, tant au niveau des études de premier cycle que des études supérieures. Analyse des examens écrits et oraux et d'épreuves portant sur l'accomplissement de tâches.

EDU5699 ÉVALUATION DE PROGRAMMES (3cr.)

EDU5799 ÉLABORATION D’INSTRUMENTS D’ÉVALUATION (3cr.)
Évaluation des compétences polyvalentes. Étude des stratégies d'élaboration d'instruments de mesure. Interprétation et diffusion des résultats d'évaluation.

EDU6191 METHODS AND INTERPRETATION OF QUANTITATIVE RESEARCH II (3cr.)
Planning, analysis and interpretation of quantitative research within experimental and quasi-experimental frameworks; application of analysis of variance, analysis of covariance and techniques of linear regression (explanation, prediction) to educational contexts. Prerequisite: EDU 5191 or equivalent.

EDU6591 MÉTHODES ET INTERPRÉTATION EN RECHERCHE DE TYPE QUANTITATIF II (3cr.)
Planification, analyse et interprétation de recherches de type quantitatif dans le cadre des plans expérimentaux et quasi-expérimentaux. Application des procédures d'analyse de la variance, d'analyse de la covariance et de la régression lineaire multiple à des problèmes typiques en éducation. Préalable : EDU 5591 ou l'équivalent.

EDU7190 QUALITATIVE RESEARCH I (3cr.)
Critical review of fundamental aspects of qualitative research in education: approaches, characteristics and strategies.

EDU7396 TECHNIQUES OF DOCUMENT ANALYSIS IN EDUCATIONAL RESEARCH (3cr.)
Study of educational documents and approaches to textual research including historical criticism, discourse analysis and narrative theory.

EDU7590 RECHERCHE QUALITATIVE I (3cr.)
Étude des aspects fondamentaux de la recherche qualitative en éducation : approches, caractéristiques et stratégies.

EDU8190 QUALITATIVE RESEARCH II (3cr.)
Examination of methodological, organizational, ethical and political issues within qualitative research.

EDU8590 RECHERCHE QUALITATIVE II (3cr.)
Examen des questions méthodologiques, organisationnelles, déontologiques et politiques liées à la recherche qualitative.

EPI5143 EPIDEMIOLOGICAL RESEARCH USING LARGE DATABASES (3cr.)
A practical approach to using administrative and other large databases for epidemiological research. Basic and advanced statistical techniques to manipulate, link, and examine datasets; large health surveys; coding systems; data warehouses; data mining; birth and death registries; use of census data; linking postal codes to geographical files; geographical information systems. Extensive use of SAS as the primary application package. Prerequisite: Permission of the program director.

EPI5180 INTERNATIONAL HEALTH AND DEVELOPMENT (3cr.)
Presentations and seminars on philosophy of international development, international health and demographics, determinants of health, international health and human rights and humanitarian emergencies, tropical diseases and emerging pathogens, aboriginal health issues, impact of new health technologies on international health, cross cultural communication, management methods for international health. Seminar presentation required. Prerequisite: Permission of the
PAP6121 PUBLIC ADMINISTRATION: COORDINATION AND CONSISTENCY
Study of the theoretical and empirical issues related to ethics in the public sector, analysis of the literature on the philosophical and political foundations of ethical methodological and theoretical contributions.

PAP6111 THEORIES OF PUBLIC POLICY
whose progress is deemed unsatisfactory are required to withdraw.

The program offers two fields or concentrations in public administration: public management and public policy. These fields are not mutually

CONTEMPORARY PSYCHOLOGY

PSY7908 PSYCHOLOGIE CLINIQUE MULTICULTURELLE / MULTICULTURAL CLINICAL PSYCHOLOGY
Présentation de la recherche empirique qui porte sur l'adaptation des familles aux transitions, à partir de la perspective du cycle de vie familial,

PSY7190 SEMINARS IN PSYCHOLOGY II

PSY7101 CAUSAL MODELING IN PSYCHOLOGICAL RESEARCH
behaviour. Study of its development.

PSY6544 APPLICATIONS OF MICRO-INFORMATIQUE À LA PSYCHOLOGIE EXPÉRIMENTALE HUMAINE

Tour d'horizon des problèmes fondamentaux liés à la légitimité de la pratique de la psychologie scientifique. Questions théoriques relevant de

PSY6147 SCHOOL PSYCHOLOGY

research - teaching - problem solving - social interactions. Concepts of learning difficulties; elaboration and evaluation of educational and teaching strategies.

PSY5533 Méthodes de recherche clinique

Principales théories contemporaines de la personnalité, de la psychanalyse et la psychologie analytique jusqu'aux approches phénoménologiques et existentielles, le néobehavioriste, sociale, dialectique, et autres.

PSY5202 PSYCHODIAGNOSTIC ASSESSMENT OF ADULTS AND CHILDREN

- Cognitive Psychology;

and
Electives : nine credits
Nine other graduate credits related to the student's area of specialization. These are ... forms: multi-level coordination, coordination across the public, private and community sectors, horizontal and vertical

Use of micro-computers in behavioural data acquisition and file organization for purposes of statistical

EPH5181 POPULATION HEALTH RISK ASSESSMENT I (3cr.)
National and international policy frameworks for health risk assessment and management, including determinants of population health; epidemiological, clinical, and toxicological methods for identifying health hazards; population health surveillance; methods of population health risk assessment; regulatory, economic, advisory, and technological approaches to population health risk management; community action and social marketing; selection of risk management strategies; risk perception and risk communication. Lectures and case studies. Preparation of term paper on a current issue in population health risk assessment. Co-requisites: EPI 5240 and EPI 5242 or equivalents. Exclusion: PHR 5181. Prerequisite: Permission of the program director.

EPH5183 APPROACHES TO COMMUNITY/PUBLIC HEALTH PROGRAM EVALUATION (3cr.)
Critical review and practical application, in collaboration with a health care community partner, of approaches to community and public health program evaluation. Community partners include representatives of the community agencies whose mandate or remit includes evaluation of their community/public health program(s). Evaluation based on student’s ability to (a) identify most appropriate approaches to evaluation, (b) critically review strengths and limitations of chosen approaches, (c) apply the selected approach appropriately to examine and quantify impact of the program(s).

EPH5188 HEALTH TECHNOLOGY ASSESSMENT (3cr.)
Definition and scope of health technology assessment; needs assessment; practice variations; use of administrative databases; evaluation of diagnostic tests; development and use of practice guidelines and clinical prediction rules; health technology assessment in the developing world. Lectures, seminars and case studies. Prerequisite: Permission of the program director.

EPH5189 HEALTH ECONOMIC EVALUATION (3cr.)
Brief overview of economics and health economics; examination of analyses used in epidemiologic and clinical research: cost-effectiveness analysis, cost-minimization analysis, cost-utility analysis (including determination of utilities), cost-benefit analysis, cost of illness studies and use of economic methods in priority-setting. Lectures and seminars. Written report required, presenting an economic evaluation or a detailed review of the economic literature in a particular area. Prerequisite: Permission of the program director.

EPH5212 COMMUNICABLE DISEASE EPIDEMIOLOGY (3cr.)
Consideration of the specialized methods used in the investigation and control of communicable disease. Detailed review of the epidemiology of the major communicable diseases. Lectures, presentations by invited experts, and student presentations. Prerequisite: A basic knowledge of epidemiologic methods and permission of the program director.

EPH5213 CHRONIC DISEASE EPIDEMIOLOGY (3cr.)
Review of the descriptive epidemiology (distribution, trends, risk factors) of the major chronic diseases, with emphasis on circulatory diseases, cancer, injuries, and mental health problems. Approaches to primary and secondary prevention. Lectures, presentations by invited experts, and student presentations. Prerequisite: Permission of the program director.

EPH5240 EPIDEMIOLOGY I - INTRODUCTORY EPIDEMIOLOGY (3cr.)
An overview of epidemiology - uses, methods, and data sources. Descriptive and analytical epidemiology. Lectures and assignments in which students will work with data and will gain experience in critically reviewing epidemiologic literature. Prerequisites: EPI 5242 (Biostatistics I) or equivalent; may be taken concurrently with the permission of the program director.

EPH5241 EPIDEMIOLOGY II - ADVANCED EPIDEMIOLOGY (3cr.)
This second level epidemiology course covers major principles of design, analysis, and interpretation of epidemiologic research. Material presented in a quantitative manner. Prerequisites: EPI 5240 (Epidemiology I) and EPI 6276 (Quantitative Methods in Epidemiology); EPI 6276 may be taken concurrently with the permission of the program director.

EPH5242 BIOSTATISTICS I (3cr.)
Building on the students’ prior background in statistics, this course explores the use of mathematical models in statistical data analysis. Topics include analysis of categorical data, choice of linear vs non-linear models, estimation of parameters, testing of hypotheses by parametric and non-parametric methods, analysis of variance, linear and logistic regression models, introduction to survival analysis. This course may also be offered in French: EPI 5642. Prerequisite: Basic course in Statistics and permission of the program director.

EPH5251 MEASUREMENT IN HEALTH (3cr.)
An overview of measurement theory as applied to health measurement; a review of existing measurements of health status in clinical and research applications, plus practical experience of how to develop and test new measurement methods. Prerequisite: Permission of the program director.

EPH6178 INTERVENTION STUDIES IN HEALTH RESEARCH (3cr.)
Practical introduction to intervention studies in the health field, including experimental and quasi-experimental studies and clinical and community trials. Question formulation; conduct of literature reviews; design issues (choice of research design and study population, implications for validity of results); ethical issues; instrument development; data collection and management; approach to data analysis; report writing and presentation. Examples drawn from both population and clinical research. Development and presentation of proposal for an intervention study. Prerequisite: Permission of the program director.

EPH6181 SOCIAL ASPECTS OF EPIDEMIOLOGY (3cr.)
This course will analyze the way in which behavioural, social and emotional forces influence patterns of disease. The links between these processes and
physiological changes; inferences on how best to intervene to modify "lifestyle" risk factors; recent prevention and health promotion trials will be reviewed. May also be offered in French: EPI 6581. Prerequisite: Permission of the program director.

EPI6188 SYSTEMATIC REVIEWS AND META-ANALYSIS (3cr.)
Approaches to the systematic review of evidence in the health sciences. Searching for the evidence, selection of studies, quality and validity of included studies, heterogeneity, statistical analysis and other quantitative and qualitative methods. Students to be required to do a meta-analysis on a topic of their own interest. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6189 CLINICAL DECISION MAKING (3cr.)
Theories of decision making and their validity in health care applications. Comparison of decision support methods: decision analysis, utility assessment techniques, patient aids, practice guidelines, care maps. Methods for developing, evaluating, and disseminating decision support tools in clinical practice. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6276 QUANTITATIVE METHODS IN EPIDEMIOLOGY (3cr.)
Application of advanced topics in statistical methods for epidemiologic data analysis: logistic regression and discriminant analysis, Poisson regression, contingency table analysis (including log-linear modelling), time series, survival analysis, Cox regression with and without time-dependent covariates, principle components and factor analysis. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

EPI6278 ADVANCED CLINICAL TRIALS (3cr.)
Lectures and laboratories on the detailed principles, design, methodology and statistical techniques associated with clinical trials. Emphasis on emerging topics and procedures. Prerequisites: EPI 5242 and EPI 6178 and permission of the program director.

EPI6281 POPULATION HEALTH RISK ASSESSMENT II (3cr.)
Scientific methods for population health risk assessment; characterization of population health risks, and attendant uncertainties; risk modeling; combining risk information from different sources; risk acceptability; principles of risk management decision making; evidence-based risk management policy development; audit and evaluation of risk interventions; priority setting; case studies on current population health risk assessment issues. Term paper on a current methodological issue in population health risk assessment required. Prerequisites: EPI 5240, EPI 5242, and EPI 5181, or equivalents and permission of the program director.

EPI6283 PHARMACOEPIDEMIOLOGY (3cr.)
Issues in and methodology of pharmacoepidemiology. Discussion on the biases and confounders possible at every stage of a pharmacoepidemiological study, in drug utilization review, drug effectiveness, risk/benefit assessment and other topics. This course will normally be given every second year. Prerequisites: EPI 5240 or equivalent and permission of the program director.

ERG5522 OCCUPATION HUMAINE I (1.5cr.)

ERG5523 L’ENVIRONNEMENT PHYSIQUE, SOCIAL, CULTUREL ET INSTITUTIONNEL (1.5cr.)

ERG5721 DIMENSIONS DE LA PERSONNE (3cr.)
Étude du développement de l’être humain de la naissance à la mort, dans ses dimensions physiques, cognitives, perceptuelles, affectives, ainsi que de l’importance relative de chacune de ces dimensions pour l’activité humaine. Concomitante: ERG 5511.

ERG5731 ATTEINTES À LA SANTÉ PHYSIQUE DES PERSONNES (3cr.)
Analyse des processus pathogéniques qui portent atteinte à la santé physique ainsi que des problèmes fonctionnels connexes.

ERG5732 ATTEINTES À LA SANTÉ MENTALE DES PERSONNES (3cr.)
Analyse des processus pathogéniques qui portent atteinte à la santé mentale ainsi que des problèmes fonctionnels connexes.

HSR6110 SEMINAR IN HEALTH SERVICES AND POLICY RESEARCH (3cr.)
Discussion on the varying perspectives of epidemiology, nursing, health care management and population health and their relevance for the development of effective health services and policy research. Graded S(satisfactory)/NS (not satisfactory).

HSR6120 KNOWLEDGE TRANSFER FOR HEALTH SERVICES AND POLICY RESEARCH (3cr.)
Critical appraisal of clinical practice guidelines, systematic reviews and published research for analysis of the evidence supporting the transfer of knowledge in a health care facility, professional organization, or an academic institution. Design of innovative transfer strategies (e.g. consumer, practitioner, multi-dimensional organizational supports). Methodological issues related to knowledge transfer including conceptualization, design and evaluation. Practical issues articulated by invited guests from national, provincial and regional health care organizations. Student opportunity to select a topic of their choice and develop a pragmatic intervention. Prerequisites: Completion of a graduate research design course or permission of the program director.

HSR6130 CANADIAN HEALTH CARE SYSTEM: ORGANIZATION AND POLICY (3cr.)
Evolution of the Canadian health care sector, overview of its organization, governance structures, financing and delivery of services. Examination of systems in other industrialized countries with a view to drawing lessons relevant to Canada, and of policy-making processes and outcomes in health care. Discussion on specific thematic issues such as rural health, equity and access, population health and health care reform in the context of policy, organization and delivery.

**HSR6140 WOMEN’S HEALTH RESEARCH, POLICY AND SERVICES (3cr.)**
Overview of approaches and issues in women’s health research, policy and services in Canada. Contributions of the women’s health movement in Canada and internationally. Critical analysis of policy and service responses to women’s health, including impact of citizen engagement, empowerment and equity.

**MHA6212 GOVERNANCE AND ETHICAL MANAGEMENT IN HEALTH CARE ORGANIZATIONS (1.5cr.)**
Governance models for health care organizations. Definition, resolution and handling of ethical problems of administrators, professionals and researchers in health organizations. Reconciliation of conflicting interests of the stakeholders according to ethical principles.

**MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY (3cr.)**
Provides a survey of epidemiology; viewed through a "population health" lens. Course will provide a survey of: measures of health status (including measures of mortality and morbidity); and measures of association. The basic epidemiological designs (observational, case-control, cohort, time series, and randomized control studies) will be reviewed. The factors affecting the precision and validity of these studies (e.g., statistical power, confounding, effect modification, and causality criterion) will be reviewed. Emphasis will be placed on equipping students with an ability to critically evaluate clinical, epidemiological, and health administration evidence in support of decisions. Guidance will also be provided to help select appropriate outcome indicators and critically evaluate interventional programs. Students will get hands on experience computing effect measures (e.g., odds ratios) from study results, as well as with assessing the precision and validity of results. **Prerequisite: MBA 5300**

**MHA6351 HEALTH ECONOMICS (3cr.)**
The course provides a macro-economic perspective on the demand and supply of healthcare, highlighting the market failures that are archetypical within the health domain. It contrasts Welfarist and Extra-Welfarist perspectives on resource allocation (contrasting technical versus allocative efficiency). The course will also review cost-benefit, cost-effectiveness, and cost-utility approaches of evaluating health interventions; and in so doing the course will provide students an opportunity for hands-on computation (workshops). The course will also consider the issue of equity and methods for incorporating equity into health economic evaluations.

**MHA6360 HEALTH CARE IN CANADA - OVERVIEW (3cr.)**

**MHA6370 INTRODUCTION TO HEALTH INFORMATICS (3cr.)**
Overview of current developments, issues and challenges in the emerging field of health informatics. Historical development as well as basic foundations of health informatics including theoretical, methodological and ethical/legal underpinnings will be studied. Critical examination of information management principles and methods in Canadian health care organizations both public and private. Emerging applications in health informatics as well as approaches to understanding and evaluating these applications. Identification of the issues which CIO’s face in their attempts to provide the right information to the right people, at the right time.

**MIC8122 ADVANCED TOPICS IN IMMUNOLOGY (3cr.)**
Focus on cellular immunology, including thymocyte maturation, induction and regulation of cellular responses, immune responses to pathogens, immunological memory, tolerance. Student assessments to be conducted by two methods: Weekly assessment of student presentations and participation in class discussions; assessment of take-home assignments such as completion of a research grant on a topic covered in the course. To be offered alternate years subject to sufficient demand. **Prerequisite: MIC 5124 or equivalent.**

**MIC8227 ADVANCED TOPICS IN MOLECULAR BIOLOGY OF HUMAN DISEASES (3cr.)**
Topics to include structure and function of the human genome, i.e. genetic and physical mapping of the human genome, the human genome project, disease gene cloning, and the genetics of host resistance. Topics on selected diseases will focus on pathogenetic mechanisms, genetic diagnostics and gene therapy. Offered alternate years; alternates with BCH 8103. **Prerequisite: BPS 4101 or equivalent with the permission of the instructor.**

**MIC8226 ADVANCED TOPICS IN VIROLOGY (3cr.)**
An in-depth presentation of current topics in virological research. Topics will vary from year to year. To be offered every alternate year subject to sufficient demand. **Prerequisite: MIC 5326 or equivalent.**

**MIC8238 ADVANCED TOPICS IN BACTERIOLOGY - MECHANISMS OF PATHOGENESIS (3cr.)**
Recent advances and current topics in selected areas of bacteriology with emphasis on mechanisms of pathogenesis. Students present and discuss journal articles. Offered every alternate year subject to sufficient demand. **Prerequisite: MIC 5224 or its equivalent.**

**MIC8401 ADVANCED TOPICS IN BACTERIAL GENETICS (3cr.)**
Microbial genetic and genomic methods: origin, purpose and functioning. Analysis and use of genomes to study bacterial pathogenesis and host-microbe interactions.

**MIC8500 SPECIAL TOPICS IN HEALTH-RELATED ENVIRONMENTAL MICROBIOLOGY (3cr.)**
Recent advances and current topics in selected areas of health-related environmental microbiology. Topics reflect student interest. Offered in alternate years subject to sufficient demand. Prerequisite: MIC 5500 or equivalent.

NSG6133 DECISION MAKING IN CLINICAL PRACTICE (3cr.)
Examination of decision models as they relate to decision making at the patient, practitioner, and policy maker levels. Study of the patient decision making process. Exploration of decision support strategies and evaluation of practitioner’s decision support skills.

NSG6533 PRISE DE DÉCISIONS EN SITUATION CLINIQUE (3cr.)
Examen des modèles de décision au niveau de la prise de décisions du patient, de l'intervenant et des prises de positions politiques. Étude du processus décisionnel du patient. Exploration des décisions entourant les stratégies de soutien et évaluation des compétences du praticien.

NSG6161 POLICY, POLITICAL ACTION AND CHANGE IN HEALTH CARE (3cr.)
Policy analysis, political action, organization and change theories. Acquisition of advanced nursing practice skills in policy and organizational analysis, application of change theory, lobbying, negotiating and strategizing.

NSG6560 POLITIQUE, ACTION POLITIQUE ET CHANGEMENT EN SOINS DE SANTÉ (3cr.)
Analyse des politiques, action politique et théories de l’organisation et du changement. Développement d’habiletés nécessaires à l’infirmière en pratique de niveau avancé en regard de l’analyse politique et organisationnelle, l’application de la théorie du changement, le lobbying, la négociation et la formulation de stratégies.

NSG7103 DECISION MAKING IN NURSING (3cr.)
Analysis and synthesis of decision and change models at client, practitioner and policy maker levels. In-depth exploration of selected conceptual, methodological, and design challenges to improve decision-making capacities of populations or to promote uptake of evidence-based nursing practices. (Course is reserved for PhD students.)

NSG7104 EVALUATING COMPLEX NURSING INTERVENTIONS (3cr.)
Discussion of design issues associated with complex interventions. Exploration of strategies for developing, implementing, and evaluating programs targeted to changing multiple levels of health care. Analysis of models, evidence, and policies appropriate to intervention design and examination of barriers to effective change. (Course is reserved for PhD students.)

PSY6202 ADVANCED SEMINAR IN BEHAVIOURAL NEUROSCIENCE (6cr.)
Advanced seminar course integrating behavioural analyses with aspects of neural circuits mediating and regulating these behaviours. Prerequisite: Adequacy in background knowledge as assessed by one of the coordinators prior to commencement of course.

PSY6905 PSYCHOLOGIE COMMUNAUTAIRE / COMMUNITY PSYCHOLOGY (3cr.)

PSY6923 RECHERCHE SUR LE STRESS PSYCHOSOCIAL / PSYCHOSOCIAL STRESS RESEARCH (3cr.)

PSY6982 LA PSYCHOLOGIE ET LA SANTÉ / PSYCHOLOGY AND HEALTH (3cr.)

PSY7901 (3cr.)

PSY7902 (3cr.)

SOC5501 THÈMES EN SOCIOLOGIE OU EN ANTHROPOLOGIE (3cr.)
Examen approfondi d'une problématique, d'un courant théorique ou d'une auteure ou d'un auteur contemporain en sociologie ou en anthropologie.

SOC7510 THÉORIES SOCIOLOGIQUES OU ANTHROPOLOGIQUES CONTEMPORAINES (3cr.)
Examen approfondi des principaux courants théoriques sociologiques ou anthropologiques.

SOC7550 RELATIONS INTERETHNIQUES: EXAMEN CRITIQUE DES THÉORIES ET DES REcherChes (3cr.)
 Principales théories sociologiques des relations interethniques; l'application de ces théories dans l'analyse de la structure sociale de quelques sociétés multietniques, notamment le Canada.

SOC7570 SOCIOLOGIE POLITIQUE: EXAMEN CRITIQUE DES THÉORIES ET DES REcherChes (3cr.)
Examen approfondi des concepts de sociologie politique, tels le pouvoir, l'État, les classes, la société civile, la démocratie, l'espace politique, la culture politique et la citoyenneté.

**Psychology (PhD)**

The School of Psychology offers graduate programs leading to the degree of Doctor of Philosophy (PhD). Specializations are offered in Clinical Psychology and Experimental Psychology in the following five fields approved by the Ontario Council on Graduate Studies:

- Clinical Psychology;
- Social Psychology;
- Developmental Psychology;
- Cognition;
- Behavioural Neurosciences.

Only students who intend to complete a doctorate are admitted. In special circumstances, students may be requested to complete the MA program after their first year of enrolment.

**Program Objectives**

**MA - PhD with Specialization in Experimental Psychology**

The objective of this program is to train researchers in experimental psychology with emphasis on one of the following areas: behavioral neurophysiology, psychopharmacology, psychophysiology, human and animal cognition, learning, language, sleep and dreams, social, cognitive and emotional development, perception, intergroup relations, motivation, and the social psychology of health and work. Training in behavioral neuroscience may also be provided through the Behavioral Neurosciences Specialization Program which is a collaborative program coordinated by the University of Ottawa and Carleton University.

**MA - PhD with Specialization in Clinical Psychology**

The purpose of this program is to provide doctoral training in the area of clinical psychology and prepare students to work with adults and children. Professional training includes exposure to cognitive-behavioural, experiential, systemic/interpersonal, and community consultation approaches. Thesis supervisors within the clinical program have special expertise in areas such as social development of children, behaviour problems in children, social skills training, depression, psychotherapy, marital therapy, family psychology, correctional psychology, community psychology and program evaluation. Training in behavioural neuroscience may also be provided through the Behavioural Neuroscience Specialization program which is a collaborative program coordinated by the University of Ottawa and Carleton University. Students may also elect to choose a thesis supervisor from the Experimental program.

This program is fully accredited by the Canadian Psychological Association and the American Psychological Association.

In Ontario, practice as a psychologist is governed by statute law; graduation from the doctoral program in clinical psychology does not by itself qualify a person to practice as a psychologist. For further information, the College of Psychologists of Ontario should be contacted, at the following address: The Registrar, The College of Psychologists of Ontario, 1246 Yonge Street, Suite 201, Toronto, Ontario, M4T 1W5, Tel: 416-961-8817, Fax: 416-961-2635.

Regulations of the School of Psychology prohibit involvement by students in the private practice of psychology, outside of practica and internships, unless they have received explicit permission from the director of the clinical psychology program to do so.

**Ph.D. Degree with recognition of Professional Bilingual Competence**

The recognition of professional bilingual competence confirms the ability to provide professional psychological services in both English and French. It is an option offered to students in both the clinical and experimental doctoral programs in Psychology.

**Co-ordination of the Programs**

The Graduate Studies Committee, and its two permanent subcommittees (for the programs in experimental and clinical psychology, respectively) ensure the ongoing co-ordination of the programs, in keeping with all regulations of the Faculty of Graduate and Postdoctoral Studies. Specific guidelines and procedures are available from the office of the Graduate Program Administrator.

**Admission**

The normal minimum requirement for admission into either of the two programs (MA - PhD in Clinical Psychology or MA - PhD in Experimental Psychology) is the Honours Baccalaureate in Psychology, or its equivalent, including an Honour’s thesis or an equivalent individual research project. In addition, course requirements are a course in History and Systems of Psychology (or its equivalent), and two courses in statistical analysis (or their equivalents). If these course requirements are not met at the time of admission, the candidates will be required to complete them within the first two years of graduate studies.
Program Requirements

Requirements

A) CLINICAL PSYCHOLOGY

The program in Clinical Psychology includes 17 courses. In addition to required clinical courses, students in Clinical Psychology must complete four fundamental courses in psychology (although equivalencies may be granted for some fundamental courses by the Director of the clinical program) and four supplementary clinical courses. For students entering the program with courses completed at the master’s level, at the discretion of the Director of the clinical program, equivalencies may be granted for up to a maximum of 30 credits.

Year 1

a) First Session:
- PSY 4130 HISTORY AND SYSTEMS OF PSYCHOLOGY
- PSY 5023 PRACTICUM DE RECHERCHE DE NIVEAU MAÎTRISE / MASTER’S LEVEL RESEARCH PRACTICUM
- 6-credit course over two consecutive semesters.
- PSY 5120 ADVANCED STATISTICS IN PSYCHOLOGY: UNIVARIATE DATA ANALYSIS
- PSY 5207 PSYCHOLOGICAL INTERVENTION AND CONSULTATION
- 6-credit course over two consecutive semesters.
- PSY 5202 PSYCHODIAGNOSTIC ASSESSMENT OF ADULTS AND CHILDREN
- 6-credit course over two consecutive semesters.
- PSY 6170 ETHICS AND PROFESSIONAL ISSUES

b) Second Session:
- PSY 5023 PRACTICUM DE RECHERCHE DE NIVEAU MAÎTRISE / MASTER’S LEVEL RESEARCH PRACTICUM
- 6-credit course over two consecutive semesters.
- PSY 5102 APPLIED PSYCHOPATHOLOGY
- PSY 5121 ADVANCED STATISTICS IN PSYCHOLOGY: MULTIVARIATE DATA ANALYSIS
- PSY 5207 PSYCHOLOGICAL INTERVENTION AND CONSULTATION
- PSY 5202 PSYCHODIAGNOSTIC ASSESSMENT OF ADULTS AND CHILDREN
- 6-credit course over two consecutive semesters.

c) Third Session:
- PSY 5023 PRACTICUM DE RECHERCHE DE NIVEAU MAÎTRISE / MASTER’S LEVEL RESEARCH PRACTICUM
- PSY 6007 PRACTICUM CLINIQUE / CLINICAL PRACTICUM
- PSY 6008 PRACTICUM CLINIQUE EXTERNE / EXTERNAL CLINICAL PRACTICUM

Year 2

- PSY 7103 PROGRAM EVALUATION
- PSY 5133 CLINICAL RESEARCH METHODS
- One or more supplementary clinical courses.
- One or more foundational courses (see list of courses below):

  - PSY 5103 FUNDAMENTALS OF BEHAVIOURAL NEUROSCIENCE
  - PSY 5105 FUNDAMENTALS OF COGNITIVE PSYCHOLOGY

Each file is assessed to determine whether equivalences will be granted on the basis of courses completed at the master’s level. Candidates for the clinical program with fewer than 21 credits of equivalencies will be admitted to the MA level while those with 21 or more credits of equivalencies will be admitted directly to the PhD.

Admission to the Experimental Psychology program is possible exceptionally on the basis of a four-year Honour’s degree in another discipline relevant to Psychology, with a letter of support from the prospective supervisor. The degree must include a thesis or an equivalent individual research project and the equivalent of at least 36 credits (12 one-session courses) in Psychology, including statistics and some research experience.

Note: Students with a strong background in mathematics, physical sciences, biological science or computer science are especially encouraged to apply.

Only students who intend to complete the doctorate are admitted. Those holding an honours baccalaureate in psychology are admitted to the MA program and are permitted to transfer to the PhD after one year provided their performance in courses and research is satisfactory. Those already holding a master’s in psychology are admitted directly to the PhD program.

Requests for admission are examined by an Admissions Committee in accordance with the admissions policy of the Council of the School of Psychology.
The program of courses is individually tailored to the research interests and needs of the student. With the exception of the statistics (PSY 5120 and PSY 5121) and research courses (PSY 5023 & PSY 6042), the schedule below is intended to serve as a guideline and is not mandatory. The two fundamental courses and three optional courses may be spread over several years, depending on availability and level of the student’s research involvement.

Note that students admitted on the basis of a Master’s degree may receive exemptions for some of the following courses as determined by the Director of the Experimental Program.

Year 1
- PSY 4130 HISTORY AND SYSTEMS OF PSYCHOLOGY ¹
- PSY5023 PRACTICUM DE RECHERCHE DE NIVEAU MAÎTRISE / MASTER’S LEVEL RESEARCH PRACTICUM (1cr.)²
- 6-credit course over two consecutive semesters.
- PSY5120 ADVANCED STATISTICS IN PSYCHOLOGY: UNIVARIATE DATA ANALYSIS (3cr.)
- PSY5121 ADVANCED STATISTICS IN PSYCHOLOGY: MULTIVARIATE DATA ANALYSIS (3cr.)

- Plus two courses among the following:
  - PSY5103 FUNDAMENTALS OF BEHAVIOURAL NEUROSCIENCE (3cr.)
  - PSY5105 FUNDAMENTALS OF COGNITIVE PSYCHOLOGY (3cr.)
  - PSY5113 FUNDAMENTALS OF SOCIAL PSYCHOLOGY (3cr.)
  - PSY5114 FUNDAMENTALS OF DEVELOPMENTAL PSYCHOLOGY (3cr.)

Year 2
- PSY6042 PRACTICUM EN RECHERCHE FONDAMENTALE / PRACTICUM IN BASIC RESEARCH (3cr.)
- The equivalent of one 3-credit course.

Year 3
- The equivalent of two 3-credit courses from optional list of courses.
- Of the optional courses, at least two should be taken from the course cluster most relevant to the student’s doctoral research. The course clusters are as follows: ⁴
  - Behavioural Neuroscience;
  - Cognitive Psychology;
  - Developmental Psychology;
  - Social Psychology and Personality;
  - Quantitative Psychology and Research Methods.

Years 4 & 5

Normally by the fourth year, all formal course requirements should have been met. What may remain are the thesis proposal, comprehensive examination, and thesis.

The composition of the thesis committee must be approved by the Director of the Experimental Program and should be determined shortly before submission of the thesis proposal. The doctoral thesis (PSY 9999) is formally submitted to the Faculty of Graduate and Postgraduate Studies only after successful completion of the thesis proposal and the PhD comprehensive examination (PSY 9998).

The School of Psychology participates in the Behavioural Neuroscience Specialization offered jointly by Psychology and Human Kinetics departments at the University of Ottawa and Psychology and Biology departments at Carleton University. The goals of the program are to...
provide interested students admitted to the Experimental or Clinical Program with a broad interdisciplinary knowledge of the concepts, research findings, and techniques pertaining to the behavioural neurosciences as well as to develop thorough knowledge in one particular area. Further details concerning the curriculum and requirements may be obtained from the Coordinator of the specialization in behavioural neuroscience.

NOTE: Students are free to take courses in both languages; please refer to the equivalent French course code.

**Ph.D. Degree with recognition of Professional Bilingual Competence**

The student will have completed a portion of the program requirements in each of Canada’s official languages. More specifically, the following conditions must be met:

**Students in the Clinical Program:**

1. Completion of one formal course (lecture or seminar format) in each of the official languages with assignments to be completed in the language of the course and completion in the student’s second language of a significant portion of the thesis (e.g., general introduction and general discussion).

   **OR**

   Completion of at least two formal courses (lecture or seminar format) in each of the official languages with assignments to be completed in the language of the courses.

2. Clinical training: Completion of provision of psychological services to at least one client during the practica or internship in each of the two official languages.

**Students in the Experimental Program:**

1. Courses: Completion of at least one formal course (lecture or seminar format) in each official language with assignments to be completed in the language of the course.

2. Thesis: Completion of a significant portion of the thesis in the student’s second language (e.g., general introduction and general discussion).

   **OR**

   completion of the entire thesis in one language and the comprehensive examination

3. Teaching: Satisfactory completion of one teaching assistantship of no less than 60 hours in each official language including in each case a minimum of three hours of formal lecturing. Equivalent substitutes may be approved by the Director of the Experimental Program.

   The satisfactory fulfillment of the above requirements will be monitored by the program directors.

N.B. In the Experimental Program, requirement 1. has to be completed before the next two requirements.

**MASTER OF ARTS (MA) IN PSYCHOLOGY**

While students are accepted only into the MA - PhD programs, in special circumstances, an MA degree may be awarded to students who have met the requirements. The Graduate Studies Committee will decide in each case whether this alternative is feasible.

In the case of a Master of Arts in Psychology (MA), the minimum requirements for the degree are as follows:

**A) CLINICAL PSYCHOLOGY**

- At least four sessions of full-time residence
- A minimum of 750 hours of applied clinical training (PSY 6007, and, if necessary, PSY 6008 or PSY 6009), to be worked out on an individual basis with the Coordinator of Practica and Internships.
- PSY 4130 HISTORY AND SYSTEMS OF PSYCHOLOGY
- PSY5023 PRACTICUM DE RECHERCHE DE NIVEAU MAÎTRISE / MASTER’S LEVEL RESEARCH PRACTICUM (1cr.)
- PSY7999 THÈSE DE MAÎTRISE / MASTER’S THESIS

- Six three-credit courses, and one six-credit course:
  - PSY5102 APPLIED PSYCHOPATHOLOGY (3cr.)
  - PSY5120 ADVANCED STATISTICS IN PSYCHOLOGY: UNIVARIATE DATA ANALYSIS (3cr.)
  - PSY5121 ADVANCED STATISTICS IN PSYCHOLOGY: MULTIVARIATE DATA ANALYSIS (3cr.)
  - PSY5202 PSYCHODIAGNOSTIC ASSESSMENT OF ADULTS AND CHILDREN (6cr.)
  - PSY5133 CLINICAL RESEARCH METHODS (3cr.)
  - PSY6190 ETHICS AND PROFESSIONAL ISSUES (3cr.)

- One supplementary three-credit clinical course.

**B) EXPERIMENTAL PSYCHOLOGY**

- At least four sessions of full-time residence.
- PSY 4130 HISTORY AND SYSTEMS OF PSYCHOLOGY
- PSY5023 PRACTICUM DE RECHERCHE DE NIVEAU MAÎTRISE / MASTER’S LEVEL RESEARCH PRACTICUM (1cr.)
- PSY7999 THÈSE DE MAÎTRISE / MASTER’S THESIS
• PSY5120 ADVANCED STATISTICS IN PSYCHOLOGY: UNIVARIATE DATA ANALYSIS (3cr.)
• PSY5121 ADVANCED STATISTICS IN PSYCHOLOGY: MULTIVARIATE DATA ANALYSIS (3cr.)
• Plus two courses among the following:
  - PSY5103 FUNDAMENTALS OF BEHAVIOURAL NEUROSCIENCE (3cr.)
  - PSY5105 FUNDAMENTALS OF COGNITIVE PSYCHOLOGY (3cr.)
  - PSY5113 FUNDAMENTALS OF SOCIAL PSYCHOLOGY (3cr.)
  - PSY5114 FUNDAMENTALS OF DEVELOPMENTAL PSYCHOLOGY (3cr.)

Residence
Minimum requirements for the Clinical Psychology Program are 12 consecutive sessions in full-time residence, and minimum requirements for the Experimental Program are nine consecutive sessions in full-time residence. While the Clinical Psychology Program may be completed in four years (12 sessions), completion of all requirements of the program of studies typically requires further sessions. Residency must be completed at the beginning of the program.

1. Only students who have not completed an undergraduate course in history of psychology must register for History and Systems of Psychology (PSY 4130). We recommend that this course be taken during the first year, but it can be taken later in the program.
2. Students entering with master’s degrees in psychology are not required to enrol in the Master’s Level Research Practicum (PSY 5023).
3. 1 credit equals 30 hours.
4. The list of courses pertaining to each cluster is available from the School of Psychology.

Courses

Les cours suivants ne sont pas tous offerts la même année. / The following courses are not all offered in the same year:

**PSY5102 APPLIED PSYCHOPATHOLOGY** (3cr.)
Major conceptual and empirical issues in the field of psychopathology. Contemporary diagnostic systems and procedures (e.g. DSM.)

**PSY5103 FUNDAMENTALS OF BEHAVIOURAL NEUROSCIENCE** (3cr.)
Critical analysis of research trends in behavioural neuroscience and of the relations between neuroanatomy, functional systems, and complex behaviours (e.g. spatial orientation, memory, language, reasoning.)

**PSY5104 INTEGRATION SEMINAR IN PROGRAM EVALUATION** (3cr.)
Integration of program evaluation practice, research and theory leading to a written report related to advances in program evaluation practice and theory. Prerequisites: a)EDU 5299 or EDU 5699 or PST 7103 or PST 7503 or CRM 6359 or CRM 6759; b) EDU 6299 or EDU 6699; c) PSY 7102 or PSY 7502. It is preferable that the student have completed, in addition, one elective course approved by the director of the certificate. Exclusion: EDU 5504.

**PSY5105 FUNDAMENTALS OF COGNITIVE PSYCHOLOGY** (3cr.)
Critical analysis of research trends in cognitive psychology. Topics to include cognitive architectures and their underlying principles, the interpretation of sensory signals, attention, memory, language, mental computation, reasoning and problem-solving.

**PSY5111 THEORIES OF PERSONALITY** (3cr.)
Contemporary personality theory and research concerning the structure, heritability, social and biological determinants, and social and psychiatric manifestation of fundamental personality traits.

**PSY5113 FUNDAMENTALS OF SOCIAL PSYCHOLOGY** (3cr.)
Critical analysis of research trends in contemporary social psychology. Topics to include the units of analysis in social psychology, social influence, formation and functions of attitudes, stereotypes, social motivation, leadership, social organizations, and inter-group relations.

**PSY5114 FUNDAMENTALS OF DEVELOPMENTAL PSYCHOLOGY** (3cr.)
Critical analysis of research trends in developmental psychology. Topics to include current issues in emotional, cognitive, and social development during childhood and adolescence and an evaluation of current conceptualizations, measurement techniques, and research methodologies.

**PSY5120 ADVANCED STATISTICS IN PSYCHOLOGY: UNIVARIATE DATA ANALYSIS** (3cr.)
Topics covered include general linear approaches to analysis of variance and covariance, basic assumptions of parametric techniques, expected mean square and error term selection, multiple comparison and trend procedures, power of statistical tests. Attention to be paid to selected factorial designs including repeated measures, regression, and log-linear analyses.

**PSY5121 ADVANCED STATISTICS IN PSYCHOLOGY: MULTIVARIATE DATA ANALYSIS** (3cr.)
Principles of multivariate statistics in general, and of those of multiple regression, discriminant function analysis, multivariate analysis of variance and canonical correlation, in particular. Each statistical procedure to be accompanied by required computer application work involving major statistical packages.

**PSY5125 PRINCIPLES OF NEUROPSYCHOLOGY** (3cr.)
Focus on understanding brain behaviour relationships by examining major neurobehavioural syndromes and associated neuropsychological deficits. Review of the current theoretical assumptions underlying the syndromes. Topics include: History and principles of neuropsychology, gross neuroanatomy and neuropathology, aphasia, apraxia, agnosia, alexia, agraphia, visuo-spatial/perceptual/construction disorders, attention/neglect, memory and learning, limbic system functions, callosal syndromes, and executive functions. **Prerequisite: knowledge of neuroanatomy.**

**PSY5135 CLINICAL RESEARCH METHODS** (3cr.)
General research principles as they apply to research with clinical populations and to research on clinical services. Strategies for enhancing both the internal and external validity of research. Sampling, measurement, statistical power, and the selection of appropriate research designs.

**PSY5158 RESEARCH PRACTICUM IN SOCIAL AND INTERPERSONAL RELATIONS** (3cr.)
Current research in assertion and social skills training is studied through student and staff participation in research projects.

**PSY5202 PSYCHODIAGNOSTIC ASSESSMENT OF ADULTS AND CHILDREN** (6cr.)
Assessment of intellectual, behavioural and emotional functioning of children and adults. Administration, scoring, and interpretation of selected instruments. Integration of data for communication of assessment findings to clients and others (e.g. parents, teachers.)

**PSY5207 PSYCHOLOGICAL INTERVENTION AND CONSULTATION** (6cr.)
Conceptions and recherche principales en psychopathologie. Systèmes et procédures actuels de diagnostic (ex. MSD).

**PSY5303 FONDEMENTS DE LA NEUROSCIENCE DU COMPORTEMENT** (3cr.)
Examen critique des courants de recherche en neuroscience du comportement et des relations entre la neuroanatomie, les systèmes fonctionnels et les comportements complexes (ex. l'orientation spatiale, la mémoire, le langage, le raisonnement.)

**PSY5505 FONDEMENTS DE LA PSYCHOLOGIE COGNITIVE** (3cr.)
Analyse critique des courants de recherche en psychologie cognitive. Les thèmes abordés incluent : les architectures cognitives et leurs principes d'opération, l'interprétation des signaux sensoriels, l'attention, la mémoire, le langage, le calcul mental, le raisonnement et la résolution de problèmes.

**PSY5511 THÉORIES DE LA PERSONNALITÉ** (3cr.)
Principales théories contemporaines de la personnalité, depuis la psycho-analyse et la psychologie analytique jusqu'aux approches phénoménologiques et existentielles, le néo-behavioriste, sociale, dialectique, et autres.

**PSY5512 FONDEMENTS DE LA PSYCHOLOGIE SOCIALE** (3cr.)
Examen critique des courants de recherche en psychologie sociale contemporaine. Les thèmes incluent les unités d'analyse en psychologie sociale, la formation et la fonction des attitudes, les stéréotypes, la motivation sociale, le leadership, les organisations sociales et les relations intergroupes.

**PSY5514 FONDEMENTS DE LA PSYCHOLOGIE DU DÉVELOPPEMENT** (3cr.)
Analyse critique des courants de recherche en psychologie du développement. Examen des questions actuelles en développement émotionnel, cognitif et social, pendant l'enfance et l'adolescence, et évaluation des théories, mesures et méthodes de recherche.

**PSY5520 STATISTIQUE AVANCÉE EN PSYCHOLOGIE : ANALYSE DE DONNÉES UNIVARIÉES** (3cr.)
Sujets abordés : modèles linéaires généraux de l'analyse de la variance et de la covariance, utilisation de techniques paramétriques, carré attendu et sélection des termes d'erreur, comparaisons multiples, analyse des tendances, pouvoir des tests statistiques. Autres sujets : plans expéri mentaux factoriels dont les mesures répétées, la régression et l'analyse log linéaire.

**PSY5521 STATISTIQUE AVANCÉE EN PSYCHOLOGIE : ANALYSE DE DONNÉES MULTIVARIÉES** (3cr.)
Analyse de variables dépendantes multiples par la modélisation en équations structurelles. Régression multiple, analyse causale, analyse factorielle, corrélation canonique, analyse discriminante et MANOVA. Utilisation de logiciels.

**PSY5525 PRINCIPES DE NEUROPSYCHOLOGIE** (3cr.)
Étude de la neuroanatomie fonctionnelle par le biais de la description de différents syndromes neurocomportementaux et déficits neuropsychologiques. Vue d'ensemble sur les fondements théoriques proposés pour chacun des troubles neuropsychologiques décrits. Les sujets traités incluent : Histoire et principes de la neuropsychologie, neuroanatomie et neuropathologie, aphasia, apraxie, agnosie, alexie, agraphie, troubles visuo-spatiaux / perceptuels / constructifs déficits attentionnels et négligence, mémoire et apprentissage. Fonctions du système limbique, atteintes du corps calleux et fonctions exécutives. **Préalable : une connaissance de la neuroanatomie.**

**PSY5533 MÉTHODES DE RECHERCHE CLINIQUE** (3cr.)
Application des méthodes scientifiques de recherche à la thèse envisagées par l'étudiant(e). Organisation d'un projet de thèse, incluant la revue de questions, l'articulation des hypothèses, l'échantillonnage et les outils de mesure. Attention spécifique aux méthodes employées pour évaluer la pratique clinique.

**PSY5558 PRACTICUM DE RECHERCHE EN RELATIONS INTERPERSONNELLES** (3cr.)
Les étudiants et les professeurs réalisent des projets de recherche en collaboration sur l'entraînement de l'affirmation de soi et des habiletés.
PSY5602 ÉVALUATION PSYCHODIAGNOSTIQUE DES ADULTES ET DES ENFANTS (6 cr.)
Évaluation du fonctionnement intellectuel, comportemental et émotionnel de l'enfant et de l'adulte. Évaluation, administration et interprétation de divers instruments. Intégration de données pour communication des résultats aux clients et autres personnes (ex. parents, enseignants).

PSY5607 INTERVENTION ET CONSULTATION PSYCHOLOGIQUE (6 cr.)

PSY5911 THÉORIES DE LA PERSONNALITÉ / THEORIES OF PERSONALITY (3 cr.)
Analyse critique et comparative des principales théories de la personnalité, depuis la psychoanalyse et la psychologie analytique jusqu'aux approches phénoménologiques et existentielles, le néo-behavioriste, sociale, dialectique, et autres. Contemporary personality theory and research concerning the structure, heritability, social and biological determinants, and social and psychiatric manifestation of fundamental personality traits.

PSY5924 PRINCIPES DE NEUROPSYCHOLOGIE / PRINCIPLES OF NEUROPSYCHOLOGY (3 cr.)
Étude de la neuroanatomie fonctionnelle par le biais de la description de différents syndromes neurocomportementaux et déficits neuropsychologiques. Vue d’ensemble sur les fondements théoriques proposés pour chacun des troubles neuropsychologiques décrits. Les sujets traités incluent : Histoire et principes de la neuropsychologie, neuropathologie et neuropsychologie, aphatie, apraxie, agnosie, alexie, agraphie, troubles visuo-spatiaux / perceptuels / constructifs déficits attentionnels et négligence, mémoire et apprentissage. Fonctions du système limbique, atteintes du corps calleux et fonctions émotionnelles. Préalable : une connaissance de la neuroanatomie. Focus on understanding brain behaviour relationships by examining major neurobehavioural syndromes and associated neuropsychological deficits. Review of the current theoretical assumptions underlying the syndromes. Topics include: History and principles of neuropsychology, gross neuroanatomy and neuropsychology, aphasia, apraxia, agnosia, alexia, agraphia, visuo-spatial/perceptual/construction disorders, attention/neglect, memory and learning, limbic system functions, callosal syndromes, and executive functions. Prerequisite: knowledge of neuroanatomy.

PSY5958 PRACTICUM DE RECHERCHE EN RELATIONS INTERPERSONNELLES / RESEARCH PRACTICUM IN SOCIAL AND INTERPERSONAL RELATIONS (3 cr.)
Current research in assertion and social skills training is studied through student and staff participation in research projects. Les étudiants et les professeurs réalisent des projets de recherche en collaboration sur l’entraînement de l’affirmation de soi et des habiletés sociales.

PSY6102 SOCIAL DEVELOPMENT (3 cr.)
A review of current issues in the literature on social development in childhood. Topics to include the development of attachment, influence of parents and peers, social competence, and social cognition.

PSY6103 SOCIALIZATION AND INDIVIDUAL DIFFERENCES (3 cr.)
Review and critical evaluation of theoretical models and empirical research in the study of socialization, gender differences, and other individual differences during childhood and adolescence.

PSY6105 FACTOR ANALYSIS IN PSYCHOLOGICAL RESEARCH (3 cr.)
Focus on the underlying rationale, conceptual understanding, basic design requirements, mathematical/inferential procedures, and range of applications related to both exploratory and confirmatory factor analyses. Students are introduced to both the LISREL and EQS statistical packages and each factor analytic example studied is accompanied by required computer application work. Prerequisite: PSY5121 Advanced Statistics in Psychology: Multivariate Data Analysis or its equivalent.

PSY6106 THE EVALUATION OF PSYCHOTHERAPY AND BEHAVIOUR CHANGE (3 cr.)

PSY6107 CLINICAL APPLICATIONS OF INTERPERSONAL THEORY (3 cr.)
Survey of the major interpersonal theories and introduction to the major assessment tools associated with these approaches. Applications of interpersonal theory to the treatment of specific clinical problems.

PSY6109 NEUROBEHAVIORAL DETERMINANTS OF MOTIVATION (3 cr.)
Seminars on biological motivation, from behaviours essential to homoeostasis to hedonic experiences, and on its roots from ontogenic development to phylogenetic development. The goal will be to describe the physiological mechanisms underlying individual behaviours and the governing principles that unify them.

PSY6113 REHABILITATION PSYCHOLOGY (3 cr.)
Introduction to the roles and functions of psychologists in medical rehabilitation and other rehabilitation settings, to acquaint students with the major assessment, intervention, and evaluation issues posed by chronic illness, disability, and handicaps.

PSY6114 COGNITIVE PSYCHOPHYSIOLOGY (3 cr.)
Seminars on the neurophysiology of human behaviour. Selected topics for discussion include basic EEG and evoked potential recording techniques, measurement and analysis of EEG (e.g., filtering, spectral analysis), sensory and cognitive evoked potentials and their component structure, the timing of mental events, sources of influence on evoked potentials (e.g., attention, consciousness, lexical-semantic processing).

PSY6115 EVOLUTION OF THE MIND (3 cr.)
Review of the historical foundation, concepts and principles associated with the evolution of the mind. Topics to include the evolution of cognitive abilities (e.g., memory, decision-making, language and communication) and social behaviour (e.g., cooperation, competition, aggression, parental behaviour, mate selection).
PSY6116 COMMUNITY PSYCHOLOGY (3cr.)
Study of the socio-historical context of community psychology. Values, paradigms, and objectives of community psychology. Community mental health, primary prevention, and intervention strategies.

PSY6117 COMPARATIVE COGNITION (3cr.)
Examination of the goals of comparative analysis of cognitive processes and the contribution of behavioural ecologists to the study of cognition in non-human species. Topics to include the dynamics of choice and timing, memory and place learning, and concept formation.

PSY6118 REASONING, JUDGEMENT AND DECISION MAKING (3cr.)
Seminars on causal reasoning, deductive and inductive inference, hypothesis formation and evaluation, probabilistic judgment, and covariation detection. Examination of these cognitive activities in the light of theoretical models based on various concepts such as logic, formal or natural, heuristics, or connectionist mechanisms.

PSY6122 CLINICAL HEALTH PSYCHOLOGY (3cr.)
Historical and theoretical foundations in Health Psychology. Health promotion issued and practices. Treatment of specific disorders. Role in the delivery of medical services.

PSY6123 PSYCHOSOCIAL STRESS RESEARCH (3cr.)
Constructs and measurements of stress and stressors. Critical analysis of theoretical models and empirical research of life events, cognitive appraisal, anticipation and coping strategies.

PSY6126 NEUropsychological Assessment (3cr.)
A theoretical and practical review of prominent neuropsychological procedures including the Halstead-Reitan, the Luria-Nebraska, and the Boston process approach.

PSY6127 Research Seminars in Social Psychology (3cr.)
Critical evaluation of studies in targeted domains of social psychology. Identification and evaluation of new orientations. Presentation and discussion of thesis project and other personal research projects. Similarities and differences in the work of researchers working in academic and private sectors.

PSY6132 CHILD PSYCHOPATHOLOGY (3cr.)
Patterns of child development and childhood psychopathology. Study of specific psychopathological conditions and implications for appropriate treatment.

PSY6133 ETHICS OF RESEARCH IN PSYCHOLOGY (3cr.)
Overview of the basic problems that pertain to the legitimacy of the practice of scientific psychology. Theoretical issues that pertain to philosophical ethics and pragmatic issues associated with ethical norms.

PSY6134 TEST CONSTRUCTION AND PSYCHOMETRIC THEORY (3cr.)
Issues relevant to the design, construction, and validation of psychometric assessment devices with applications to research. Special topics to include item construction, open-ended items, multiple-choice items, applications of exploratory and confirmatory factor analysis, construct validity, measures of internal consistency and reliability, item analysis, and cross-linguistic adaption of assessment devices.

PSY6143 ADVANCED TOPICS IN PSYCHODIAGNOSTIC ASSESSMENT (3cr.)
Advanced seminars on current topics in Psychological Assessment such as: Diagnostic Interviewing with Children, Family Assessment, Behavioural Assessment, Neuropsychological Assessment, Consultation and Problem solving, etc.

PSY6144 APPLICATION OF MICROCOMPUTERS TO HUMAN EXPERIMENTAL PSYCHOLOGY (3cr.)
Use of micro-computers in behavioural data acquisition and file organization for purposes of statistical treatment. Subjects to be covered include: writing instructions for video display, video display techniques, techniques for recording answers, statistical properties of various answers. Applied assignments are important components of this course.

PSY6145 COGNITIVE PSYCHOLOGY OF LANGUAGE (3cr.)
This seminar studies the perceptual and cognitive processes underlying language behaviour. The course is divided into five parts: 1) introduction to the study of language behaviour; 2) language comprehension; 3) language production; 4) language acquisition; and 5) the relation between language and thought. The main objective is to survey contemporary knowledge of this field of research.

PSY6146 SOCIAL PSYCHOLOGY OF LANGUAGE (3cr.)
The study of language as an interactive communication process. Integrated review of the production and interpretation mechanisms as a function of social and cognitive contexts. Analysis of the methodological problems posed by the study of interaction.

PSY6147 SCHOOL PSYCHOLOGY (3cr.)

PSY6151 DRUGS AND BEHAVIOUR (3cr.)
A study of current neurochemical and neuropharmacological techniques applicable to the study of normal and pathological behaviour. A critical evaluation of these techniques as they relate to animal and human behaviour.

PSY6152 RESEARCH AND APPLICATION OF LEARNING PRINCIPLES (3cr.)
Recent development in classical and instrumental conditioning stimulus control, and aversively-motivated learning. Theoretical relevance of
methodological and theoretical contributions.

Study of different methodological approaches used in public administration, conceptual tools and research methods (discourse analysis, content analysis, government intervention and policy-making from a comparative perspective.

accountability. A particular focus of this seminar is a critical evaluation of the New Public Management reforms, and an in-depth review of different models of
totalitarianism and its consequences.

CONTEMPORARY PSYCHOLOGY

PSY7904 THÉRAPIE SYSTÉMIQUE / SYSTEMIC THERAPY

et recherche.

psychoanalysis, behaviour modification, general systems theory.

Advanced seminars offered on different topics each year.

APPLICATION OF MICROCOMPUTERS TO HUMAN EXPERIMENTAL PSYCHOLOGY

main computer simulation techniques of cognitive processes with hands-on exercises on the microcomputer. Detailed analysis of object-oriented

neurophysiological correlates of sleep stages, the phenomenon of dreaming, and sleep disorders.

relations between language and thought. The main objective is to survey contemporary knowledge of this field of research.

APPLICATION TO HUMAN EXPERIMENTAL PSYCHOLOGY

thematic and inter-disciplinary approaches to research in psychology.

PSY5114 FUNDAMENTALS OF DEVELOPMENTAL PSYCHOLOGY

Prerequisite: Approval of the Academic Unit.

Presentation of a seminar and
Electives : nine credits
Nine other graduate credits related to the student's area of specialization. These are

Completion of remaining foundational course requirements.

One or more foundational courses (see list of courses below):

Completion of one formal course (lecture or seminar format) in each of the official languages with assignments to be completed in the

holding a master's degree in public administration or in a related discipline with a minimum average of 75% (B+); and

Clinical training: Completion of provision of psychological services to at least one client during the practica or internship in each of the two

Completion of interdisciplinary courses in a number of fields, including:

Evaluation in relation to the development of health service programs.

and
Electives : nine credits
Nine other graduate credits related to the student's area of specialization. These are ...

forms: multi-level coordination, coordination across the public, private and community sectors, horizontal and vertical

laboratory findings for application.

PSY6154 CHILD PSYCHOTHERAPY (3cr.)

PSY6155 APPLIED SOCIAL PSYCHOLOGY IN THE WORK PLACE (3cr.)
Seminars with simulations of problems people face in the work place. Topics for discussion include affirmative action, women in management, work/family conflict, corporate culture, quality of work life, flextime, psychological services in organizations, and program evaluation

PSY6158 RESEARCH METHODS IN SOCIAL PSYCHOLOGY (3cr.)
Critical review of research methods used in social psychology and their applications in contemporary research. Elaboration of a research project on

a social problem using different data collection methods.

PSY6166 HUMAN AND SOCIAL MOTIVATION: THEORY AND RESEARCH (3cr.)
Epistemological, theoretical and experimental aspects of the concept of motivation as an explanatory construct of social behaviour. Study of its
development.

PSY6167 EXPERIMENTAL TECHNIQUES IN SLEEP RESEARCH (3cr.)
Seminars/tutorials on the experimental techniques that apply to the psychophysiological and cognitive study of sleep. Selected topics to include

the use of these techniques in the study of the time course of sleeping episodes, neurophysiological correlates of sleep stages, the phenomenon of
dreaming, and sleep disorders.

PSY6168 COMPUTER SIMULATION OF COGNITIVE PROCESSES (3cr.)
Overview of the main computer simulation techniques of cognitive processes with hands-on exercises on the microcomputer. Detailed analysis of

object-oriented programming and its potential as a simulation tool in cognitive science.

PSY6170 ETHICS AND PROFESSIONAL ISSUES (3cr.)
Systematic review of ethical principles, codes of ethics and standards of practice related to the psychological enterprise in research and clinical

practice. Introduction to the organization of psychology as a profession and to recent professional issues.

PSY6176 CLINICAL GEROPSYCHOLOGY (3cr.)
Normal aspects of physical and psychological aging, psychological assessment and interventions with older adults.

PSY6182 PSYCHOLOGY AND HEALTH (3cr.)
Psychosocial factors in physical and mental health. Bio-psycho-social approach. Notions of epidemiology. Risk, maintenance, and remission

factors. Intervention strategies.

PSY6190 COUNSELLING WITH DYING AND BEREAVED (3cr.)
Phases of dying and bereavement, normal and abnormal. Counseling the patient, the family. Development of the concept of death; how to deal

with dying or bereaved children, adolescents. Euthanasia, untimely deaths, etc.

PSY6191 SEMINARS IN PSYCHOLOGY (3cr.)
Selected topics on contemporary psychology presented and discussed as graduate seminars.

PSY6201 BASICS OF NEUROSCIENCE (6cr.)
Comprehensive neuroscience course from the membrane and the cellular levels through the behavioural aspects of invertebrates and vertebrates.

Lectures and tutorials on aspects of neuroscience such as neuroanatomy, neurophysiology, behavioural neuroscience and neuropharmacology.

PSY6202 ADVANCED SEMINAR IN BEHAVIOURAL NEUROSCIENCE (6cr.)
Advanced seminar course integrating behavioural analyses with aspects of neural circuits mediating and regulating these behaviours.

Prerequisite: Adequacy in background knowledge as assessed by one of the coordinators prior to commencement of course.

PSY6391 PSYCHOPHYSIOLOGY OF INDIVIDUAL DIFFERENCES (3cr.)
Seminar/tutorial examining psychophysiological research on the nature of individual differences in personality, intelligence and learning

disabilities.

PSY6502 DÉVELOPPEMENT ÉMOTIONNEL (3cr.)
Les courants de recherche les plus récents dans les différents domaines du développement émotionnel. Accent sur l’ontogénése des émotions et

leur rôle dans le développement humain, la représentation des états émotionnels, la socialisation des émotions, la régulation des comportements

expressifs, le décodage des comportements expressifs et les déterminants cognitifs des émotions.

PSY6506 DÉVELOPPEMENT COGNITIF (3cr.)
Examen des approches théoriques actuelles dans le domaine du développement cognitif. Approches considérées : la théorie gibsonienne, la théorie

de la pensée, l’approche néo-piagéienne et les théories du traitement de l’information.

PSY6507 APPLICATIONS CLINQUES DE LA THÉORIE INTERPERSONNELLE (3cr.)
Examen des principales théories interpersonnelles et initiation aux principaux outils d’évaluation liés à ces approches. Applications de la théorie

interpersonnelle au traitement de problèmes spécifiques.

PSY6509 DÉTERMINANTS NEUROCOMPORTEMENTAUX DE LA MOTIVATION (3cr.)
Séminaires sur la motivation biologique, des comportements essentiels à l’équilibre homeostatique aux expériences hémoniques, et sur ses origines ontogénétiques aussi bien que phylogénétiques. L’objectif principal poursuivi sera de décrire les mécanismes physiologiques sous-jacents aux comportements individuels ainsi que leurs principes unificateurs.

**PSY6514 PSYCHOPHYSIOLOGIE COGNITIVE** (3cr.)
Séminaires sur la neurophysiologie du comportement humain. Sujets abordés : les techniques d’enregistrement du EEG et des potentiels évoqués, la mesure et l’analyse du EEG (ex. filtrage, analyse spectrale), potentiels évoqués liés à des événements sensoriels ou cognitifs, le cours temporel des événements mentaux, les sources d’influence sur les potentiels évoqués (ex. l’attention, la conscience, le traitement lexico-sémantique).

**PSY6515 ÉVOLUTION DE LA PENSÉE** (3cr.)
Retour sur les fondements historiques, les concepts et principes liés à l’évolution de la pensée. Les thèmes incluent l’évolution des habiletés cognitives (ex., la mémoire, la prise de décision, le langage et la communication) et du comportement social (ex., la coopération, la compétition, l’agressivités, le comportement parental, la sélection des partenaires).

**PSY6516 PSYCHOLOGIE COMMUNAUTAIRE** (3cr.)

**PSY6517 COGNITION COMPAREÉE** (3cr.)
Examen des objectifs de l’analyse comparée des processus cognitifs et de la contribution de l’écologie du comportement dans l’étude de la cognition chez les espèces non humaines. Les thèmes incluent la dynamique des choix et de la coordination temporelle, la mémoire et l’apprentissage des lieux, la formation des concepts.

**PSY6518 LE RAISONNEMENT, LE JUGEMENT ET LA PRISE DE DÉCISION** (3cr.)
Séminaires sur le raisonnement causal, l’inférence déductive et inductive, la formation et l’évaluation d’hypothèses, le jugement probabiliste et la détection des covariations. Examen de ces activités cognitives à la lumière de modèles théoriques faisant appel à des concepts variés tels que la logique, formelle ou naturelle, les processus heuristiques ou les mécanismes connexionnistes.

**PSY6522 PSYCHOLOGIE CLINIQUE DE LA SANTÉ** (3cr.)
Bases historiques et théoriques en psychologie de la santé. La promotion de la santé est sortie des pratiques. Traitement de troubles spécifiques. Rôle dans la livraison de services médicaux.

**PSY6523 RECHERCHE SUR LE STRESS PSYCHOSOCIAL** (3cr.)

**PSY6526 ÉVALUATION NEUROPSYCHOLOGIQUE** (3cr.)
Le côté théorique et pratique de l’évaluation neuropsychologique. L’entrevue neuropsychologique; les facteurs pouvant affecter la validité de l’examen; les théories et les substrats neuroanatomiques de différentes fonctions cognitives (ex. l’attention, la perception visuo-spatiale, le langage, les fonctions exécutives, l’apprentissage et la mémoire); désordres neuropsychologiques communs.

**PSY6527 SÉMINAIRE DE RECHERCHE EN PSYCHOLOGIE SOCIALE** (3cr.)

**PSY6532 PSYCHOPATHOLOGIE DE L’ENFANT** (3cr.)
Le développement normal de l’enfant et la psychopathologie de l’enfant. Diverses formes de psychopathologie et implications au plan thérapeutique.

**PSY6533 ÉTHIQUE DE LA RECHERCHE EN PSYCHOLOGIE** (3cr.)
Tour d’horizon des problèmes fondamentaux liés à la légitimité de la pratique de la psychologie scientifique. Questions théoriques relevant de l’éthique philosophique aux questions pragmatiques associées aux codes déontologiques.

**PSY6534 CONSTRUCTION DE TESTS ET THÉORIE PSYCHOMÉTRIQUE** (3cr.)
Sujets afférents à la planification, la construction et la validation d’un instrument de mesure dans le cadre de son application à la recherche. Thèmes spécifiques comprenant la conception d’items, les questions à réponse construite, les questions à réponse choisie, les applications de l’analyse factorielle exploratoire et confirmatoire, la validité théorique, les mesures de cohérence interne et de fidélité, l’analyse d’items et l’adaptation interlinguistique des instruments de mesure.

**PSY6544 APPLICATIONS DE LA MICRO-INFORMATIQUE À LA PSYCHOLOGIE EXPÉRIMENTALE HUMAINE** (3cr.)
Utilisation des micro-ordinateurs dans l’acquisition des données comportementales et organisation des fichiers de données pour le traitement statistique. Sujets abordés : la rédaction de consignes adaptées à l’affichage vidéographique, les techniques d’affichage vidéographique, les techniques d’enregistrement des réponses, les propriétés statistiques de divers types de réponses. Les travaux pratiques constituent une composante importante de ce cours.

**PSY6545 PSYCHOLOGIE COGNITIVE DU LANGAGE** (3cr.)
Ce séminaire étudie les processus perceptuels et cognitifs sous-jacents au comportement langagier. Le cours est divisé en cinq parties : 1) une introduction à l’étude du comportement langagier; 2) la compréhension du langage; 3) la production du langage; 4) l’acquisition du langage; et 5) la relation entre langage et pensée. L’objectif principal du cours est de faire un bref bilan de l’état actuel des connaissances sur les sujets abordés.
PSY5121 ADVANCED STATISTICS IN PSYCHOLOGY: MULTIVARIATE DATA ANALYSIS (3cr.)

PSY6547 PSYCHOLOGIE SCOLAIRE (3cr.)
Introduction aux modèles et méthodes d'interventions psychologiques en milieu scolaire. Interventions à court terme pour améliorer l'attention, le travail scolaire, la résolution de problèmes et les interactions sociales. Notions de difficultés d'apprentissage; élaboration et évaluation de programmes destinés à ceux qui ont des difficultés d'apprentissage.

PSY6551 DROGUES ET COMPORTEMENT (3cr.)
Les techniques neurochimiques et neuropharmacologiques utiles à l'étude du comportement normal et pathologique. Évaluation critique des techniques appliquées au comportement animal et humain.

PSY6552 LA RECHERCHE SUR LES PRINCIPIES D'APPRENTISSAGE ET LEURS APPLICATIONS (3cr.)
Développements récents en matière de conditionnement classique et instrumental, du contrôle du stimulus et de l'apprentissage aversif. Implications théoriques de données expérimentales récentes.

PSY6553 PSYCHOLOGIE SOCIALE APPLIQUÉE AU MONDE DU TRAVAIL (3cr.)
Séminaires accompagnés de simulations des problèmes éprouvés dans le monde du travail. Sujets de discussion : l'action affirmative, les femmes et la gestion, les conflits entre travail et famille, la culture des grandes sociétés, la qualité de vie au travail, les horaires de travail flexibles, les services psychologiques dans les grandes sociétés et l'évaluation de programme.

PSY6558 MÉTHODES DE RECHERCHE EN PSYCHOLOGIE SOCIALE (3cr.)
Étude critique des différentes méthodes de recherche et de leur mise en œuvre dans la recherche contemporaine en psychologie sociale. Élaboration d'un projet d'étude sur une question sociale spécifique et application de différentes méthodes de collecte des données.

PSY6566 MOTIVATION HUMAINE ET SOCIALE : THÉORIES ET RECHERCHE (3cr.)
Aspects épistémologiques, théoriques et expérimentaux du concept de motivation en tant que déterminant du comportement social. Étude de son développement.

PSY6567 TECHNIQUES EXPÉRIMENTALES EN RECHERCHE SUR LE SOMMEIL (3cr.)

PSY6568 SIMULATION INFORMATIQUE DES PROCESSUS COGNITIFS (3cr.)
Tour d'horizon des principales techniques de simulation informatique des processus cognitifs, avec exercices pratiques sur micro-ordinateur. Analyse détaillée de la programmation axée sur l'objet et de son potentiel comme outil de simulation en sciences de la cognition.

PSY6570 DÉONTOLOGIE ET QUESTIONS PROFESSIONNELLES (3cr.)
Revue systématique des principes déontologiques, des codes d'éthique et des standards de pratique reliés à l'entreprise psychologique en recherche et pratique clinique. Introduction à l'organisation de la psychologie en tant que profession ainsi qu'à des questions professionnelles courantes.

PSY6576 PSYCHOLOGIE CLINIQUE DE LA PERSONNE ÂGÉE (3cr.)
Les aspects normaux du vieillissement physique et psychologique, l'évaluation psychologique et les interventions psychologiques auprès des personnes âgées.

PSY6582 LA PSYCHOLOGIE ET LA SANTÉ (3cr.)

PSY6591 SÉMINAIRES EN PSYCHOLOGIE (3cr.)
Sujets choisis de psychologie contemporaine présentés et discutés en séminaires au niveau gradué.

PSY6601 FONDEMENTS DE LA NEUROSCIENCE (6cr.)
Cours de synthèse portant sur l'ensemble de la neuroscience, du niveau membranaire au niveau cellulaire incluant l'étude du comportement des invertébrés et des vertébrés. Cours magistraux et travaux dirigés sur divers aspects de la neuroscience et la neuropharmacologie du comportement.

PSY6901 DÉTERMINANTS NEUROCOMPORTEMENTAUX DE LA MOTIVATION / NEUROBEHAVIORAL DETERMINANTS OF MOTIVATION (3cr.)
Séminaires sur la motivation biologique, des comportements essentiels à l'équilibre homéostatique aux expériences hédoniques, et sur ses origines ontogénétiques aussi bien que phylogénétiques. L'objectif principal poursuivi sera de décrire les mécanismes physiologiques sous-jacents aux comportements individuels ainsi que leurs principes unificateurs. Séminars on biological motivation, from behaviours essential to homeostasis to hedonic experiences, and on its roots from ontogenic evolution to phylogenic development. The goal will be to describe the physiological mechanisms underlying individual behaviours and the governing principles that unify them.

PSY6903 PSYCHOPHYSIOLOGIE COGNITIVE / COGNITIVE PSYCHOPHYSIOLOGY (3cr.)
Séminaires sur la neurophysiologie du comportement humain. Sujets abordés : les techniques d'enregistrement du EEG et des potentiels évoqués, la mesure et l'analyse du EEG (ex. filtrage, analyse spectrale), potentiels évoqués liés à des événements sensoriels ou cognitifs, le cours temporel
PSY6904 EVOLUTION DE LA PENSEE / EVOLUTION OF THE MIND (3cr.)
Retour sur les fondements historiques, les concepts et principes liés à l'évolution de la pensée. Les thèmes incluent l'évolution des habiletés cognitives (ex. la mémoire, la prise de décision, le langage et la communication) et du comportement social (ex. la coopération, la compétition, l'agression, le comportement parental, la sélection des partenaires). Review of the historical foundation, concepts and principles associated with the evolution of the mind. Topics to include the evolution of cognitive abilities (e.g., memory, decision-making, language and communication) and social behaviour (e.g., cooperation, competition, aggression, parental behaviour, mate selection).

PSY6905 PSYCHOLOGIE COMMUNAUTAIRE / COMMUNITY PSYCHOLOGY (3cr.)

PSY6906 COGNITION COMPAREE / COMPARATIVE COGNITION (3cr.)
Examen des objectifs de l'analyse comparée des processus cognitifs et de la contribution de l'écologie du comportement dans l'étude de la cognition chez les espèces non humaines. Les thèmes incluent la dynamique des choix et de la coordination temporelle, la mémoire et l'apprentissage des lieux, la formation des concepts. Examination of the goals of comparative analysis of cognitive processes and the contribution of behavioural ecologists to the study of cognition in non-human species. Topics to include the dynamics of choice and timing, memory and place learning, and concept formation.

PSY6918 LE RAISONNEMENT, LE JUGEMENT ET LA PRISE DE DECISION / REASONING, JUDGEMENT AND DECISION MAKING (3cr.)
Séminaires sur le raisonnement causal, l'inférence déductive et inductive, la formation et l'évaluation d'hypothèses, le jugement probabiliste et la détection des covariations. Examen de ces activités cognitives à la lumière de modèles théoriques faisant appel à des concepts variés tels que la logique, formelle ou naturelle, les processus heuristiques ou les mécanismes connexionnistes. Seminars on causal reasoning, deductive and inductive inference, hypothesis formation and evaluation, probabilistic judgement, and covariation detection. Examination of these cognitive activities in the light of theoretical models based on various concepts such as logic, formal or natural, heuristics, or connectionist mechanisms.

PSY6920 PSYCHOLOGIE CLINIQUE DE LA SANTÉ / CLINICAL HEALTH PSYCHOLOGY (3cr.)

PSY6923 RECHERCHE SUR LE STRESS PSYCHOSOCIAL / PSYCHOSOCIAL STRESS RESEARCH (3cr.)
Concepts and measures of stress and stressors. Analyse critique des modèles théoriques et des recherches empiriques concernant les événements de la vie, l'appréhension cognitive, les stratégies d'anticipation et de gestion du stress. Constructs and measurements of stress and stressors. Critical analysis of theoretical models and empirical research of life events, cognitive appraisal, anticipation and coping strategies.

PSY6926 ÉVALUATION NEUROPSYCHOLOGIQUE / NEUropsychological ASSESSMENT (3cr.)
PSY6927 SÉMINAIRES DE RECHERCHE EN PSYCHOLOGIE SOCIALE / RESEARCH SEMINARS IN SOCIAL PSYCHOLOGY (3cr.)

PSY6930 ETHIQUE DE LA RECHERCHE EN PSYCHOLOGIE / ETHICS OF RESEARCH IN PSYCHOLOGY (3cr.)
Tour d'horizon des problèmes fondamentaux liés à la légitimité de la pratique de la psychologie scientifique. Questions théoriques relevant de l'éthique philosophique aux questions pragmatiques associées aux codes déontologiques. Overview of the basic problems that pertain to the legitimacy of the practice of scientific psychology. Theoretical issues that pertain to philosophical ethics and pragmatic issues associated with ethical norms.

PSY6931 CONSTRUCTION DE TESTS ET THÉORIE PSYCHOMÉTRIQUE / TEST CONSTRUCTION AND PSYCHOMETRIC THEORY (3cr.)
Sujets afférents à la planification, la construction et la validation d'un instrument de mesure dans le cadre de son application à la recherche. Thèmes spécifiques comprenant la conception d'items, les questions à réponse construite, les questions à réponse choisie, les applications de l'analyse factorielle exploratoire et confirmatoire, la validité théorique, les mesures de cohérence interne et de fidélité, l'analyse d'items et l'adaptation interlinguistique des instruments de mesure. Issues relevant to the design, construction, and validation of psychometric assessment devices with applications to research. Special topics to include item construction, open-ended items, multiple-choice items, applications of exploratory and confirmatory factor analysis, construct validity, measures of internal consistency and reliability, item analysis, and cross-linguistic adaption of assessment devices.

PSY6932 PSYCHOPATHOLOGIE DE L'ENFANT / CHILD PSYCHOPATHOLOGY (3cr.)
PSY6941 APPLICATIONS DE LA MICRO-INFORMATIQUE À LA PSYCHOLOGIE EXPÉRIMENTALE HUMAINE / APPLICATION OF MICROCOMPUTERS TO HUMAN EXPERIMENTAL PSYCHOLOGY (3cr.)
Utilisation des micro-ordinateurs dans l'acquisition des données comportementales et organisation des fichiers de données pour le traitement statistique. Sujets abordés : la rédaction de consignes adaptées à l'affichage vidéographique, les techniques d'affichage vidéographique, les techniques d'enregistrement des réponses, les propriétés statistiques de divers types de réponses. Les travaux pratiques constituent une composante importante de ce cours. Use of micro-computers in behavioural data acquisition and file organization for purposes of statistical treatment. Subjects to be covered include: writing instructions for video display, video display techniques, techniques for recording answers, statistical properties of various answers. Applied assignments are important components of this course.

PSY6943 PSYCHOLOGIE COGNITIVE DU LANGAGE / COGNITIVE PSYCHOLOGY OF LANGUAGE (3cr.)
Ce séminaire étudie les processus perceptuels et cognitifs sous-jacents au comportement langagier. Le cours est divisé en cinq parties : 1) une introduction à l'étude du comportement langagier; 2) la compréhension du langage; 3) la production du langage; 4) l'acquisition du langage; et 5) la relation entre langage et pensée. L'objectif principal du cours est de faire un bref bilan de l'état actuel des connaissances sur les sujets abordés. This seminar studies the perceptual and cognitive processes underlying language behaviour. The course is divided into five parts: 1) introduction to the study of language behaviour; 2) language comprehension; 3) language production; 4) language acquisition; and 5) the relation between language and thought. The main objective is to survey contemporary knowledge of this field of research.

PSY6946 PSYCHOLOGIE SOCIALE DU LANGAGE / SOCIAL PSYCHOLOGY OF LANGUAGE (3cr.)
Étude du langage en tant que processus interactif de communication. Revue intégrée des processus de production et d'interprétation en fonction des contextes sociaux et cognitifs. Analyse des problèmes méthodologiques spécifiques à l'étude de l'interaction. The study of language as an interactive communication process. Integrated review of the production and interpretation mechanisms as a function of social and cognitive contexts. Analysis of the methodological problems posed by the study of interaction.

PSY6947 PSYCHOLOGIE SCOLAIRE / SCHOOL PSYCHOLOGY (3cr.)

PSY6951 DROGUES ET COMPORTEMENT / DRUGS AND BEHAVIOUR (3cr.)
Les techniques neurochimiques et neuropharmacologiques utiles à l'étude du comportement normal et pathologique. Évaluation critique des techniques appliquées au comportement animal et humain. A study of current neurochemical and neuropharmacological techniques applicable to the study of normal and pathological behaviour. A critical evaluation of these techniques as they relate to animal and human behaviour.

PSY6952 LA RECHERCHE SUR LES PRINCIPES D’APPRENTISSAGE ET LEURS APPLICATIONS / RESEARCH AND APPLICATION OF LEARNING PRINCIPLES (3cr.)

PSY6954 PSYCHOLOGIE SOCIALE APPLIQUÉE AU MONDE DU TRAVAIL / APPLIED SOCIAL PSYCHOLOGY IN THE WORK PLACE (3cr.)
Séminaires accompagnés de simulations des problèmes éprouvés dans le monde du travail. Sujets de discussion : l'action affirmative, les femmes et la gestion, les conflits entre travail et famille, la culture des grandes sociétés, la qualité de vie au travail, les horaires de travail flexibles, les services psychologiques dans les grandes sociétés et l'évaluation de programme. Topics for discussion include affirmative action, women in management, work/family conflict, corporate culture, quality of work life, flextime, psychological services in organizations, and program evaluation.

PSY6958 MÉTHODES DE RECHERCHE EN PSYCHOLOGIE SOCIALE / RESEARCH METHODS IN SOCIAL PSYCHOLOGY (3cr.)
Étude critique des différentes méthodes de recherche et de leur mise en œuvre dans la recherche contemporaine en psychologie sociale. Élaboration d'un projet d'étude sur une question sociale spécifique et application de différentes méthodes de collecte des données. Critical review of research methods used in social psychology and their applications in contemporary research. Elaboration of a research project on a social problem using different data collection methods.

PSY6962 MOTIVATION HUMAINE ET SOCIALE : THÉORIÈRES ET RECHERCHE /HUMAN AND SOCIAL MOTIVATION: THEORY AND RESEARCH (3cr.)
Aspects épistémologiques, théoriques et expérimentaux du concept de motivation en tant que déterminant du comportement social. Étude de son développement. Épistemological, theoretical and experimental aspects of the concept of motivation as an explanatory construct of social behaviour. Study of its development.

PSY6963 TECHNIQUES EXPÉRIMENTALES EN RECHERCHE SUR LE SOMMEIL / EXPERIMENTAL TECHNIQUES IN SLEEP RESEARCH (3cr.)
Séminaires/tutoriels sur les techniques expérimentales pertinentes à l'étude psychophysiologique et cognitive du sommeil. Sujets abordés : l'application de ces techniques à l'étude du cours temporel des épisodes de sommeil, des corrélats neurophysiologiques des stades du sommeil, du phénomène du rêve et des troubles du sommeil. Seminars/tutorials on the experimental techniques that apply to the psychophysiological and cognitive study of sleep. Selected topics to include the use of these techniques in the study of the time course of sleeping episodes, neurophysiological correlates of sleep stages, the phenomenon of dreaming, and sleep disorders.
PSY6964 SIMULATION INFORMATIQUE DES PROCESSUS COGNITIFS / COMPUTER SIMULATION OF COGNITIVE PROCESSES (3cr.)
Tour d'horizon des principales techniques de simulation informatique des processus cognitifs, avec exercices pratiques sur micro-ordinateur. Analyse détaillée de la programmation axée sur l'objet et de son potentiel comme outil de simulation en sciences de la cognition. Overview of the main computer simulation techniques of cognitive processes with hands-on exercises on the microcomputer. Detailed analysis of object-oriented programming and its potential as a simulation tool in cognitive science.

PSY6975 PSYCHOLOGIE CLINIQUE DE LA PERSONNE ÂGÉE / CLINICAL GEROPSYCHOLOGY (3cr.)

PSY6982 LA PSYCHOLOGIE ET LA SANTÉ / PSYCHOLOGY AND HEALTH (3cr.)

PSY6991 SÉMINAIRES EN PSYCHOLOGIE / SEMINARS IN PSYCHOLOGY (3cr.)
Sujets choisis de psychologie contemporaine présentés et discutés en séminaires au niveau gradué. Selected topics on contemporary psychology presented and discussed as graduate seminars.

PSY7101 CAUSAL MODELING IN PSYCHOLOGICAL RESEARCH (3cr.)
Focus on the conceptual framework and analytic procedures associated with causal modeling, as it relates to psychological research. Specific applications include path analysis based on both multiple regression and analysis of covariance structures, and full structural equation modeling applied to cross-sectional as well as longitudinal designs. Each example studied is accompanied by required computer application work. Prerequisite: PSY 6105 Factor Analysis in Psychological Research.

PSY7102 FIELD RESEARCH IN SOCIAL AND COMMUNITY INTERVENTIONS (3cr.)
Practical experience in carrying out applied research and program evaluation in a community agency or organization. Prerequisite: PSY 7103

PSY7103 PROGRAM EVALUATION (3cr.)

PSY7104 SYSTEMIC THERAPY (3cr.)
An introduction to concepts and practices in systemic therapy that may be used with individuals, couples or families. Emphasis on the context of problems and therapeutic practices enabling clients to have more choices in their lives.

PSY7105 BEHAVIOUR THERAPY WITH CHILDREN AND FAMILIES (3cr.)
Reviews evidence-based cognitive-behavioural approaches to dealing with a range of psychological problems. Examination of both cognitive and non-cognitive approaches to working with individual children, their parents, and larger units such as classrooms.

PSY7106 SEMINARS IN GENERAL PSYCHOLOGY (3cr.)
Research topics are regularly reported and studied by staff members and occasionally with visiting researchers.

PSY7107 PSYCHOLOGY OF THE FAMILY (3cr.)
Examination of the empirical literature on how families deal with normative and non-normative life transitions across the family life cycle, with discussion of major challenges facing families.

PSY7108 MULTICULTURAL CLINICAL PSYCHOLOGY (3cr.)
Issues related to the assessment and treatment of multicultural populations. Theoretical frameworks and practical aspects of multicultural counseling.

PSY7109 PSYCHOLOGICAL EFFECTS AND TREATMENT OF TRAUMA (3cr.)
Theoretical, empirical, and clinical aspects of traumas such as sexual or physical abuse, violent crime, torture, or war experiences. Effects of trauma, including post-traumatic stress disorder, the assessments of such effects, and methods of treatment.

PSY7112 RESEARCH SEMINARS IN CONTEMPORARY PSYCHOLOGY (3cr.)
Advanced seminars offered on different topics each year.

PSY7114 SEMINARS IN PROFESSIONAL PSYCHOLOGY (3cr.)
Advanced Seminars offered on different topics each year.

PSY7123 COGNITIVE AND BEHAVIOUR THERAPIES (3cr.)
Critical review of contemporary theories and practices in cognitive-behaviour therapy with a focus on depression and anxiety disorders.

PSY7124 COUPLES THERAPY (3cr.)

PSY7167 FAMILY PSYCHOTHERAPY (3cr.)

PSY7190 SEMINARS IN PSYCHOLOGY II (3cr.)
Selected topics on contemporary psychology presented and discussed as graduate seminars.

PSY7502 RECHERCHE APPLIQUÉE AUX INTERVENTIONS SOCIALES ET COMMUNAUTAIRES (3cr.)
Expérience pratique de la recherche et de l'évaluation de programme dans le contexte d'un organisme communautaire. Préalable : PSY 7502.

PSY7503 ÉVALUATION DE PROGRAMMES (3cr.)
Le concept de programme dans le contexte des services de santé. L'évaluation dans le contexte du développement des programmes dans les services de santé. Le contexte organisationnel de l'évaluation. L'identification de besoins et planification de programmes dans le contexte communautaire. L'évaluation des résultats de programmes. L'évaluation de la qualité des services.

PSY7504 THÉRAPIE SYSTÉMIQUE (3cr.)
Introduction aux concepts et pratiques en thérapie systémique que l'on peut utiliser avec les individus, les couples, ou les familles. Discussion du contexte des problèmes psychosociaux. Présentation des approches qui ont pour but de faciliter le choix chez les clients.

PSY7505 THÉRAPIE COMPORTEMENTALE DE L'ENFANT ET DE LA FAMILLE (3cr.)
Étude des approches cognitive-comportementales qui sont basées sur des données probantes pour une gamme des problèmes. Étude des approches cognitives et non-cognitives à l’intervention avec des enfants individuels, leurs parents, et des unités telles que des salles de classes.

PSY7506 SÉMINAIRES EN PSYCHOLOGIE GÉNÉRALE (3cr.)
Les sujets de recherche sont présentés et discutés à dates fixées par les membres du personnel enseignant, et occasionnellement avec la participation d’un chercheur invité.

PSY7507 PSYCHOLOGIE DE LA FAMILLE (3cr.)
Présentation de la recherche empirique qui porte sur l’adaptation des familles aux transitions, à partir de la perspective du cycle de vie familiale, avec discussion des défis auxquels font face les familles.

PSY7508 PSYCHOLOGIE CLINIQUE MULTICULTURELLE (3cr.)
Étude de questions relatives à l'évaluation et au counselling de populations multiculturelles. Aspects théoriques et appliqués du counselling multiculturel.

PSY7509 EFFETS ET TRAITEMENT PSYCHOLOGIQUES DU TRAUMATISME (3cr.)

PSY7512 SÉMINAIRES DE RECHERCHE EN PSYCHOLOGIE CONTEMPORAINE (3cr.)
Séminaires sur différents sujets offerts chaque année.

PSY7514 SÉMINAIRES EN PSYCHOLOGIE PROFESSIONNELLE (3cr.)
Séminaires sur différents sujets offerts chaque année.

PSY7523 THÉRAPIE COMPORTEMENTALES ET COGNITIVES (3cr.)
Étude critique des théories et pratiques contemporaines en thérapie cognito-comportementale, avec un accent particulier sur la dépression et les troubles d’anxiété.

PSY7524 LA THÉRAPIE DE COUPLES (3cr.)
Perspectives empiriques sur la déresse conjugale et les relations amoureuses chez l’adulte. Les modèles empiriques intégrés d’intervention dans la thérapie de couples – en particulier la thérapie de couples dépression, trouble de stress suite au traumatisme et violence dans les relations.

PSY7567 PSYCHOTHERAPIE FAMILIALE (3cr.)

PSY7590 SÉMINAIRES EN PSYCHOLOGIE II (3cr.)
Sujets choisis de psychologie contemporaine présentés et discutés en séminaires au niveau supérieur.

PSY7904 THÉRAPIE SYSTÉMIQUE / SYSTEMIC THERAPY (3cr.)
Introduction aux concepts et pratiques en thérapie systémique que l’on peut utiliser avec les individus, les couples, ou les familles. Discussion du contexte des problèmes psychosociaux. Présentation des approches qui ont pour but de faciliter le choix chez les clients. An introduction to concepts and practices in systemic therapy that may be used with individuals, couples or families. Emphasis on the context of problems and therapeutic practices enabling clients to have more choices in their lives.

PSY7905 THÉRAPIE COMPORTEMENTALE DE L'ENFANT ET DE LA FAMILLE/ BEHAVIOUR THERAPY WITH CHILDREN AND FAMILIES (3cr.)
Étude des approches cognito-comportementales qui sont basées sur des données probantes pour une gamme de problèmes. Étude des approches cognitives et non-cognitives à l'intervention avec des enfants individuels, leurs parents, et des unités telles que des salles de classes. Reviews evidence-based cognitive-behavioural approaches to dealing with a range of psychological problems. Examination of both cognitive and non-cognitive approaches to working with individual children, their parents, and larger units such as classrooms.
PSY 7906 SÉMINAIRES EN PSYCHOLOGIE GÉNÉRALE / SEMINARS IN GENERAL PSYCHOLOGY (3cr.)
Les sujets de recherche sont présentés et discutés à des dates fixées par les membres du personnel enseignant, et occasionnellement avec la participation d’un chercheur invité. Research topics are regularly reported and studied by staff members and occasionally with visiting researchers.

PSY 7907 PSYCHOLOGIE DE LA FAMILLE / PSYCHOLOGY OF THE FAMILY (3cr.)
Présentation de la recherche empirique qui porte sur l’adaptation des familles aux transitions, à partir de la perspective du cycle de vie familiale, avec discussion des défis auxquels font face les familles. Examination of the empirical literature on how families deal with normative and non-normative life transitions across the family life cycle, with discussion of major challenges facing families.

PSY 7908 PSYCHOLOGIE CLINIQUE MULTICULTURELLE / MULTICULTURAL CLINICAL PSYCHOLOGY (3cr.)

PSY 7909 EFFETS ET TRAITEMENT PSYCHOLOGIQUES DU TRAUMATISME / PSYCHOLOGICAL EFFECTS AND TREATMENT OF TRAUMA (3cr.)
Étude des aspects théoriques, empiriques, et cliniques du traumatisme, tel que l’abus physique ou sexuel, le crime violent, la torture, et les expériences de guerre. Les effets de tels traumas (ex. le « post-traumatic stress disorder »), l’évaluation de ces effets, et les approches thérapeutiques. Theoretical, empirical, and clinical aspects of trauma such as sexual or physical abuse, violent crime, torture, or war experiences. Effects of trauma, including post-traumatic stress disorder, the assessments of such effects, and methods of treatment.

PSY 7912 SÉMINAIRES DE RECHERCHE EN PSYCHOLOGIE CONTEMPORAINE / RESEARCH SEMINARS IN CONTEMPORARY PSYCHOLOGY (3cr.)

PSY 7914 SÉMINAIRES EN PSYCHOLOGIE PROFESSIONNELLE / SEMINARS IN PROFESSIONAL PSYCHOLOGY (3cr.)

PSY 7916 LECTURES DIRIGÉES EN PSYCHOLOGIE I / DIRECTED READINGS IN PSYCHOLOGY I (3cr.)
Directed readings on selected topics in Psychology. / Lectures dirigées sur des thèmes choisis en psychologie.

PSY 7923 THÉRAPIES COMPORTEMENTALES ET COGNITIVES / COGNITIVE AND BEHAVIOUR THERAPIES (3cr.)

PSY 7967 PSYCHOTHERAPIE FAMILIALE / FAMILY PSYCHOTHERAPY (3cr.)

PSY 7990 SÉMINAIRES EN PSYCHOLOGIE II / SEMINARS IN PSYCHOLOGY II (3cr.)

PSY 8916 LECTURES DIRIGÉES EN PSYCHOLOGIE II / DIRECTED READINGS IN PSYCHOLOGY II (3cr.)
Directed readings on selected topics in Psychology (topic must be different from that of PSY 7916). / Lectures dirigées sur des thèmes choisis en psychologie (le thème doit être différent de celui traité dans le cours PSY 7916).

Practica et internats / Practica and Internships

PSY 5023 PRACTICUM DE RECHERCHE DE NIVEAU MAÎTRISE / MASTER’S LEVEL RESEARCH PRACTICUM (1cr.)

PSY 6002 PRACTICUM RECHERCHE APPLIQUÉE / PRACTICUM INAPPLIED RESEARCH (3cr.)

PSY 6007 PRACTICUM CLINIQUE / CLINICAL PRACTICUM (1cr.)

PSY 6008 PRACTICUM CLINIQUE EXTERNE / EXTERNAL CLINICAL PRACTICUM (1cr.)

PSY 6009 PRACTICUM CLINIQUE EXTERNE AVANCÉ / ADVANCED EXTERNAL CLINICAL PRACTICUM (1cr.)

PSY 6010 PRACTICUM CLINIQUE INTERNE AVANCÉ / ADVANCED INTERNAL CLINICAL PRACTICUM (1cr.)

PSY 6022 STAGE EN COUNSELLING - CLINIQUE PSYCHOLOGIQUE I / INTERNSHIP IN COUNSELLING - CLINICAL PSYCHOLOGY I (1cr.)

PSY 6032 STAGE AUX HÔPITAUX / INTERNSHIP IN HOSPITALS (1cr.)

PSY 6042 PRACTICUM EN RECHERCHE FONDAMENTALE / PRACTICUM IN BASIC RESEARCH (3cr.)

Cotes générales / General Codes

PSY 7999 THÈSE DE MAÎTRISE / MASTER’S THESIS

PSY 9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION

PSY 9999 THÈSE DE DOCTORAT / DOCTORAL THESIS

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**Public Administration (PhD)**

The School of Political Studies located in the Faculty of Social Science offers graduate programs leading to the Master of Arts (MA) and the Doctor of Philosophy (PhD) degrees in Public Administration.

The main objective of the doctoral program in public administration is to provide students with leading-edge theoretical and conceptual knowledge to enable them to understand and analyze public administration, as well as equipping them with the know-how and skills necessary for success in a constantly changing organizational environment.

The program aims to prepare students for academic and research careers. The various components of the doctoral program (courses, comprehensive examination, thesis proposal, thesis and defence) are all designed to develop the student’s capacity for high level independent research in social sciences.

The program offers two fields or concentrations in public administration: public management and public policy. These fields are not mutually exclusive, but constitute the two main components of public administration studies.

The MA program is offered both full- and part-time, whereas the PhD program is offered full-time only. The programs are offered in French and English and the use of both languages is encouraged.

In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English.

The programs operate within the general framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**

Admission to the graduate program in Public Administration is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

To be considered for admission, applicants must:

1. Hold a master’s degree in public administration or in a related discipline with a minimum average of 75% (B+);
2. Demonstrate a good academic performance in previous studies as shown by official transcripts, research reports, abstracts or any other documents demonstrating research skills;
3. Provide at least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
4. Provide a statement of purpose indicating the career goals and the interests in the proposed research area;
5. Identify at least one professor who is willing and available to act as thesis supervisor;
6. Be proficient (understand, speak and write) in English or in French. A passive knowledge of the other language is required. *

*Students whose first language is other than French or English must provide proof in their application of their level of competence in these languages. The Public Administration Program reserves the right to conduct an interview and to require a test in either language. If a student’s research interests require comprehension of a language other than French or English, the Public Administration Program may require proof of such competency.

**Transfer from master’s to PhD**

Students enrolled in the MA program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Completion of four graduate courses (12 credits) with a minimum average of 85% (A) and with an A+ in at least one of the courses;
2. Satisfactory progress in the research program;
3. Approval of the Graduate Studies Committee in public administration.

The transfer must take place within sixteen months of full-time registration (or equivalent) in the master’s program. Following the transfer, all of the requirements of the doctoral program must be met. Students who transfer but do not complete the PhD program can however obtain the MA degree provided they meet all of its requirements.

**Program Requirements**

**PhD Degree Requirements**
The program is structured around the two fields: public management and public policy. Students must choose one as their major field and the other as their minor field. The choice of major field will be linked to their research interests.

The following requirements must be met:

1. Six compulsory credits from the courses PAP9310 and PAP9311;
2. Successful completion of the seminar course PAP9320 (in major field: public management) or of the seminar course PAP9330 (in major field: public policy);
3. Presentation of a research seminar (PAP9200);
4. Successful completion of a comprehensive examination* (PAP9998) and of a thesis proposal (PAP9997);
5. Presentation and defense of a thesis (PAP9999) based on original research carried out under the direct supervision of a faculty member of the Department.

Note: Students who have not completed a master’s level course in research methods must register in PAP6103 (3cr.) in addition to the other courses listed above.

* Comprehensive examinations are aimed at demonstrating basic knowledge in both fields. They usually take place towards the end of the third session of registration in the program. To continue in the program, students must pass a comprehensive examination of their major and minor fields.

**Residence**

All students must complete a minimum of six sessions of full-time registration. In the case of transfer students, the residency period is nine full-time sessions from the date of initial registration in the program.

**Duration of the program**

The requirements of the program are usually fulfilled within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

**Minimum Standards**

The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), the thesis proposal, the research paper, the thesis or whose progress is deemed unsatisfactory are required to withdraw.

**Courses**

**PAP6101 GLOBALIZATION AND CONTINENTAL INTEGRATION** (3cr.)
Examination of the impacts of socio-economic, technological and cultural globalization on our systems of governance both internationally and domestically. Analysis of the role of the nation-state in a context of simultaneous decentralization and internationalization, with a particular focus on global institutions and North American integration.

**PAP6102 DEMOCRATIC GOVERNANCE** (3cr.)
This seminar provides an examination of how democratic governments structure their decision-making processes for effectiveness, representation and accountability. A particular focus of this seminar is a critical evaluation of the New Public Management reforms, and an in-depth review of different models of government intervention and policy-making from a comparative perspective.

**PAP6103 RESEARCH METHODS** (3cr.)
Study of different methodological approaches used in public administration, conceptual tools and research methods (discourse analysis, content analysis, quantitative methods (statistics and probability), interview techniques, etc.) necessary for leading-edge research in public management and policy public. Epistemological and ontological questions related to the different approaches. Development of major research paper or thesis proposal.

**PAP6110 THEORIES OF PUBLIC MANAGEMENT** (3cr.)
(Core course for students in the field of public management.) Presentation of major components of public management (managerial roles and functions, planning, organizational cultures, leadership and motivation, human resources managements, change management, etc.). Study of the main theoretical approaches in public management, with the aim of relating them critically to one another and undertaking a critical analysis of the methodological and theoretical contributions of the various approaches.

**PAP6111 THEORIES OF PUBLIC POLICY** (3cr.)
(Core course for students in the field of public policy.) Presentation of the different stages of the policy process, notably emergence, development, implementation and evaluation, as well as the influence of institutions, ideas and interests on public policy. The objective is to present the main theoretical approaches (neo-institutionalism, post-modification, political economy, etc.) with the aim of relating them critically to one another and critically analyzing their methodological and theoretical contributions.
PAP6120 ETHICS IN THE PUBLIC SECTOR (3cr.)
Study of the theoretical and empirical issues related to ethics in the public sector, analysis of the literature on the philosophical and political foundations of ethical reflection and the literature on ethics and public administration. Themes addressed include citizenship and democracy, responsibility and accountability, the public interest, contemporary issues in ethics in the public sector and social justice in public decision-making.

PAP6121 PUBLIC ADMINISTRATION: COORDINATION AND CONSISTENCY (3cr.)
Examination of the influence of structural and social processes on the theory and practice of public administration. The course will examine the mechanisms and issues of coordination in its multiple forms: multi-level coordination, coordination across the public, private and community sectors, horizontal and vertical coordination. The course will also address the challenges and issues of consistency in the process of public policy development and implementation and will examine a number of cases and international comparisons.

PAP6122 CULTURE AND POWER IN PUBLIC ORGANIZATIONS (3cr.)
Informal dimensions of public organizations, including organizational cultures and power relations that mesh with organizational issues. Sociopolitical analysis of organizations to improve understanding of factors of inertia, resistance and blockage that influence, to different degrees, possibilities for innovation and change in public administration.

PAP6130 SELECTED THEMES IN PUBLIC ADMINISTRATION (3cr.)

PAP6501 MONDIALISATION ET INTÉGRATION CONTINENTALE (3cr.)
Examen de l'impact sur la gouvernance à l'échelle internationale et nationale de la mondialisation des secteurs socio-économique, technologique et culturel. Analyse du rôle joué par l'état-nation dans un contexte de décentralisation et d'internationalisation simultanées, en mettant particulièrement l'accent sur les institutions mondiales et l'intégration nord-américaine.

PAP6502 GOUVERNANCE DÉMOCRATIQUE - RENDEMENT ET IMPUTABILITÉ (3cr.)
Examen des mesures prises par les gouvernements démocratiques pour s'assurer que les processus de prise de décision répondent aux critères d'efficacité, de représentativité, et d'imputabilité. Accent sur l'examen critique des réformes récentes des modes de gestion à la fonction publique et étude approfondie des différents modes d'intervention gouvernementale et d'élaboration de politiques d'un point de vue comparatif.

PAP6503 MÉTHODES DE RECHERCHE (3cr.)
Étude de différentes approches méthodologiques utilisées en administration publique, outils conceptuels et méthodes de recherche (analyse de discours, analyse de contenu, méthodes quantitatives (statistiques et probabilités), techniques d'entrevue, etc.) nécessaires pour faire de la recherche de pointe en gestion publique et en politiques publiques. Questions épistémologiques et ontologiques associées à ces diverses approches. Élaboration du projet de mémoire ou de thèse.

PAP6510 THÉORIES EN GESTION PUBLIQUE (3cr.)
(Cours nouyau pour les étudiants dans le champ de la gestion publique.) Présentation des grandes composantes de la gestion publique (rôles et fonctions manageriels, planification, cultures organisationnelles, leadership et motivation, gestion des ressources humaines, gestion du changement, etc.). Étude des principales approches théoriques de la gestion publique, dans le but de les relier et d'entreprendre l'analyse critique des apports méthodologiques et théoriques des diverses approches.

PAP6511 THÉORIES EN POLITIQUES PUBLIQUES (3cr.)
(Cours nouyau pour les étudiants dans le champ des politiques publiques.) Présentation des différentes phases de l’analyse des politiques publiques, notamment celles de l’émergence, de l’élaboration, de la mise en œuvre et de l’évaluation, ainsi que de l’influence des institutions, des idées et des intérêts sur les politiques publiques. L’objectif sera de présenter les principales approches théoriques de politiques publiques (néo-institutionnalisme, post-positivisme, économie politique, etc.), de les relier de façon critique et d'entreprendre une analyse des apports méthodologiques et théoriques des diverses approches.

PAP6520 ÉTHIQUE PUBLIQUE (3cr.)
Étude des enjeux théoriques et empiriques liés à l'éthique publique, analyse de la littérature sur les fondements philosophiques et politiques de la réflexion éthique et de la littérature sur l’éthique et l’administration publique. Les thèmes abordés incluent la citoyenneté et la démocratie, la responsabilité et la reddition de comptes, l'intérêt public, les enjeux éthiques publics contemporains et la justice sociale dans le contexte de la prise de décision publique.

PAP6521 ADMINISTRATION PUBLIQUE : COORDINATION ET COHÉRENCE (3cr.)

PAP6522 CULTURES ET POUVOIR DANS LES ORGANISATIONS PUBLIQUES (3cr.)
Dimension informelle de l’organisation publique, à savoir les cultures organisationnelles et les relations de pouvoir qui se conjuguent inégalement aux enjeux organisationnels. Lecture sociopolitique de l’organisation pour mieux saisir les facteurs d’inertie, de résistance et de blocage qui pèsent, à des degrés divers, sur les possibilités d’innovation et de changement dans l’administration publique.

PAP6530 THÈMES CHOISIS EN ADMINISTRATION PUBLIQUE (3cr.)

PAP6980 LECTURE DIRIGÉE / DIRECTED READING (3cr.)
PAP9988 PROJET DE THÈSE DE MAÎTRISE / MASTER'S THESIS PROPOSAL

PAP7997 STAGE / INTERNSHIP (3cr.)
Le stage s’effectue normalement au sein de la fonction publique, mais également dans des organismes non-gouvernementaux ou privés. Dans la mesure du possible, le stage est en rapport étroit avec le sujet du mémoire. Il a pour but d’approfondir les connaissances de l’étudiant dans son domaine d’intérêt et de lui fournir de l’expérience pratique en administration publique. L’étudiant doit soumettre un rapport écrit à la fin du stage et il doit s’inscrire à temps plein simultanément au mémoire et au stage. Le stage se fait habituellement à la troisième session. Le mémoire est noté S (satisfaisant) ou NS (non satisfaisant). / The internship, normally in the public service, but also in non-governmental or private organizations, is related as closely as possible to the subject of the research paper and is intended to provide a deeper understanding of the student’s area of interest as well as practical experience in public administration. The student must submit a written report relating to the internship and must register full time simultaneously for the research paper and the internship. The internship will usually take place during the third term, i.e. the summer term. Graded S (satisfactory) or NS (not satisfactory).

PAP7998 MÉMOIRE / RESEARCH PAPER (6cr.)
L’inscription au mémoire est permise dès la deuxième session d’études. Le mémoire a environ douze mille mots (environ 50 pages). Il est évalué par la personne qui l’a dirigé et par un autre professeur nommé par le directeur des études supérieures. Le mémoire est noté S (satisfaisant) ou NS (non satisfaisant). / Registration for the research paper is permitted in the second session. The research paper is approximately 12,000 words (50 pages) in length. It is evaluated by the supervisor and by another professor appointed by the professor in charge of graduate studies. The research paper is graded S (satisfactory) or NS (not satisfactory).

PAP7999 THÈSE DE MAÎTRISE / MA THESIS (12cr.)

PAP9200 RESEARCH SEMINAR IN PUBLIC ADMINISTRATION (6cr.)
Preparation for writing the thesis (including the thesis proposal) in public administration. Different stages of research in public management and public policy, notably the development of the research question, literature review, theoretical framework, methodological approach and the development of empirical data. The ontological dimensions (what constitutes the knowledge domain?) and epistemological (how do we know what we know?) will also be addressed. Introduction to different strategies of knowledge diffusion (conferences, articles, book chapters, letters to the media) and preparation for the thesis defence.

PAP9310 PUBLIC MANAGEMENT (3cr.)
In-depth study of the field of public management. Presentation of the formal dimensions (direction, organization, budgeting, strategy, planning, control, etc.) and informal dimensions (leadership, motivation, mobilization, organizational culture, coordination, power relations, etc.) in public management. Critical analysis of the principal theoretical approaches and tendencies of public management and their theoretical and methodological contributions.

PAP9311 PUBLIC POLICY (3cr.)
In-depth study of the field of public policy. Different stages in the policy process (emergence, development, implementation and evaluation). The objective is to present the main theoretical approaches and tendencies (neo-institutionalism, post-positivism, political economy, etc.), relating them critically to one another and critically analyzing their methodological and theoretical contributions.

PAP9320 SEMINAR IN MAJOR FIELD: PUBLIC MANAGEMENT (3cr.)
This course deepens the knowledge acquired in the course PAP9310 Public Management for doctoral candidates with public management as the Major Field.

PAP9330 SEMINAR IN MAJOR FIELD: PUBLIC POLICY (3cr.)
This course deepens the knowledge acquired in the course PAP9311 Public Policy for doctoral candidates with public policy as the Major Field.

PAP9600 SÉMINAIRE DE RECHERCHE EN ADMINISTRATION PUBLIQUE (6cr.)
Préparation à la rédaction de la thèse (incluant le projet de thèse) en administration publique. Les différentes étapes de la production de connaissances en gestion publique et en politiques publiques, notamment la formulation de la problématique de recherche, la revue de littérature, le cadre théorique, la démarche méthodologique et la production des données empiriques. Les dimensions ontologique (qu’est-ce qui compose le domaine du savoir ?) et épistémologique (comment savons-nous ce que nous savons ?) sont également abordées. Initiation aux différentes stratégies de diffusion des connaissances (conférences, rédaction d’articles, de chapitres et de lettres aux médias), avec un souci particulier pour la préparation à la soutenance de la thèse.

PAP9710 GESTION PUBLIQUE (3cr.)
Étude approfondie du domaine de la gestion publique. Présentation des composantes formelles (direction, organisation, budgétisation, stratégie, planification, contrôle, etc.) et informelles (leadership, motivation, mobilisation, culture organisationnelle, coordination, relations de pouvoir, etc.) en gestion publique. Analyse critique des principales approches et courants théoriques de la gestion publique et de leurs apports théoriques et méthodologiques.

PAP9711 POLITIQUES PUBLIQUES (3cr.)
Étude approfondie du domaine des politiques publiques. Différentes phases de l’analyse des politiques publiques (émergence, élaboration, mise en œuvre et évaluation). L’objectif sera de présenter les principales approches et courants théoriques dans le domaine des politiques publiques (néo-institutionnalisme, post-positivisme, économie politique, etc.), de les relier de façon critique et d’entreprendre une analyse de leurs apports théoriques et méthodologiques.

PAP9720 SÉMINAIRE DANS LE CHAMP MAJEUR : GESTION PUBLIQUE (3cr.)
Ce cours approfondira les connaissances acquises lors du cours PAP9710 Gestion publique pour les doctorants avec gestion publique comme champ majeur.
PAP9730 SÉMINAIRE DANS LE CHAMP MAJEUR : POLITIQUES PUBLIQUES (3cr.)
Ce cours approfondira les connaissances acquises lors du cours PAP9711 Politiques publiques pour les doctorants dont le champ majeur est politiques publiques.

PAP9980 LECTURE DIRIGÉE / DIRECTED READING (3cr.)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le directeur des études supérieures. / Independent study under the direction of a faculty member in the program. The topic and requirements must be approved by the director of graduate studies.

PAP9997 PROJET DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL

PAP9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION

PAP9999 THÈSE DE DOCTORAT / PhD THESIS

Rehabilitation Sciences (PhD)

The Ph.D. degree in Rehabilitation Sciences (REA) is offered by the School of Rehabilitation Sciences located within the Faculty of Health Sciences. The degree prepares candidates from both professional and research backgrounds for a career involving research in rehabilitation sciences, including issues ranging from basic science questions to psychosocial repercussions of health conditions in a rehabilitation context. PhD graduates will develop independent and collaborative research skills and will be equipped to contribute to the knowledge base that informs the practice of rehabilitation professionals. The program is offered in English and French and students may write examinations, papers and theses in one or the other language.

The PhD program involves three fields of research:

- Impairment and rehabilitation: This field concerns the impact of motor, sensory, cognitive, and mental health impairments on the individual’s daily functioning. It includes research on fundamental views of disease and disease etiology as risks factors for eventual difficulties in functioning.
- The environment and rehabilitation: This field focuses on the way social and physical environmental factors can either enable or hinder an individual’s functioning.
- Participation in life situations and rehabilitation: This field focuses on how the individual is re-integrated into the community and takes part in life activities while gaining functional autonomy following the onset of disease, disorder, or trauma.

Admission

Admission to the PhD program in rehabilitation sciences is governed by the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS). Applicants must have a master’s degree in Health Sciences or in a related discipline (e.g., education, health administration, psychology) with a minimum average of 75% (B+) calculated in accordance with FGPS guidelines. Proficiency in either English or French is required. Applicants whose first language is neither English nor French should provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the admission section of the general regulations of the FGPS.

Applications are evaluated based on the following criteria:

- Academic performance in previous studies including the official transcripts, research reports, abstracts or any other documents demonstrating research skills;
- At least two confidential letters of recommendation from professors who have known the applicant and are familiar with the student work;
- An up-to-date curriculum vitae including a list of relevant publications;
- Statement of purpose indicating the reasons for PhD study, career goals, interests in the proposed research area;
- Identification of a professor (member of the FGPS) who is willing and available to act as thesis supervisor.

Transfer from Master’s to PhD Program

Students in a Health Sciences research master’s program at the University of Ottawa (for instance, Nursing, Human Kinetics) who have achieved an 80% (A-) average in their last two years of undergraduate studies may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

- Completion of 5 graduate courses (15 credits) with a grade of A- or better in each;
- Satisfactory progress in the research program;
- Written recommendation from the supervisor and the thesis advisory committee;
- Approval by the graduate studies committee.

The transfer must take place within sixteen months of initial registration in the master’s. Following transfer, all the requirements of the doctoral program must be met.
Program Requirements

Degree Requirements
The PhD program in rehabilitation sciences requires successful completion of the following: a minimum of 12 credits and a maximum of 18 credits of coursework, with 9 compulsory credits (REA 7101, REA 7102 and REA 7103) within the School of Rehabilitation Sciences; a comprehensive examination; a thesis proposal; and a thesis. The type and amount of coursework depends on the student's background (research experience and skills) and chosen field of research.

Residence
As per FGPS regulations, all students must complete a minimum of six sessions of full-time registration at the beginning of the program. All requests for non-consecutive full-time study sessions will need to be approved by the FGPS. The program is intended for full-time students. In the case of transfer students, the residency period is nine sessions from the initial registration in the master’s program.

Thesis Advisory Committee
During the first session of the program, a thesis advisory committee (TAC) is formed for the candidate. The Committee’s membership will be determined by the specific interests of the candidate. It will be composed of the supervisor and 2-3 additional professors who are available to offer the student support and direction during the thesis work. At least one member of the thesis committee, in addition to the supervisor, must be from the Faculty of Health Sciences. The TAC is responsible for guiding the student throughout the program, including course selection, the comprehensive examination, thesis proposal, and thesis defense.

Regular meetings between the student and thesis committee members will take place at least once per session. The thesis examining board may include members who are not part of the TAC.

Minimum Standards
The passing grade in all courses is 65% (C+). Students who fail two courses (equivalent to 6 credits), the thesis proposal, or the comprehensive exam or whose research progress is deemed unsatisfactory are required to withdraw.

Duration of the program
Students are expected to complete all requirements within four years. The maximum time permitted is six years from the date of initial registration in the program.

Courses

En plus des cours obligatoires en REA, les étudiants doivent compléter un cours additionnel de 3 crédits. Il est possible que le cours sélectionné ait un préalable, ce qui pourrait augmenter le nombre de crédits requis. Le(s) cours additionnel(s) peuvent être suivis à l’extérieur de la faculté des sciences de la santé et sont identifiés par le directeur de thèse et le comité.

Le comité d’admission peut demander que l’étudiant prenne 6 crédits additionnels, basé sur sa formation antérieure.

In addition to the compulsory REA courses, students must complete an additional three-credit course. It is possible that the chosen course has a prerequisite and this may increase the number of credits required. The additional course or courses can be taken outside of the Faculty of Health Sciences and will be identified by the thesis committee in consultation with the thesis supervisor.

The admission committee can request that the student take an additional 6 credits based on the student’s previous training.

REA7101 TEAM RESEARCH AND INTERDISCIPLINARY METHODOLOGY (3cr.)
Challenges and solutions of working in interdisciplinary research teams using a patient-centered collaborative approach.

REA7102 RESEARCH SEMINAR ON INDIVIDUAL FUNCTIONING AND REHABILITATION MODELS (3cr.)
Relevance and discussion of current and past rehabilitation models of individual functioning.

REA7103 KNOWLEDGE TRANSFER AND EXCHANGE SEMINAR (3cr.)
Religious Studies (PhD)

Programs of Study

Programs of study leading to the degrees of master of arts (MA) in religious studies and doctor of philosophy (PhD) in religious studies are offered.

Objectives and Methods

The orientation of the Department of Classics and Religious Studies (sector: religious studies) is that of the "Science of Religions" or Religionswissenschaft. Thus, the study of the religious phenomenon is pursued through teaching and research in the same manner and on the same level as any other category of facts accessible to human experience and observation.

The disciplines that play a role in the study of religions are primarily of a historical, sociological, psychological and anthropological nature. Moreover, in the modern context, such a study must take into account the plurality of religious traditions and expressions in society and examine...
the relationships among them.

In light of the above, the Department of Classics and Religious Studies (sector: religious studies) takes a multidisciplinary approach to the study of religious phenomena using the perspectives of historical, sociological, psychological, anthropological and literary studies to arrive at a comprehensive understanding of people as religious beings. Research on the meaning of religious phenomena is accomplished through analysis and comparison of the various means of religious expression, both in the past and present. No tradition is considered normative.

**Areas of research**

The doctoral program in religious studies focuses on religions in Canada, including Amerindian and Inuit traditions, and on religions in a comparative cultural context. The comparative cultural approach provides an opportunity to explore religious phenomena across different religious traditions expressly within their specific cultural contexts. The program favours the methods of anthropology, history, psychology and sociology. The comparative cultural approach focuses on religions in the Roman Empire and in the contemporary period.

**Admission**

Candidates must have a master of arts in religious studies or the equivalent, and must meet the requirements of the Faculty of Graduate and Postdoctoral Studies. When they apply, candidates must indicate their preferred area of research, consult a full-time professor of the department whom they hope to have as a supervisor, and submit a two-page statement of their doctoral research project.

Official applications should be submitted by the deadlines listed on the website of the Faculty of Graduate and Postdoctoral Studies. Applications received after a deadline will be considered only if positions are available.

All applicants must be able to understand speak and write either English or French proficiently. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

**Collaborative Program in Canadian Studies at the Doctoral Level**

The doctoral program in religious studies participates in the collaborative program in Canadian Studies at the doctoral level. This program has been established for students wishing to enrich their training in religious studies by including an interdisciplinary component in Canadian studies. The Seminar in Canadian Studies (CDN6910) fits into the departmental course requirements and does not add to the number of courses required for the doctorate in religious studies.

For further details, please consult the Canadian Studies website of the Faculty of Graduate and Postdoctoral Studies.

**Transfer from MA to PhD**

Students enrolled in the MA program may be allowed to transfer to the PhD program without being required to write a master’s thesis provided they meet the following conditions:

1. Hold an honours BA in Religious Studies with a minimum average of 8.0 (A-) in the last eight relevant courses of the undergraduate transcript and a minimum of 9.0 (A) in four of these eight courses, or hold a master’s degree in a field other than religious studies;

2. Have completed the mandatory MA course SRS5915/5115 and three other MA courses with a minimum grade of A- in two courses and a minimum grade of A in two courses;

3. Have completed a 40-page research paper (SRS5999);

4. Provide a written recommendation in support of the transfer from the supervisor of the research paper and from the Graduate Studies Committee;

5. Provide an agreement on the part of a faculty member of the religious studies program to supervise the student’s doctoral thesis.

The transfer must be completed by the end of the fourth session following initial registration in the master’s program. Following transfer, all of the usual requirements of the PhD must be met: a total of 30 credits of graduate coursework (MA and PhD combined); the comprehensive exam (SRS9998); and, the thesis (SRS9989).

**Program Requirements**

**Degree Requirements**

The doctoral program consists of 18 credits in courses and directed studies, a comprehensive examination, and the writing and defence of a thesis.

The 18 credits in courses comprise:
For students in the collaborative program in Canadian Studies, the 18 credits in courses comprise:

1. SRS8115 or SRS8915 (3cr.)
2. SRS5928 (3cr.)
3. four graduate courses or directed studies in religious studies (12cr.)

Students who have completed a master’s degree with thesis or the equivalent in terms of research and writing may substitute a three-credit course or directed study for SRS5928.

The Graduate Studies Committee may require additional courses from the student depending on the nature of the research.

**Comprehensive examination**

Students must successfully complete a comprehensive examination in which they demonstrate their knowledge of the general and the specific fields of research to which the doctoral thesis is related. Instructions regarding the examination can be obtained from the Director of Graduate Studies in the department.

After consulting with the research supervisor, the student shall submit a comprehensive examination proposal to the Committee of Studies for approval at least two months before the proposed examination date. After approving the plan, the Committee shall designate two examiners in addition to the research supervisor, taking into account the suggestions of the student, and set the examination date. The department shall forward a written confirmation of the examination date to the student one month in advance. Any student who decides to withdraw must advise the department in writing at least two weeks prior to the date scheduled for the examination.

**Thesis**

After consultation with their research supervisor, students must submit their thesis topic to the Committee of Studies for approval.

Before the end of the second year of studies, the thesis project must be presented for examination and discussion at a colloquium attended by professors and students of the department. After the colloquium, the project must be submitted to the Committee of Studies for approval. Instructions regarding the colloquium and the thesis project can be obtained from the Director of Graduate Studies in the department.

For additional information on deadlines and on the writing, submission, examination, and revision of the thesis, please consult the general regulations of the Faculty of Graduate and Postdoctoral Studies as well as the guide «Preparing a Thesis or a Research Paper» available on the website: http://www.etudesup.uottawa.ca/Default.aspx?tabid=1381.

**Colloquium**

Participation in the department's regular research colloquia is compulsory for all registered graduate students.

**Residence**

Doctoral students must register for a minimum of six full-time sessions.

**Time limit**

Students are expected to fulfill all requirements within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

**Course Taken Outside the Department**

Subject to the approval of the chair, students registered in a graduate program may receive credit for two course (equivalent to six credits according to departmental requirements) taken outside the department.

**Courses**

SRS5101 SECOND TEMPLE JUDAISM (3cr.)
Central questions and recent developments in the study of Judaism in the period of the Second Temple.

SRS5102 PSYCHOANALYSIS AND RELIGION (3cr.)
Psychoanalytic thought relating to religion since the work of Sigmund Freud; therapeutic traditions and theories derived from the writings of Melanie Klein, D.W. Winnicott, W.R.D. Fairbairn and Jacques Lacan.
SRS5103 FREUD, JUNG AND RELIGION (3cr.)
An examination of Sigmund Freud’s and Carl Jung’s writings pertaining to religion and mythology.

SRS5107 ORIGINS OF CHRISTIANITY (3cr.)
Current questions and recent developments in the study of the origins of Christianity.

SRS5115 SEMINAR IN RELIGIOUS STUDIES (3cr.)
An orientation to the study of religion at an advanced level.

SRS5116 CURRENT APPROACHES TO THE STUDY OF RELIGION (3cr.)
The methodological terrain of the current study of religion: the history, theoretical and methodological contributions, and influence of various approaches.

SRS5305 RELIGION AND SOCIETY IN CROSS-CULTURAL ANALYSIS (3cr.)
Comparative sociological analysis of the relations between religion and society in different cultures and regions.

SRS5320 RELIGION AND ANTHROPOLOGY - SELECTED TOPICS (3cr.)
Major theories and debates in anthropological analyses of religion and the associated methodology of ethnography.

SRS5502 RELIGIONS AFRICAINES (3cr.)
Étude des religions et cultures africaines dans leurs dimensions politiques, économiques, conflictuelles et identitaires, depuis les réalités ancestrales et les cultes traditionnels jusqu’au foisonnement des spiritualités contemporaines.

SRS5520 RELIGION ET ANTHROPOLOGIE - THÈMES CHOISIS (3cr.)
Théories et débats à la base des analyses anthropologiques du religieux, et de la méthodologie ethnographique dont elles sont inséparables.

SRS5901 HISTOIRE DES SCIENCES DES RELIGIONS / HISTORY OF RELIGIOUS STUDIES (3cr.)
Analyse historique des théories et des approches méthodologiques de l’étude de la religion; développement institutionnel des sciences des religions. / Analysis of theories and methodological approaches in the historical study of religion; the institutional development of religious studies.

SRS5902 TEXTES ET RÉCITS RELIGIEUX / RELIGIOUS TEXTS AND NARRATIVES (3cr.)
Approches actuelles dans l’étude des textes et récits religieux. Études d’aspects tels que l’oralité, l’intertextualité, l’expression, l’éréception et l’idéologie. / Current approaches to the study of religious texts and narratives, exploring such aspects as orality, intertextuality, performance, reception, and ideology.

SRS5903 RITES ET SYMBOLES RELIGIEUX / RELIGIOUS RITES AND SYMBOLS (3cr.)
Approches actuelles dans l’étude des rites et symboles religieux. Étude de la dynamique du symbolisme, de la corporalité, de la communauté, de l’expression et de l’identité. / Current approaches to the study of religious rites and symbols, exploring the dynamics of symbolism, embodiment, performance, community, and identity.

SRS5915 SÉMINAIRE EN SCIENCES DES RELIGIONS / SEMINAR IN RELIGIOUS STUDIES (3cr.)
Introduction approfondie à l’étude savante du religieux. / An orientation to the study of religion at an advanced level.

SRS5918 RELIGION, ART ET CULTURE / RELIGION, ART AND CULTURE (3cr.)
Étude de la représentation du religieux dans les arts (arts visuels, musique, théâtre, littérature, cinéma) ou de la contribution des arts à la religion. / An examination of the representation of religion in the arts (visual art, music, drama, literature, and film) or of the contribution of the arts to religion.

SRS5920 APPROCHES ACTUELLES DANS L’ÉTUDE DE LA RELIGION / CURRENT APPROACHES TO THE STUDY OF RELIGION (3cr.)
Le domaine méthodologique de l’étude contemporaine de la religion, y compris l’historicité, les contributions théoriques ou méthodologiques et l’influence de diverses approches. / The methodological terrain of the current study of religion: the history, theoretical and methodological contributions, and influence of various approaches.

SRS5923 LES DÉÉSSES ET LES FEMMES DANS LE MYTHE ET LE SYMBOLE / GODDESSES AND WOMEN IN MYTH AND SYMBOL (3cr.)
Étude des théoriciens actuels qui fondent leur analyse critique de l’idéologie et de la culture sur les représentations féminines dans l’imagier religieux. / An examination of the work of current theorists who make use of female representations in religious imagery for the purpose of critical analysis of ideology and culture.

SRS5924 LE JUDAÏSME DU SECOND TEMPLE / SECOND TEMPLE JUDAISM (3cr.)
Questions essentielles et développements récents dans l’étude du judaïsme du Second Temple. / Central questions and recent developments in the study of Judaism in the period of the Second Temple.

SRS5925 ORIGINES DU CHRISTIANISME / ORIGINS OF CHRISTIANITY (3cr.)
Questions actuelles et développements récents dans l’étude des origines du Christianisme / Current questions and recent developments in the study of the origins of Christianity.
of Christianity.

**SRS5926 RELIGION DANS L’ANTIQUITÉ TARDIVE / RELIGION IN LATE ANTIQUITY** (3cr.)
Étude de la religion dans le monde méditerranéen de l’Antiquité tardive, en particulier des questions de transformation religieuse, de discours, de conflit, de pluralisme et d’identité. / An examination of religion in the Mediterranean world in Late Antiquity, with particular attention to religious transformation, discourse, conflict, pluralism, and identity.

**SRS5927 TRADITIONS CHAMANIQUES / SHAMANIC TRADITIONS** (3cr.)
Étude anthropologique des visions du monde chamanique et des religions utilisant la transe, ainsi que des pratiques rituelles, thérapeutiques ou artistiques qui y sont associées. / Anthropological study of shamanic worldviews and trance-based religions, and the associated ritual, therapeutic, and artistic practices they inform.

**SRS5928 PROJET DE THÈSE / THESIS PROPOSAL** (3cr.)
La planification et réalisation d’une thèse : définition d’un cadre théorique, formulation de la problématique, mise au point de la méthodologie, détermination des hypothèses et de l’argumentation, préparation d’une description détaillée du projet de thèse, présentation du projet dans un colloque, évaluation et approbation déontologiques, planification et exécution de la recherche et de la rédaction. Réservé aux étudiants inscrits à un programme avec thèse. Préalables: SRS5115/SRS5915 ou SRS8115/SRS8915. The planning and implementation of a thesis: establishing a theoretical framework, formulating the question, refining the methodology, defining the hypotheses and lines of argumentation, preparing a detailed description of the thesis project, presenting the project in a colloquium, obtaining ethics approval, planning and carrying out the research and writing. Restricted to students registered in a program with thesis. 
Prerequisites: SRS5115/SRS5915 or SRS8115/SRS8915.

**SRS5999 MÉMOIRE / RESEARCH PAPER** (6cr.)

**SRS6100 RELIGION AND LAW** (3cr.)
An examination of the ways in which law defines and regulates religion, focusing especially on the treatment of minority religious groups and the concept of religious diversity.

**SRS6101 RELIGION AND HUMAN RIGHTS** (3cr.)
An examination of the intersection of human rights regimes and the ways in which they define and delimit religion in the context of current issues.

**SRS6900 ÉTUDE COMPARATIVE DU RELIGIEUX / COMPARATIVE STUDY OF RELIGION** (3cr.)
Étude comparative d’un thème ou d’un aspect du religieux tel qu’il se manifeste dans diverses cultures. / A comparative study of a theme or aspect of religion as manifested in diverse cultures.

**SRS6905 RELIGION ET SOCIÉTÉ / RELIGION AND SOCIETY** (3cr.)
Étude de diverses perspectives méthodologiques et théoriques s’appliquant à la dynamique entre religion et société. / An examination of the dynamic between religion and society through a variety of theoretical and methodological perspectives.

**SRS6906 RELIGION ET PSYCHOLOGIE / RELIGION AND PSYCHOLOGY** (3cr.)
Étude de théories psychologiques actuelles telles que la psychologie critique, la psychologie des profondeurs et la psychologie de l’ego, et de leur rapport aux sciences des religions. / An examination of current psychological theories, such as critical psychology, depth psychology, and ego psychology, as they relate to topics in religious studies.

**SRS6907 THÈMES CHOISIS EN CHRISTIANISME / SELECTED TOPICS IN CHRISTIANITY** (3cr.)
Étude d’un sujet particulier concernant le christianisme, circonscrit dans un cadre temporel, géographique ou thématique. / Examination of a specific topic in Christianity, defined temporally, geographically or thematically.

**SRS6913 THÈMES CHOISIS EN HISTOIRE DES RELIGIONS AU CANADA / SELECTED TOPICS IN THE HISTORY OF RELIGIONS IN CANADA** (3cr.)
Étude approfondie des aspects particuliers de l’histoire des religions dans un contexte canadien. / An in-depth examination of particular aspects of the history of religions in a Canadian context.

**SRS6915 SYSTÈMES RELIGIEUX DES AMÉRINDIENS ET DES INUIT / AMERINDIAN AND INUIT RELIGIOUS SYSTEMS** (3cr.)
Étude de l’expression et de la conceptualisation de la religion chez les Amérindiens et les Inuits. / An examination of the expression and conceptualization of religion in Amerindian and Inuit cultures.

**SRS6920 LES RELIGIONS DANS LE CONTEXTE MONDIAL / RELIGIONS IN A GLOBAL CONTEXT** (3cr.)
Analyse critique des formes, des concepts et du contenu des religions dans le contexte mondial; théories et débats actuels en sciences des religions. / Critical examination of the forms, concepts, and content of religions in a global context; current theories and discussions in religious studies.

**SRS6921 LA RELIGION DANS LE CANADA D’AUJOURD’HUI / RELIGION IN CONTEMPORARY CANADA** (3cr.)
La religion au Canada depuis la Deuxième Guerre mondiale; analyses sociologiques, anthropologiques ou historiques. / Religion in Canada since the Second World War; sociological, anthropological or historical analyses.
SRS6922 THÈMES CHOISIS EN JUDAÏSME / SELECTED TOPICS IN JUDAISM (3cr.)
Étude approfondie d'un sujet particulier relevant du judaïsme, depuis les traditions rabbinitiques jusqu'à la vie des juifs d'aujourd'hui. / A close examination of a specific topic in Judaism from Rabbinic traditions to contemporary Jewish life.

SRS6923 RELIGIONS DE L'ASIE / RELIGIONS OF ASIA (3cr.)
Étude d'un ou plusieurs systèmes religieux de l'Asie, à partir de théories et méthodes actuelles en sciences des religions, telles que les approches interprétivistes, matérialistes, phénoménologiques, historiques, philosophiques, ethnographiques, poststructurales, postcoloniales, etc. / An exploration of one or more religious systems of Asia, using current theoretical and methodological approaches in religious studies (e.g., interpretivist, materialist, phenomenological, historical, philosophical, ethnographic, poststructural, postcolonial, etc.).

SRS6924 LA RELIGION DANS LA PENSÉE FÉMINISTE ACTUELLE / RELIGION AND CURRENT FEMINIST THOUGHT (3cr.)
Étude de l'influence des théories féministes actuelles sur les méthodes et théories en sciences des religions. / An examination of the influence of current feminist theory on methods and theories in religious studies.

SRS6925 GENRE ET RELIGION / GENDER AND RELIGION (3cr.)
Étude des débats entourant la notion de genre comme catégorie d’analyse dans les sciences des religions. / An examination of developments within religious studies pertaining to the use of gender as a category of analysis.

SRS6980 ÉTUDES DIRIGÉES I / DIRECTED STUDY I (3cr.)

SRS7080 ÉTUDES DIRIGÉES II / DIRECTED STUDY II (6cr.)

SRS7988 RECENSION DES ÉCRITS - M.A. / LITERATURE REVIEW - M.A. (3cr.)
Vue d'ensemble de la littérature savante du champ d'études dans lequel se situe le mémoire ou la thèse de maîtrise. Rapport écrit à évaluer par le professeur qui l'a dirigé plus un autre professeur. Évalué S/NS. Prérequis: SRS5115/SRS5915 / Review of the scholarly literature in the field of study in which the master's research paper or thesis is situated. Paper to be evaluated by the professor who supervised it and another professor. Evaluated S/NS. Prerequisite: SRS5115/SRS5915.

SRS7989 THÈSE DE MAÎTRISE / MA THESIS

SRS8016 TRAVAUX DIRIGÉS II / SUPERVISED RESEARCH II (6cr.)

SRS8115 SEMINAR IN RELIGIOUS STUDIES (3cr.)
An orientation to the study of religion at an advanced level.

SRS8915 SÉMINAIRE EN SCIENCES DES RELIGIONS / SEMINAR IN RELIGIOUS STUDIES (3cr.)
Introduction approfondie à l'étude savante des religieux. / An orientation to the study of religion at an advanced level.

SRS8916 TRAVAUX DIRIGÉS I / SUPERVISED RESEARCH I (3cr.)

SRS9989 THÈSE DE DOCTORAT / PhD THESIS

SRS9998 EXAMEN DE SYNTHÈSE (Ph.D.) / COMPREHENSIVE EXAMINATION (PhD)

Social Work (PhD)

The École de service social (ÉÉS) offers a master's program (maîtrise en service social/MSS) and a doctoral program (PhD) in social work. The School is a member of the Canadian Association for Social Work Education (CASWE) and the MSS program is approved by the Program Accreditation Bureau of that association.

The objective of the PhD program is to train high-calibre researchers or professionals, to provide them with tools to analyze the articulation of the dimensions of micro- and macro intervention practices in social work, and to significantly contribute to the renewal of these practices. Students will acquire critical and in-depth knowledge of social work in its multiple contexts, through scientific reasoning steps to successfully complete the doctoral thesis.

The doctoral program consists of two research fields: Health and Family-Childhood.

The compulsory courses of the program are offered in French only. It is possible to take an elective course in French or in English. In accordance with the University of Ottawa regulation, students have a right to produce their work, their thesis, and to answer examination questions in French or in English. If the thesis is written in English, the abstract must be in French and vice versa.

The programs operate within the framework of the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS), which are posted on the FGPS website.
Admission

1. To be admitted into the doctoral program, applicants must hold a master’s in social work (or equivalent) with a minimum average of 75% (B+) calculated in accordance with FGPS guidelines.

2. Applicants with substantial professional experience (equivalent to 2 years of full-time work) in social intervention and who hold a master’s in another discipline may also be admitted.

3. The admission file must include the following:
   - The application form available online; - Official university transcripts; - At least two confidential letters of recommendation from professors familiar with the applicants and their previous work and able to comment on their potential to pursue graduate studies; - Proof of proficiency in French and a passive knowledge of English.

4. Moreover, applicants must provide:
   - A curriculum vitae, including a list of all their publications and presentations at conferences. Other documents demonstrating research skills may also be included (thesis or master’s research paper, articles, research reports, abstracts and so on); - A statement of purpose indicating their interest in doctoral studies and outlining the research direction of their thesis; - The name of a potential thesis supervisor, who has been contacted beforehand and who must provide a confidential letter confirming his or her intention to supervise the thesis.

Proficiency in French must be sufficient for taking courses and seminars in French and for reading relevant scholarly literature in French. Language tests may be required with the cost to be covered by the applicants.

The list above specifies the minimum admission requirements. L’École de service social reserves the right to require additional courses if necessary, depending on the candidate’s background preparation. For instance, in cases where the master’s degree was obtained in another discipline or outside of Canada, master’s-level social work courses may be added to the regular program with a requirement that they be completed during the first two sessions. The specific courses will depend on the student’s academic background and the maximum number will not normally exceed two. In all cases, admission to the doctoral program is conditional on finding a professor willing to supervise the thesis in the proposed research area.

Program Requirements

Four courses (12 credits):

1. 3 compulsory courses (SVS7501, SVS7502 and SVS7590)
2. 1 elective course (3cr.)
   The elective course, which can be in English or French, must be approved by the Thesis Advisory Committee and the Graduate Studies Coordinator of the ÉÉS, and it can be selected from graduate courses at the 6000 level (minimum) offered by the ÉÉS or by another graduate program.

3. Comprehensive examination (SVS9997)
4. Thesis proposal (SVS9998)
5. PhD thesis (SVS9999)

Minimum Standards
The minimum passing grade in all doctoral courses is 75% (B+). Students who fail two courses (equivalent to 6 credits), the thesis proposal, the comprehensive exam, the thesis, or whose progress is deemed unsatisfactory must withdraw from the program.

Thesis Advisory Committee
During the first session in the program, a thesis advisory committee (TAC) is formed for each student. It includes a minimum of three members: the thesis supervisor, and two other professors. At least one of the members, other than the thesis supervisor, must be a professor in the ÉÉS and one member, other than the thesis supervisor, must be an expert in the subject of the thesis.

The Committee’s membership is determined by the thesis supervisor in consultation with the student and must be approved by the Graduate Studies Coordinator of the ÉÉS. The TAC is responsible for guiding the student throughout the program, including course selection, the comprehensive examination, thesis proposal, and thesis defence. Meetings between the student and thesis committee members will take place at least once per session until the end of the program.

SVS9997 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION
Students must demonstrate breadth of knowledge and their ability to deepen and integrate theories, concepts and thinking on practices in social intervention in their area of interest. The examination consists of two questions, one in general theory and the other directly related to the thesis topic. The written examination must include an exhaustive bibliography.

Upon successfully completing the written exam, students can proceed to the oral, which takes place before a committee consisting of the two professors who prepared the questions and the thesis supervisor. Students must register for the comprehensive exam in the session when they begin to prepare for it and must remain registered each session until they have successfully completed it. In the case of failure, they are entitled to retake the exam once, normally at the end of
the next session.
A second failure leads to withdrawal from the program. All details regarding the exam are posted on the program website.

**SVS9998 PROJET DE RECHERCHE / RESEARCH PROJECT**
Under the direction of the thesis supervisor, students prepare their research proposal. This is similar to a directed readings course leading to the writing of the proposal. In this document, students describe the theoretical context of the thesis, the research questions, the methodology they will use and the contribution that the thesis will make to the advancement of knowledge. The project must be defended to the satisfaction of the TAC.
In the case of failure, the proposal can be resubmitted and defended the following session at the latest. A second failure leads to withdrawal from the program. The proposal must be successfully completed before submitting it to the Research Ethics Board and before undertaking any independent data collection.

**SVS9999 THÈSE DE DOCTORAT / PhD THESIS**
The doctoral thesis must constitute a significant contribution to knowledge, embody the results of original investigation and analysis on the part of the student and be of such quality as to merit publication. It must show that the student has a profound knowledge of his subject and he used relevant methods to arrive at responses to his research questions.

**Residence**
Students must register full-time for at least six sessions at the beginning of their program. They may be allowed to register part-time after the residency period.

**Duration of the program**
Students are expected to fulfill all requirements within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

**Courses**

**SVS7501 ÉPISTÉMOLOGIE ET SERVICE SOCIAL** (3cr.)
Étude des principales théories de la connaissance (positivisme, phénoménologie, constructivisme, structuralisme, théories critiques, perspectives postmodernes) et leurs rapports avec le service social comme champ d’intervention et de recherche. Les liens entre les théories de la connaissance et la problématisation des questions de recherche en service social. Réserve aux étudiants de doctorat.

**SVS7502 ÉTUDE AVANCÉE DES THÉORIES ET DES PRATIQUES D'INTERVENTION SOCIALE** (3cr.)
Étude approfondie et examen critique des outils conceptuels (configuration, champ, monde social, micro-pouvoir, etc.) utiles pour une analyse contextualisée des pratiques d’intervention sociale. Réserve aux étudiants de doctorat.

**SVS7590 SÉMINAIRE DE RECHERCHE AVANCÉ EN SERVICE SOCIAL** (3cr.)
Habilités avancées de recherche. Toutes les étapes de la démarche scientifique seront considérées et discutées. En plus de faire une analyse des approches méthodologiques les plus récentes en sciences sociales, le séminaire constituera pour l’étudiant une occasion de réfléchir sur les enjeux d’une démarche interdisciplinaire en service social.

**SVS9997 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION**

**SVS9998 PROJET DE RECHERCHE / RESEARCH PROJECT**
Préalable / Prerequisite : SVS 9997

**SVS9999 THÈSE DE DOCTORAT / PhD THESIS**
Préalable / Prerequisite: SVS 9998

**Sociology (PhD)**

The doctoral program aims to prepare sociologists to conduct research, using the most up-to-date theoretical and methodological tools on social relations as they influence the conditions of existence and the transformations of contemporary societies. The program’s two main fields of research are minorities and culture, and political sociology.

Professors in the department are involved in research on a wide range of topics related to the main fields. To get a complete picture of the wide range of research being undertaken by the department, students are encouraged to consult the list of professors and their areas of interest, which extend far beyond the fields of research mentioned above.

The PhD program is offered full-time and in French and English. All students must, however, successfully complete at least two courses/seminars given in French. Linguistic support will be available for students who require it.

In accordance with University of Ottawa Policy, examinations, assignments and the research paper or thesis may be written in either English or
Admission

To be admitted to the PhD program, applicants must hold a master’s degree in sociology (or equivalent) and have an overall average of at least 75% (B+), calculated in accordance with the guidelines of the FGPS. A student with a master’s degree with the required average in a related discipline can be considered. He or she will be asked to take a number of additional courses. The number of extra courses required is determined by the Graduate Studies Committee after examining the file of each candidate.

Admission to the doctoral program also depends on the possibility of finding a supervisor and a committee specialized in the student’s field of interest.

The application for admission to the doctoral program should include, in addition to transcripts of records and letters of recommendation, a letter which specifies: 1) the proposed research area; 2) the specific research topic for the doctoral thesis; 3) the preferred supervisor; 4) language skills (English and French) of the candidate. The applicant must also include a sample of a written work.

All students must be capable of reading texts in French and in English. Students must indicate in their application the language in which they plan to take the majority of their courses. The department reserves the right to require a language test for either language.

For information on transfer from MA to PhD see “Admission” under Master’s program.

Collaborative program in Canadian Studies at the PhD level

The Department of Sociology and Anthropology is one of the participating units in the collaborative PhD program in Canadian Studies. This program was created to enable students to enrich their education in sociology by adding the interdisciplinary dimension of Canadian Studies. The Seminar in Canadian Studies (CDN 6910) is recognized by the Department of Sociology and Anthropology towards the requirements of the PhD degree. Thus students registered in the collaborative program do not have to take an additional course.

To be accepted into the collaborative program, students must be already registered in at least one graduate course in sociology with Canadian content, or have already passed such a course. The degree of those who have successfully completed the interdisciplinary seminar (CDN 6910) and thesis with Canadian content will indicate a “specialization in Canadian studies”. For more information, please refer to the description of the Canadian Studies collaborative program on the website of the Faculty of Graduate and Postdoctoral Studies.

Program Requirements

PhD Degree Requirements

The requirements of the PhD program are as follows:

- SOC8510 SÉMINAIRE DE DOCTORAT (3cr.)
- SOC8511 SÉMINAIRE AVANCÉ DE RECHERCHE SOCIOLOGIQUE (3cr.)
- One seminar from the following list:
  - SOC7150 INTERETHNIC RELATIONS: CRITICAL EXAMINATION OF THEORIES AND RESEARCH (3cr.)
  - SOC7151 RESEARCH SEMINAR IN INTERETHNIC RELATIONS (3cr.)
  - SOC7152 SELECTED TOPICS IN INTERETHNIC RELATIONS (3cr.)
  - SOC7170 POLITICAL SOCIOLOGY: CRITICAL EXAMINATION OF THEORIES AND RESEARCH (3cr.)
  - SOC7171 RESEARCH SEMINAR IN POLITICAL SOCIOLOGY (3cr.)
  - SOC7172 SELECTED TOPICS IN POLITICAL SOCIOLOGY (3cr.)

OR from the corresponding list of seminars in French.

- One elective course (3 credits) approved by the Graduate Studies Committee. This course is normally chosen among the department’s graduate courses, but it could be from another discipline.
  - SOC9910 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION
  - SOC9930 PROJET DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL
  - SOC9999 THÈSE DE DOCTORAT / PHD THESIS

During the first session, a thesis committee (consisting of three members, including the thesis supervisor) is assigned to the candidate. The composition of the committee is confirmed at the end of the first year. This committee (including a fourth member from outside the department) is responsible for approving the thesis proposal and Comprehensive Exam.
Initial registration in SOC 9910 PhD Comprehensive Examination occurs in the student’s third session, and successful completion of this exam is a prerequisite for proceeding to SOC 9930 Projet de thèse de doctorat / PhD Thesis Proposal. If a comprehensive exam is failed, it may be rewritten once. A second failure is regarded as final and the candidate must withdraw from the program.

The thesis proposal must be approved by the thesis committee. A student whose proposal is not accepted on the first submission may be allowed to submit it a second time. A student whose proposal is rejected a second time must withdraw from the program.

Minimum standards
The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), the thesis proposal, the comprehensive exam, or whose research progress is deemed unsatisfactory are required to withdraw.

Residence
The program is intended for full-time students. All students must complete a minimum of six sessions of full-time registration at the beginning of the program. In the case of transfer students, the minimum residency period is nine sessions, of which at least six must be at the doctoral level.

Duration of the program
The program is designed as a four-year program and students are expected to complete it within four years. All requirements other than the thesis must be fulfilled at the end of the sixth session of registration. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of students transferring from the master’s to the doctorate.

Courses

SOC5101 SELECTED TOPICS IN SOCIOLOGY OR IN ANTHROPOLOGY (3cr.)
In-depth examination of a topic, a theoretical approach, or a contemporary author in sociology or anthropology.

SOC5501 THÈMES EN SOCIOLIGIE OU EN ANTHROPOLOGIE (3cr.)
Examen approfondi d'une problématique, d'un courant théorique ou d'une auteure ou d'un auteur contemporain en sociologie ou en anthropologie.

SOC7110 CONTEMPORARY SOCIOLOGICAL OR ANTHROPOLOGICAL THEORIES (3cr.)
In depth examination of the main theoretical currents in sociology or anthropology.

SOC7510 THÉORIES SOCIOLOGIQUES OU ANTHROPOLOGIQUES CONTEMPORAINES (3cr.)
Examen approfondi des principaux courants théoriques sociologiques ou anthropologiques.

SOC7112 SELECTED TOPICS IN CONTEMPORARY SOCIOLOGY OR ANTHROPOLOGY I (3cr.)
In depth examination of an issue or question linked to new trends or research areas in sociology or anthropology.

SOC7512 THÈMES EN SOCIOLOGIE OU ANTHROPOLOGIE CONTEMPORAINES I (3cr.)
Analyse approfondie d’une problématique ou d’une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

SOC7120 SOCIOLOGICAL EPISTEMOLOGY (3cr.)
Issues related to the social shaping of science; critical examination of sociological knowledge.

SOC7520 ÉPISTÉMOLOGIE SOCIOLOGIQUE (3cr.)
Problèmes de la détermination sociale de la science et examen critique de la connaissance sociologique.

SOC7122 SELECTED TOPICS IN CONTEMPORARY SOCIOLOGY OR ANTHROPOLOGY II (3cr.)
In depth examination of an issue or question linked to new trends or research areas in sociology or anthropology.

SOC7522 THÈMES EN SOCIOLOGIE OU ANTHROPOLOGIE CONTEMPORAINES II (3cr.)
Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

SOC7132 SELECTED TOPICS IN CONTEMPORARY SOCIOLOGY OR ANTHROPOLOGY III (3cr.)
In depth examination of an issue or question linked to new trends or research areas in sociology or anthropology.

SOC7532 THÈMES EN SOCIOLOGIE OU ANTHROPOLOGIE CONTEMPORAINES III (3cr.)
Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.
SOC7139 THESIS OR MAJOR RESEARCH PAPER PROPOSAL (3cr.)
Critical review of readings selected by the student’s supervisor. Drafting of a thesis or major research paper proposal. Submission of proposal to the thesis or major paper committee. Graded S/NS.

SOC7539 PRÉPARATION DU PROJET DE THÈSE OU DE MÉMOIRE ET LECTURE DIRIGÉES (3cr.)
Exam critique approfondi de documents dont la liste est établie par le directeur ou la directrice de thèse ou de mémoire. Rédaction d'un projet de thèse ou d'un projet de mémoire. Soumission du projet aux membres du comité de thèse ou de mémoire. Noté S/NS.

SOC7740 QUANTITATIVE ANALYSIS OF SOCIOLOGICAL DATA (3cr.)
Overview of the principal quantitative methods and techniques used in sociology. Multivariate analysis. Formulation of sociological theories suitable for quantitative data analysis. The use of these methods in the sociological literature. Research project.

SOC7750 ANALYSE QUANTITATIVE DES DONNÉES SOCIOLOGIQUES (3cr.)
Investigation des méthodes quantitatives de recherche, par exemple, l'analyse multivariée. Formulation des théories sociologiques pour permettre une vérification quantitative. L'emploi de ces méthodes dans la littérature sociologique. Projet de recherche.

SOC7741 DEBATES IN SOCIOLOGICAL METHODOLOGY (3cr.)
Qualitative analysis of sociological data; case-oriented analysis and variable-oriented analysis; the qualitative-quantitative continuum; discourse analysis; triangulation; issues of validation; the relationship between methodology, theory, and research findings.

SOC7742 DÉBATS SUR LA MÉTHODOLOGIE SOCIOLOGIQUE (3cr.)
Analyse qualitative des données sociologiques; analyse de cas et analyse de variables; continuum qualitatif-quantitatif; analyse du discours; triangulation; problèmes de validation; rapport entre méthodologie, théorie et résultats.

SOC7750 INTERETHNIC RELATIONS: CRITICAL EXAMINATION OF THEORIES AND RESEARCH (3cr.)
Principal sociological theories in interethnic relations, and the use of these theories in the analysis of the social structure of a number of multiethnic societies, especially Canada.

SOC7755 RELATIONS INTERETHNIQUES: EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)
Principales théories sociologiques des relations interethniques; l'application de ces théories dans l'analyse de la structure sociale de quelques sociétés multiethniques, notamment le Canada.

SOC7756 INTERETHNIC RELATIONS RESEARCH SEMINAR (3cr.)
Overview and assessment of the main research findings in the area.

SOC7757 SÉMINAIRE DE RECHERCHE EN RELATIONS INTERETHNIQUES (3cr.)
Évaluation des recherches dans le domaine.

SOC7758 SELECTED TOPICS IN INTERETHNIC RELATIONS (3cr.)
In depth examination of a topic in interethnic relations.

SOC7759 PROBLÈMES CHOISIS EN RELATIONS INTERETHNIQUES (3cr.)
Analyse approfondie d'une question de relations interethniques.

SOC7760 GENDER RELATIONS AND INTERETHNIC RELATIONS (3cr.)
Examination of modes of differentiation according to gender, ethnicity, and race in contemporary societies and of the theoretical linkages among them.

SOC7761 RAPPORTS SOCIAUX DES FEMMES ET MINORISATION (3cr.)
Examen des modes de différenciation selon le sexe, l'ethnie et la race dans les sociétés contemporaines et leur articulation théorique.

SOC7762 DEVELOPMENT: CRITICAL EXAMINATION OF THEORIES AND RESEARCH (3cr.)

SOC7763 DÉVELOPPEMENT: EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)

SOC7764 RESEARCH SEMINAR IN DEVELOPMENT (3cr.)
Evaluation of research in the area.

SOC7765 SÉMINAIRE DE RECHERCHE EN DÉVELOPPEMENT (3cr.)
Évaluation des recherches dans le domaine.
SOC7162 SELECTED TOPICS IN DEVELOPMENT (3cr.)
In depth analysis of a topic in the sociology of development.

SOC7562 PROBLÈMES CHOISIS EN DÉVELOPPEMENT (3cr.)
Analyse approfondie d'une question de sociologie du développement.

SOC7166 DEVELOPMENT AND GENDER RELATIONS (3cr.)
Deconstruction of the concepts of gender and development. International power relations and gender. Women in the global South and their theorizing of gender relations.

SOC7566 DÉVELOPPEMENT: RAPPORTS SOCIAUX DE SEXES (3cr.)
Déconstruction des concepts de genre et de développement. Réflexion sur les rapports internationaux de domination. Étude des modalités d'organisation des femmes dans les sociétés du Sud et analyse de leur théorisation des rapports sociaux de sexes.

SOC7170 POLITICAL SOCIOLOGY: CRITICAL EXAMINATION OF THEORIES AND RESEARCH (3cr.)
In depth examination of the main concepts of political sociology such as power, the state, social classes, civil society, democracy, political space, political culture, and citizenship.

SOC7570 SOCIOLOGIE POLITIQUE: EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)
Examen approfondi des concepts de sociologie politique, tels le pouvoir, l'État, les classes, la société civile, la démocratie, l'espace politique, la culture politique et la citoyenneté.

SOC7171 RESEARCH SEMINAR IN POLITICAL SOCIOLOGY (3cr.)
Overview and assessment of the main research findings in the area.

SOC7571 Séminaire de recherche en sociologie politique (3cr.)
Évaluation des recherches dans le domaine.

SOC7172 SELECTED TOPICS IN POLITICAL SOCIOLOGY (3cr.)
In depth examination of a topic in political sociology.

SOC7572 PROBLÈMES CHOISIS EN SOCIOLOGIE POLITIQUE (3cr.)
Analyse approfondie d'une question de la sociologie politique.

SOC7176 GENDER DIFFERENCES IN POLITICAL SOCIOLOGY (3cr.)
Examination of the notion of gender difference, in relation, for example, to citizenship, the private/public divide, political representation, women's rights, kinship, and power.

SOC7576 DIFFÉRENCE DES SEXES EN SOCIOLOGIE POLITIQUE (3cr.)
Examen de la notion de la différence des sexes appliquée, par exemple, à la citoyenneté, le privé/public, la représentation politique, les droits des femmes, la filiation et le pouvoir.

SOC7938 MÉMOIRE / RESEARCH PAPER (6cr.)
Mémoire d'une cinquantaine de pages préparé sous la direction d'un ou deux membres du corps professoral choisis en accord avec la personne responsable des études supérieures. Mémoire noté par un total de deux membres du corps professoral dont les personnes qui en ont assumé la direction. Dans les cas où le mémoire n'est dirigé que par une seule personne, il sera noté par cette personne et un autre membre du corps professoral. Le mémoire doit être terminé en un maximum de quatre sessions consecutives. Noté: S/N. Fifty-page research paper prepared under the direction of one or two professors chosen in consultation with the supervisor of graduate studies in sociology. Graded by two professors, either the two co-supervisors, or if there is only one, by the supervisor and another professor. The research paper must be completed in at most four consecutive sessions. Graded: S/N.

SOC7999 THÈSE DE MAÎTRISE / MA THESIS

SOC8510 SÉMINAIRE DE DOCTORAT (3cr.)
Le séminaire aborde une thématique sociologique contemporaine qui touche plusieurs champs de la discipline. La thématique est abordée dans ses dimensions théoriques, méthodologiques et/ou épistémologiques de même que par le biais des enjeux de recherche qu'elle soulève. Séminaire s'échelonnant de septembre à avril.

SOC8511 SÉMINAIRE AVANCÉ DE RECHERCHE SOCIOLOGIQUE (3cr.)
Le séminaire aborde certaines préoccupations fondamentales de la discipline, dont le raisonnement sociologique et les méthodes de travail essentielles pour mener à bien des recherches doctorales. Il comporte également un travail collectif sur les projets de thèse. Séminaire s'échelonnant de septembre à avril.

SOC9910 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION
L'examen de synthèse, administré par un comité d'examen, consiste en un travail écrit portant sur chacune de deux questions qui ciblent des domaines sociologiques distincts. Il comporte également une épreuve orale. L'inscription à SOC9910 se fait normalement à la troisième session. L'examen est noté.
S/NS. The comprehensive exam, administered by the examination committee, consists of a written essay on each of two questions, which targets distinct sociological domains. It also includes an oral exam. Registration in SOC9910 is normally done in the third session. Graded S/NS.

**SOC9930 PROJET DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL**
Preparation, supervised by the director or the director of the dissertation, from the dissertation, which must be approved by the committee. Noted S/NS. / Preparation, under the direction of the thesis supervisor, of the thesis proposal and submission for approval by the thesis committee. Graded S/NS.

**SOC9999 THÈSE DE DOCTORAT / PhD THESIS**

**ANT5100 COMPARATIVE THEORETICAL APPROACHES IN ANTHROPOLOGY: THE FRENCH AND ANGLO-AMERICAN TRADITIONS** (3cr.)
In-depth and comparative examination of the main theoretical currents in social and cultural anthropology in the French and Anglo-American traditions. The course will also focus on the development and the points of convergence and divergence of these currents throughout the history of anthropological thought as well as on their relative influence on anthropology in Francophone and Anglophone Canada.

**ANT5141 RESEARCH METHODOLOGY IN ANTHROPOLOGY** (3cr.)
Methodological approaches specific to anthropology: ethnographic fieldwork methods; validation problems; content analysis; relationship between research question, methods, theoretical framework, and results. Debates about the analysis of anthropological data collected in "traditional" and "modern" societies in the West and elsewhere; the qualitative-quantitative continuum; objectivity, involvement of the researcher and reflexivity; research ethics and responsibilities of the researcher.

**ANT5500 APPROCHES THÉORIQUES COMPARÉES EN ANTHROPOLOGIE : LES TRADITIONS FRANÇAISES ET ANGLO-AMÉRICAINES** (3cr.)
Examen approfondi et comparé des principaux courants théoriques en anthropologie sociale et culturelle dans les traditions française et anglo-américaine. Le développement de ces courants et leurs points de convergence et de divergence tout au long de l'histoire de la pensée anthropologique ainsi que leur résonance au sein de l'anthropologie au Canada francophone et anglophone seront aussi examinés.

**ANT5541 MÉTHODOLOGIE DE LA RECHERCHE EN ANTHROPOLOGIE** (3cr.)
Approches méthodologiques propres à l'anthropologie : méthodes de terrain ethnographique; problèmes de validation; analyse de contenu; rapport entre problématique, méthodes, cadre théorique et résultats. Débats sur l'analyse de données anthropologiques collectées dans les sociétés « traditionnelles » et « modernes », ici comme ailleurs; continuum qualitatif-quantitatif; objectivité, implication du chercheur et réflexivité; éthique de la recherche et responsabilités du chercheur.

**ANT6550 PROBLÉMATIQUE DE RECHERCHE EN ANTHROPOLOGIE** (3cr.)
Réflexion approfondie sur la conception et la mise en forme d'une problématique de recherche afin de permettre aux étudiant-es de concevoir un projet de recherche et de discuter (collectivement) de chaque étape. Préalables : ANT5541/5141 et ANT5500/5100.

**Spanish (PhD)**

The Spanish section of the Department of Modern Languages and Literatures offers the degrees of master of arts (M.A) and doctor of philosophy (PhD) in Spanish. The objectives of the Spanish Section are to provide advanced training in Hispanic literature, culture and linguistics, and to make use of the resources offered by the theoretical and comparative interests of the Faculty. The program has two fields of research:

- Hispanic Literature and Culture;
- Hispanic Linguistics.

The program operates within the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**

**Doctoral Admission Requirements**

Applicants must have an MA in Spanish or equivalent degree, with an average of at least 75 per cent (B+). (Please note that our program reserves the right to raise the required grade point average above the level set by the Faculty of Graduate and Postdoctoral Studies (FGPS). Applicants are required to submit a short description of their proposed doctoral research project outlining their areas of interest as well as a sample of their graduate written work. Wherever possible, candidates for admission to the program should be interviewed by a professor or professors assigned by the Section.
All inquiries should be addressed to the director of graduate studies in Spanish.

Students registered in the Master of Arts in Spanish at the University of Ottawa who have obtained excellent results may, exceptionally, be admitted into the doctoral program without having completed a master’s thesis. To take advantage of this option, they must:

1. obtain an average of at least 80 per cent (A-) in the four courses of the master's with thesis option
   and
2. obtain the approval of the graduate studies committee. Similar arrangements may be made for students registered in a master of arts in Spanish at another university.

**Language requirements**

In addition to an excellent knowledge of Spanish, all students must meet one of the following requirements:

1. proficiency in English with a good passive knowledge of French;
   or
2. proficiency in French with a good passive knowledge of English.

Moreover, students need a passive knowledge of any other languages necessary for completion of their thesis research.

**Collaborative Program in Canadian Studies at the PhD Level**

The Spanish section of the Department of Modern Languages and Literatures is a participating unit in the collaborative program in Canadian Studies at the PhD level. This program has been established for students wishing to enrich their training in Spanish by including an interdisciplinary component in Canadian Studies. The Seminar in Canadian Studies (CDN 6910) counts for credit towards the PhD in Spanish such that students in the collaborative program are not required to complete an additional course.

To be admitted to the program, students must be registered in or have successfully completed at least one graduate course in Spanish with Canadian content. The mention "Specialization in Canadian Studies" will be added to the diploma of students who pass the CDN 6910 seminar and successfully defend a thesis on a Canadian topic in Spanish.

For further details, please consult the Canadian Studies program on the Faculty of Graduate and Postdoctoral Studies website.

**Doctoral Requirements**

**Doctoral Degree Requirements**

1. Six 3-credit courses.  
   One of these courses must be ESP 5901 Méthodes de recherche et bibliographie en littérature et culture hispaniques / Research Methods and Bibliography in Hispanic Literature and Culture or ESP 5902 Méthodes de recherche et bibliographie en linguistique hispanique / Research Methods and Bibliography in Hispanic Linguistics. Since one of these courses is also compulsory in the MA program, students who have completed their MA in Spanish at the University of Ottawa, or at another institution where they took an equivalent course, will be exempted from it, and will therefore be required to complete only five courses while in the PhD program. The total number of courses required of students permitted to transfer from MA to PhD without completing the master’s will be 9 (4 at the master’s level and 5 at the PhD level).

   One of these courses may be a "directed studies" course leading towards the development of the thesis topic. Students are encouraged to take at least two courses in areas related to their thesis topic. Additional courses may be required, depending on the student’s background and preparation.

2. The comprehensive examination, which includes a written and an oral component, must be completed within 18 months of initial registration in the program. Its purpose is to test the candidates’ mastery of their field as well as their knowledge of their research topic.

   Upon admission, students will be assigned a professor in their area of interest who will act as their academic advisor and will normally become their thesis director. The thesis topic will be determined by the student in consultation with the thesis director and will be related to the latter’s area of expertise. Shortly after successfully completing the comprehensive examination, the student must submit a thesis project for the approval of the thesis committee.

**Note:** All program requirements should normally be completed within four years.

**Residence**

Doctoral candidates who hold a master’s degree or the equivalent must spend at least six sessions in full-time residence. Candidates admitted to a doctoral program who do not hold a master's degree must spend at least nine sessions in full-time residence. Under special circumstances, arrangements may be made for part-time registration after completion of the residency period.
Courses

Pour la liste des cours offerts durant l'année, consultez le Livret de l'étudiant et de l'étudiante (disponible au Département). Tous les cours indiqués, à l'exception de ESP 7997, 7999, 9998 et 9999, sont des cours de trois crédits. Ils exigent normalement 30 heures de présence en classe et durent une session.

Tous les cours sont donnés en espagnol.

Courses offered in a given year are listed in the Student Handbook (available at the Department). All courses listed, with the exception of ESP 7997, 7999, 9998 and 9999, are worth three credits. They normally require 30 hours of class time and last one session.

All courses are given in Spanish.

ESP5901 MÉTHODES DE RECHERCHE ET BIBLIOGRAPHIE EN LITTÉRATURE ET CULTURE HISPANIQUES / RESEARCH METHODS AND BIBLIOGRAPHY IN HISPANIC LITERATURE AND CULTURE (3cr.)
Outils et méthodes de la recherche; débats scolaires dans ce champ; approches théoriques à l’étude de la littérature et culture; rédaction de thèse, de demandes de bourses et de précíss de conférences. / Research tools and methods; scholarly debates in the field; different theoretical approaches to the study of literature and culture; writing of theses, grant proposals and conference abstracts.

ESP5902 MÉTHODES DE RECHERCHE ET BIBLIOGRAPHIE EN LINGUISTIQUE HISPANIQUE / RESEARCH METHODS AND BIBLIOGRAPHY IN HISPANIC LINGUISTICS (3cr.)
Concepts de la recherche; cadres théoriques et hypothèses dans les projets descriptifs et dans la recherche fondée sur les bases de données; ressources pour trouver des références; débats scolaires dans ce champ; rédaction de thèse, de demandes de bourses et de précíss de conférences; procédures pour obtenir l'autorisation du comité d’Éthique dans le but de faire de la recherche impliquant des sujets humains. / Research concepts; theoretical frameworks and hypotheses in descriptive projects and data-based research; reference resources, scholarly debates in the field; writing of theses, grant proposals, conference abstracts; procedures to obtain ethics approval to carry out research involving humans.

ESP5912 ASPECTS DE LA LITTÉRATURE ESPAGNOLE MÉDIÉVALE / ASPECTS OF MEDIEVAL SPANISH LITERATURE (3cr.)

ESP5914 ASPECTS DE LA LITTÉRATURE DE L'ÂGE D'OR / ASPECTS OF THE LITERATURE OF THE GOLDEN AGE (3cr.)

ESP5918 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XIXe SIÈCLE / ASPECTS OF NINETEENTH-CENTURY SPANISH LITERATURE (3cr.)

ESP5920 LA GÉNÉRATION DE 1898 / THE GENERATION OF 1898 (3cr.)

ESP5922 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XXe SIÈCLE I / ASPECTS OF TWENTIETH-CENTURY SPANISH LITERATURE I (3cr.)

ESP5924 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XXe SIÈCLE II / ASPECTS OF TWENTIETH-CENTURY SPANISH LITERATURE II (3cr.)

ESP5930 ASPECTS DE LA LITTÉRATURE HISPANO-AMÉRICaine DU XIXe SIèCLE / ASPECTS OF NINETEENTH-CENTURY SPANISH-AMERICAN LITERATURE (3cr.)

ESP5932 LE MODERNISME HISPANO-AMÉRICAIN / SPANISH-AMERICAN MODERNISM (3cr.)

ESP5934 ASPECTS DE LA LITTÉRATURE HISPANO-AMÉRICaine DU XXe SIèCLE I / ASPECTS OF TWENTIETH-CENTURY SPANISH-AMERICAN LITERATURE I (3cr.)

ESP5935 ASPECTS DE LA LITTÉRATURE HISPANO-AMÉRICaine DU XXe SIèCLE II / ASPECTS OF TWENTIETH-CENTURY SPANISH-AMERICAN LITERATURE II (3cr.)

ESP5941 TRADUCTION AVANCÉE DE L'ESPAGNOL VERS L'ANGLAIS / ADVANCED TRANSLATION FROM SPANISH INTO ENGLISH (3cr.)

ESP5942 TRADUCTION AVANCÉE DE L'ESPAGNOL VERS LE FRANÇAIS / ADVANCED TRANSLATION FROM SPANISH INTO FRENCH (3cr.)
Four sessions of residence as a full-time student are mandatory. The candidate must complete all degree requirements within six years from the date of the first session.

Selon leur projet de recherche, les étudiants pourront suivre les cours suivants offerts par le Département de linguistique, pourvu qu'ils aient les préalables ou la maîtrise requise.

SPANISH-AMERICAN LITERATURE

The doctoral program in religious studies focuses on religions in Canada, including Amerindian and Inuit traditions, and on religions in a Jewish setting. The program was created to enable students to enrich their education in sociology by adding the interdisciplinary dimension of Canadian Studies. The program was established for students wishing to enrich their training in Spanish by including an interdisciplinary dimension.

All inquiries should be addressed to the director of graduate studies in Spanish.

The thesis proposal must be approved by the thesis committee. A student whose proposal is not accepted on the first submission may be allowed to submit it a second time, but if it is still not accepted, the candidate is regarded as final and the candidate must withdraw from the program.

During the first session, a thesis committee (consisting of three members, including the thesis supervisor) is assigned to the candidate. The composition of the committee is based on the student's research interests.

The program is divided into four major areas: a) Study of the history, development and conflict in the field of religious studies; b) Study of the relationship between religion and society; c) Study of the relationship between religion and the state; d) Study of the role of religion in Canadian society.

Evaluation of research in the area.


Examination of the notion of gender difference, in relation, for example, to citizenship, the private/public divide, political representation, women's rights, kinship, etc.

Evaluation of research in the area.

Analyse approfondie d'une problématique ou d'une question liée aux nouvelles tendances en recherche ou aux nouveaux thèmes de recherche.

Courses

ESP5901 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DE L'ÂGE D'OR / ASPECTS OF SPANISH GOLDEN AGE LITERATURE (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.

ESP5902 ASPECTS DE LA LITTÉRATURE ESPAGNOLE DU XXe SIÈCLE / ASPECTS OF TWENTIETH-CENTURY SPANISH LITERATURE (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.

ESP5903 ASPECTS DE LA LITTÉRATURE HISPANO-AMÉRICaine DE XXe SIÈCLE / ASPECTS OF TWENTIETH-CENTURY SPANISH-AMERICAN LITERATURE (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.

ESP5904 ASPECTS DE LA THÉORIE DE LA LITTÉRATURE / ASPECTS OF THE THEORY OF LITERATURE (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.

ESP5905 ASPECTS DE LA LINGUISTIQUE HISPANIque / ASPECTS OF HISPANIC LINGUISTICS (3cr.)
Concentration sur des aspects sélectionnés dans des domaines spécifiques. Travaux écrits.
Focus on selected aspects in specific areas. Written assignments.

ESP5910 SÉMINAIRE DE RECHERCHE EN LITTÉRATURE ESPAGNOLE / RESEARCH SEMINAR IN SPANISH LITERATURE (3cr.)
Séminaire de recherche sur certains sujets dans des domaines spécifiques avec accent sur la participation de l’étudiant. Travaux écrits.

Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

ESP7911 SÉMINAIRE DE RECHERCHE EN LITTÉRATURE HISPANO-AMÉRICaine / RESEARCH SEMINAR IN SPANISH-AMERICAN LITERATURE (3cr.)

Séminaire de recherche sur certains sujets dans des domaines spécifiques avec accent sur la participation de l’étudiant. Travaux écrits.

Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

ESP7915 SÉMINAIRE DE RECHERCHE EN THÉORIE DE LA LITTÉRATURE / RESEARCH SEMINAR IN THEORY OF LITERATURE (3cr.)

Séminaire de recherche sur certains sujets dans des domaines spécifiques avec accent sur la participation de l’étudiant. Travaux écrits.

Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

ESP7916 SÉMINAIRE DE RECHERCHE EN LINGUISTIQUE HISPANIQUE / RESEARCH SEMINAR IN HISPANIC LINGUISTICS (3cr.)

Séminaire de recherche sur certains sujets dans des domaines spécifiques avec accent sur la participation de l’étudiant. Travaux écrits.

Seminars on research topics in their specific areas with emphasis on student participation. Written assignments.

ESP7920 SÉMINAIRE SPÉCIAL / SPECIAL SEMINAR (3cr.)

This course offers a flexible seminar code for some special areas of expertise of professors, particularly invited professors.

ESP7997 MÉMOIRE DE MAÎTRIsE / MA RESEARCH PAPER

ESP7999 THÈSE DE MAÎTRIsE / MA THESIS

ESP9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION

ESP9999 THÈSE DE DOCTORAT / PhD THESIS

Prérequis : ESP 9998 / Prerequisite: ESP 9998

Selon leur projet de recherche, les étudiants pourront suivre les cours suivants offerts par le Département de linguistique, pourvu qu’ils aient les préalables ou la permission du professeur.

Depending on their research project, students could take some of the following courses offered by the Department of Linguistics, provided they meet the prerequisites or obtain permission of the instructor:

LIN5903 SOCIOLINGUISTIQUE I / SOCIOLINGUISTICS I (3cr.)
LIN5915 PHONOLOGIE I / PHONOLOGY I (3cr.)
LIN5917 SYNTAXE I / SYNTAX I (3cr.)
LIN5918 SÉMANTIQUE I / SEMANTICS I (3cr.)
LIN7901 PSYCHOLINGUISTIQUE I / PSYCHOLINGUISTICS I (3cr.)
LIN7920 ACQUISITION DE LA LANGUE SECONDE I / SECOND LANGUAGE ACQUISITION I (3cr.)
LIN7923 LINGUISTIQUE APPLIQUÉE À L’ENSEIGNEMENT DES LANGUES SECONDES / LINGUISTICS APPLIED TO SECOND LANGUAGE TEACHING (3cr.)
LIN7925 PROBLÈMES THÉORIQUES EN LINGUISTIQUE APPLIQUÉE / THEORETICAL ISSUES IN APPLIED LINGUISTICS (3cr.)
Theology (PhD)

By virtue of the federation of Saint Paul University with the University of Ottawa, the Faculty of Theology of Saint Paul University offers graduate programs leading to the degrees conferred jointly by the senates of both universities.

Other graduate theology programs within the sole jurisdiction of the Senate of Saint Paul University are also offered; their description and requirements can be found in the calendar of the Faculty of Theology.

The Faculty of Theology offers the following programs whose degrees are conferred jointly by the senates of the University of Ottawa and Saint Paul University:

1. Master of Arts in Theology;
2. PhD in Theology;
3. Master of Pastoral Theology;
4. Doctor of Ministry;
5. Master in Religious Education.

Objectives

The doctoral program is intended to promote the acquisition of a high level of intellectual autonomy and expertise in a field of theology.

As well, applicants are expected to contribute to the progress of knowledge in their discipline or field of studies by presenting original research in the form of a doctoral dissertation. Moreover, the program aims to form qualified persons for university research and teaching or for other activities that require advanced specialization in our disciplines and fields of study.

Concentrations

Students register in one of the following concentrations:

1. Systematic and historical theology
2. Ethics
3. Biblical studies
4. Spirituality
5. Eastern Christian studies

Doctoral candidates can best benefit from the resources of the faculty by defining their thesis projects in view of the areas of competence of faculty members.

Admission

Admission Requirements

1. To be admitted to the PhD(Th) program, the candidate must hold a MA(Th) degree of the University of Ottawa/Saint Paul with a minimum 75 per cent (B+) average, or its equivalent.

2. Among the applicants who meet this requirement, only those whose academic record gives assurance that they are able to succeed and to make a personal contribution to the field of theological studies will be accepted as candidates to the doctorate.

3. The candidate must master either English or French and have a passive knowledge (ability to follow lectures and to read) of the other language.

4. To be admitted in the biblical studies concentration, candidates must have a basic knowledge (Level 1 - Introduction) of Hebrew and of Greek. They must acquire an intermediate level of competence in Hebrew and Greek before presentation of the thesis project.

5. The Faculty may require a candidate to acquire certain skills deemed necessary for the achievement of the research project (for example, knowledge of a language, basic knowledge of other disciplines).

Scholarships and Fellowships
Saint Paul University has established a number of fellowships for doctoral students. More information concerning these as well as other forms of financial assistance can be obtained from the Registrar of Saint Paul University.

Graduate Courses and Seminars in Theology

Four seminars and several courses are offered each year. The precise topics covered by the general headings listed below are selected according to their importance, timeless, the student interest and the availability of professors.

The list of courses and timetables are available at the dean’s office at the beginning of May.

Student Transfers From Other Universities

Students who transfer from other universities may receive credit for work already done, but are normally expected to complete the major part of the requirements for the degree at Saint Paul University. Doctoral candidates transferring from another university to complete their degree at Saint Paul University may be given advanced standing for work and residence already completed elsewhere. However, in all such cases, doctoral candidates must complete at least one year of full-time residence, complete 12 credits in their concentration and pass a preliminary examination at Saint Paul University.

Program Requirements

Degree Requirements

- two regular courses (three credits each) in the area of concentration;
- directed reading course (3 credits);
- comprehensive exam;
- the seminar (3 credits);
- submission and defence of a thesis.

Research Director

The research director is appointed by the Faculty of Theology before the end of the second session upon consultation with the student.

Comprehensive Examination

1. The comprehensive examination is intended to verify that candidates have developed a theological culture enabling them to acquire a knowledge and critical judgment in reference to the major questions, the most significant debates and the principal authors, past and present, in their concentration and, more particularly, in the area of their own research.
2. THO 9998 is a credited activity which is evaluated upon completion of both a written exam and an oral presentation.
3. This examination should take place sometime between the beginning of the third session and the end of the fourth session. It takes place before the presentation of the thesis project.

Refer to the graduate studies procedures manual of the Faculty of Theology for further details on the comprehensive examinations.

Thesis Project Presentation

The thesis topic must be submitted to the Faculty of Graduate and Postdoctoral Studies for registration after the successful completion of the comprehensive examination.

After the comprehensive examination, upon completion of all course and seminar requirements, and with the approval of the research director, the candidates present their thesis project to professors and graduate students. At this meeting, the candidates present the original hypothesis they have formulated and explain how their project attempts to prove it. The presentation is not perceived as an examination but as an exchange between the participants which may elicit suggestions for improving the project.

Thesis

The candidate must write, submit and successfully defend a thesis of at least 200 pages. The thesis must be a significant contribution to the advancement of knowledge, embody the results of original research and analysis and be of such quality as to be worthy of publication.

At least six copies of the thesis and of a summary not exceeding 350 words must be submitted to the Faculty of Theology.

The thesis is submitted to an examining board of four to seven examiners, at least one of these being chosen outside the University. If the thesis is accepted by this board, the candidate will be called to defend it. The University community and the general public are invited to attend the defence.

Residence and Time Limit

Four sessions of residence as a full-time student are mandatory. The candidate must complete all degree requirements within six years from the date of the first registration in the program.
Courses

Cours de base / Foundation Courses

THO6310 THEOLOGICAL HERMENEUTICS (3cr.)
Principles and history of interpretation in theology. Recent developments and debates. The role of classic texts and the question of historical consciousness.

THO6318 THE INTERPRETATION OF BIBLICAL TEXTS (3cr.)
Principles and methods of interpretation. History of interpretation: the Church Fathers, Middle Ages, the Reformation, 19th and 20th centuries.

THO6333 METHODS AND APPROACHES IN CONTEMPORARY ETHICS (3cr.)
Hermeneutical questions and methodological foundations of contemporary ethical reflection analysed from a theological perspective.

THO6358 SPIRITUALITY: METHODS; RELATIONSHIPS WITH THE HUMAN SCIENCES (3cr.)
Analysis of the methods used in the theological study of spirituality. Spirituality in relation to the human sciences.

THO6375 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN CHURCH HISTORY (3cr.)
In-depth reading, analysis and evaluation of key historical source material from the fourth century to the present.

THO6376 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN SPIRITUALITY (3cr.)
In-depth reading, analysis and evaluation of basic spiritual classics of Eastern Christianity from the fourth century to the present.

THO6377 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN LITURGICAL HISTORY (3cr.)
In-depth reading, analysis and evaluation of basic sources that illustrate the evolution of Eastern Christian worship from the fourth century to the present.

THO6382 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN THEOLOGY (3cr.)
In-depth reading, analysis and evaluation of basic texts that have helped shape Eastern Christian theology from the third century to the present.

THO6388 FOUNDATIONAL TEXTS IN EASTERN CHRISTIAN LITURGICAL THEOLOGY (3cr.)
In-depth reading, analysis and evaluation of basic texts from the fourth century to the present.

THO6397 FOUNDATIONAL TEXTS IN EAST-WEST ECUMENISM (3cr.)
In-depth reading, analysis and evaluation of key documents that have shaped East-West rapprochement from 1902 to the present.

THO6710 HERMÉNEUTIQUE THÉOLOGIQUE (3cr.)

THO6718 INTERPRÉTATION DU TEXTE BIBLIQUE (3cr.)

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Study of a particular issue, author, or trend in the hermeneutics and exegesis of the Eastern Churches, e.g. particularities of the Greek, Syriac, or Slavonic versions and their distinctive canons; worship as hermeneutical matrix; scripture and tradition in Eastern Christian reflection; extra-biblical texts; the development of modern Orthodox hermeneutics in dialogue with Western text criticism and methods.

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Examination of a particular issue, author, or trend in Eastern Patristic theology, e.g. Greek, Byzantine, Syrian, Coptic or Armenian sources; or the twentieth-century neo-patristic synthesis.

THO6381 CONTEMPORARY EASTERN THEOLOGY (3cr.)
Study of a particular issue, author, or trend in contemporary Eastern Christian theology, e.g. modern philosophical theology (for example, sophiology), and systematics and/or moral theology of the Greek, Russian, Ukrainian, Melkite and Romanian schools in particular; or the systematics and/or moral reflection of non-Byzantine theologians.

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Study of a particular issue, author, or trend relating to the history of the Constantinopolitan, Armenian, Alexandrian, West Syrian or East Syrian worship traditions and their offshoots, e.g. historical and structural analyses of Eastern patristic sources, Church Orders, euchologies, typica and other worship books; chant traditions, execution, environment; cultural factors conditioning these traditions.

THO6392 THE HISTORY OF EASTERN CHRISTIAN INSTITUTIONS, MOVEMENTS, PERSONS (3cr.)
Historical analysis of Eastern Christian institutions, movements or persons in the early, “medieval,” or modern periods of one or several of the various Eastern Churches, e.g. pre- and post- Nicean developments; Byzantine; pre-Ephesian and pre-Chaledonian Churches; the Slavic missions and Kyivan Rus’; the Turkocratia and subsequent liberation; later Rus’ Christianity; the Tsarist era; modern persecution; the Eastern Christian “diaspora.”

THO6393 METHODOLOGICAL ISSUES IN EASTERN CHURCH HISTORY (3cr.)
Investigation of a particular issue, author, or trend related to the periodization, historiography or methodology in general of Eastern Christian history.

THO6398 INTER-RELIGIOUS ISSUES AND THE CHRISTIAN EAST (3cr.)
Examination, from the perspective of the Eastern Churches, of a particular issue, author, or trend relating to dialogue between Christianity and other religions, e.g. Islamic-Christian encounters in the Middle-East, the Balkans and the former USSR; Slavic Christian-Jewish interaction; Buddhist-Eastern Christian monastic contacts.

THO6752 ÉTUDES DU CHRISTIANISME ORIENTAL (3cr.)
Étude sur un thème particulier, un auteur ou un courant relié à un aspect du christianisme oriental non couvert par les autres cours.

THO6778 RESSOURCES ET MÉTHODES POUR L'ÉTUDE DU CHRISTIANISME ORIENTAL (3cr.)
Examen des divers outils de recherche reliés au christianisme oriental et à la religion en général. Survol des principales méthodes utilisées dans le christianisme oriental pour l'exégèse, la théologie, la liturgie, la spiritualité et l'histoire de l'Eglise, et leur rapport avec les approches classiques et modernes de l'Occident.

THO6779 THÈMES PARTICULIERS D'HERMÈNEUTIQUE ET D'EXÉGÈSE DU CHRISTIANISME ORIENTAL (3cr.)
Études d'un thème particulier, d'un auteur ou d'un courant d'herméneutique ou d'exégèse des Églises orientales, ex. particularités des versions grecques, syriques ou slavues et leurs canons respectifs; le culte comme lieu herméneutique; l'écriture et la tradition dans la réflexion du christianisme oriental; les textes non-bibliques; le développement de l'herméneutique orthodoxe moderne en dialogue avec les méthodes et critiques textuelles de l'Occident.

THO6780 THÉOLOGIE PATRISTIQUE (3cr.)
Examen d'un thème particulier, d'un auteur ou d'un courant du christianisme oriental en théologie patristique, ex. sources grecque, byzantine, syriaque, copte ou arménienne; ou la synthèse néo-patristique du vingtième siècle.

THO6781 THÉOLOGIE CONTEMPORAINE DU CHRISTIANISME ORIENTAL (3cr.)
Étude d'un thème particulier, d'un auteur ou d'un courant en théologie orientale contemporaine, ex. théologie philosophique moderne (par exemple la sophiologie), et en particulier les écoles de théologie systématicque ou de théologie morale grecques, russes, ukrainiennes, melchites et romanes.

THO6787 THÈMES DE L'HISTOIRE LITURGIQUE DU CHRISTIANISME ORIENTAL (3cr.)
Étude d'un thème particulier, d'un auteur ou d'un courant relié à l'histoire des traditions cultuelles de Constantinople, d'Arménie, d'Alexandrie, de Syrie Occidentale et Orientale, et leurs dérivés, ex. les analyses historiques et structurelles des sources patristiques orientales, les Ordres ecclésiaux, les eucologues, typica et autres livres de prières; les traditions, modes et contextes d'exécution de cantiques; les facteurs culturels influençant ces traditions.

THO6792 HISTOIRE DES INSTITUTIONS, MOUVEMENTS ET PERSONNAGES IMPORTANTS DU CHRISTIANISME ORIENTAL (3cr.)
Analyse historique des institutions, mouvements et personnages importants des périodes primitives, médiévales et modernes de l'une ou plusieurs églises orientales, ex. évolution pré- ou post-nicéenne; Byzance; églises pré-épiscopienne et pré-calcaédonienne; les missions slaves et de "Kyivan Rus"; la Turcocratie et la libération subséquente; la chrétienté "Rus" tardive; l'ère des Tsars; la persécution moderne; la "diapora" du christianisme oriental.

THO6793 THÈMES MÉTHODOLOGIQUES DE L'HISTOIRE DU CHRISTIANISME ORIENTAL (3cr.)
Étude d'un thème particulier, d'un auteur, d'un courant relié à la périodisation, à l' historiographie ou à la méthodologie en général de l'histoire du christianisme oriental.

THO6798 QUESTIONS INTERRELIGIEUSES ET CHRISTIANISME ORIENTAL (3cr.)
À partir du point de vue du christianisme oriental, examen d'un thème particulier, d'un auteur ou d'un courant relié au dialogue entre le christianisme et les autres religions, ex. les rencontre Islamo-chrétiennes au Moyen Orient, les Balkans et l'ancienne URSS; les interactions entre chrétiens et juifs slaves; les contacts monastiques entre le bouddhisme et le christianisme oriental.

THO6997 EXAMEN DE SYNTHÈSE DE M.A. EN CHRISTIANISME ORIENTAL / MA SYNTHESIS EXAMINATION IN EASTERN CHRISTIAN STUDIES (3cr.)
Un examen oral et écrit pendant lequel l'étudiant devra démontrer son aptitude à faire une réflexion critique sur cinq thèmes (et textes correspondants), ayant une portée particulière pour le christianisme oriental. / A written and oral exercise during which the student is expected to demonstrate the ability to reflect critically on five themes (and concomitant texts) of particular significance to Eastern Christian Studies.

Toutes les concentrations / All Concentrations

THO6101 METHODS AND TASKS OF THEOLOGY (3cr.)

THO6105 IMPORTANT THEOLOGICAL SYNTHESES (3cr.)

THO6501 MÉTHODES ET TÂCHES DE LA THÉOLOGIE (3cr.)

THO6505 GRANDES SYNTHESES THÉOLOGIQUES (3cr.)

THO6998 MÉMOIRE / RESEARCH PAPER (6cr.)
Le mémoire, d'environ 40 pages, sera évalué par le directeur, qui doit appartenir à la concentration de l'étudiant, et par un autre professeur de la Faculté de théologie. Le mémoire ne peut être déposé qu'après avoir terminé avec succès les cours de méthodologie (THO 6799 ou THO 6778). / The research paper, approximately 40 pages in length, will be evaluated by both the supervisor, who must be from the student's concentration, and another professor from the Faculty of Theology. The submission of the research paper is dependent upon successful completion of the methodology course (THO 6399 or THO 6378).

THO8311 DIRECTED READINGS AND RESEARCH I (3cr.)

THO8312 DIRECTED READINGS AND RESEARCH II (3cr.)

THO8351 THEORETICAL AND PRACTICAL INITIATION TO THE TEACHING OF THEOLOGY (3cr.)

THO8711 LECTURE ET RECHERCHES DIRIGÉES I (3cr.)

THO8712 LECTURE ET RECHERCHES DIRIGÉES II (3cr.)

THO8751 INITIATION THÉORIQUE ET PRATIQUE À L'ENSEIGNEMENT DE LA THÉOLOGIE (3cr.)

THO9295 SÉMINAIRE DE 3e CYCLE EN THÉOLOGIE (3cr.)
Organization et rédaction d'un projet de thèse acceptable par la Faculté de théologie et la Faculté des études supérieures et postdoctorales. (Noté : S ou NS)

THO9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD PRELIMINARY EXAMINATION

THO9999 THÈSE / THESIS

Maîtrise en théologie pastorale / Master of Pastoral Theology

DCA5310 CHURCH LAW AND PASTORAL MINISTRY (3cr.)
Theological reflection on and practical application of Canon Law to some areas of pastoral ministry, specifically marriage and reconciliation.

DCA5710 DROIT ECCLÉSIAL ET MINISTÈRE PASTORAL (3cr.)
Réflexion théologique et application pratique du Droit canonique à certains domaines du ministère pastoral, en particulier au mariage et à la réconciliation.

IPA5321 PASTORAL MINISTRY AND PSYCHOLOGY (3cr.)
Interaction between theology and psychology with reference to pastoral ministry, the experience of the believer, the development of faith and of religious attitudes. The pastoral implications of psychological theories of the individual and his/her social relations: impact on cognitive processes, emotion, behaviour, competence, values. Psychological perspectives on the pastoral minister's practice, role and identity.

IPA5322 PASTORAL MINISTRY AND SOCIOLOGY (3cr.)
Interaction between theology and sociology with reference to pastoral ministry. A study of the pastoral implications of socio-historical structures, and of social and cultural change. Analysis of how the social milieu forms the way people think, feel and act, and the reflection on the importance of this formation for values and beliefs. Sociological perspectives on Christian communities' practice, role and identity.

IPA5721 MINISTÈRE PASTORAL ET PSYCHOLOGIE (3cr.)
Interaction entre théologie et psychologie en relation avec le ministère pastoral, l'expérience, la croissance et les attitudes religieuses du croyant. Implications pastorales des théories psychologiques concernant l'individu et ses relations sociales : leur impact sur le processus de connaissance, les émotions, le comportement, la compétence, les valeurs. Perspectives psychologiques sur les pratiques, le rôle et l'identité de l'agent pastoral.

IPA5722 MINISTÈRE PASTORAL ET SOCIOLOGIE (3cr.)

THO5301 PASTORAL THEOLOGY (3cr.)

THO5302 CATECHETICAL PASTORAL THEOLOGY (3cr.)
Theological reflection on the practice and principles of catechesis. The development and growth of faith in current pastoral contexts. Methodologies, learning styles, growth processes and approaches tailored in view of various groups and settings.

THO5303 LITURGICAL PASTORAL THEOLOGY (3cr.)
Theological reflection on the liturgical experience and expression of Christian communities. Principles, dynamics, and actualization of liturgical celebration, including sacraments, paraliturgies and prayer services. Roles and ministries in liturgical celebrations.

THO5304 CHRISTIAN COMMUNITY IN ITS SOCIAL DIMENSION (3cr.)
The Christian community as a social reality embodying beliefs and values. Its relationship to and responsibility toward contemporary society and church: local, national, international. Present social questions and the Christian social tradition.

THO5305 CHRISTIAN COMMUNITY AND ITS DEVELOPMENT (3cr.)

THO5307 STUDIES IN PASTORAL PRACTICE I (3cr.)
Study of a specific topic or issue in pastoral theology.

THO5308 STUDIES IN PASTORAL PRACTICE II (3cr.)
Study of a specific topic or issue in pastoral theology.
THO5701 THÉOLOGIE PASTORALE (3cr.)

THO5702 THÉOLOGIE PASTORALE ET CATÉCHÉTIQUE (3cr.)
Réflexion théologique sur l'enseignement et les principes de la catéchèse. La formation et la croissance de la foi dans le contexte pastoral actuel. Méthodologie, modes d'apprentissage, processus de croissance, et approches préparées spécialement pour des groupes de divers niveaux.

THO5703 THÉOLOGIE PASTORALE ET LITURGIE (3cr.)
Réflexion théologique sur l'expérience liturgique des communautés chrétiennes et son expression. Les principes, la dynamique et l'actualisation de la célébration liturgique, y compris les sacrements, les célébrations paraliturgiques et les rencontres de prières. Les rôles et les divers ministères dans les célébrations liturgiques.

THO5704 DIMENSION SOCIALE DE LA COMMUNAUTÉ CHRÉTIENNE (3cr.)
La communauté chrétienne comme réalité sociale incarnant croyances et valeurs. Ses relations et responsabilités envers la société contemporaine et l'Église : aux plans local, national et international. Problèmes sociaux actuels et la tradition sociale chrétienne.

THO5705 LA FORMATION DE LA COMMUNAUTÉ CHRÉTIENNE (3cr.)

THO5707 QUESTIONS PARTICULIÈRES EN PRATIQUE PASTORALE I (3cr.)
Étude d'un sujet ou d'un problème particulier de théologie pastorale.

THO5708 QUESTIONS PARTICULIÈRES EN PRATIQUE PASTORALE II (3cr.)
Étude d'un sujet ou d'un problème particulier de théologie pastorale.

Stage / Practicum
L'objectif principal du practicum consiste à assurer une formation adéquate au ministère par l'étude de la théologie, la réflexion théologique pratique, l'acceptation et l'exercice d'un ministère responsable dans un contexte où l'on peut atteindre et évaluer des objectifs professionnels bien définis.

The main objective of the practicum is to foster a ministerial identity that is informed by the study of theology, practical theological reflection and the acceptance and praxis of ministerial responsibility in a setting where well-defined professional objectives can be achieved and evaluated.

IPA5481 PROFESSIONAL MINISTRY PRACTICUM I (6cr.)
Supervised ministry in a local church or other ministerial setting. Emphasis on the receptive skills and attitudes of the pastoral minister. Theological, sociological, and psychological theories are introduced which will enable the pastoral agent to observe, analyze, and integrate events within the religious community. Cognitive, behavioural, motivational, and emotional components are related to people's individual, social, and interpersonal life. Professional ethical issues are addressed. Codes of ethics in allied professions are used when appropriate. Supervision occurs in small groups under the guidance of a supervisor from the Saint Paul University.

IPA5482 PROFESSIONAL MINISTRY PRACTICUM II (6cr.)
In collaboration with a supervisor the student actively addresses a segment of his ministry drawn from Practicum I (e.g., relationships, or the community, or individuals). Action plans are formulated and carried out. Implications for religious structure, liturgy, homilies, sacraments are developed and implemented. Emphasis is placed on critical, informed involvement, resource and time management in the exercise of collegial and co-responsible lay and ordained leadership in preaching, liturgical presiding, and community facilitation. Supervision occurs in small groups under the guidance of a supervisor from the Saint Paul University. Prerequisite: IPA 5481.

IPA5881 FORMATION PROFESSIONNELLE AU MINISTÈRE: STAGE I (6cr.)
Ministère supervisé dans une église locale ou un autre contexte ministériel. Importance attachée aux capacités d'écoute et aux attitudes de l'agent pastoral. Présentation de théories théologiques, sociologiques et psychologiques qui amèneront l'agent pastoral à observer, analyser et intégrer les événements dans la vie religieuse de la communauté. La connaissance, le comportement, la motivation et les émotions en tant que composantes liées à la vie privée, sociale et interpersonnelle de la personne. Problèmes d'éthique professionnelle. Utilisation des codes d'éthique des professions connexes selon les cas. Supervision en petits groupes sous la direction d'un superviseur de l'Université Saint-Paul.

IPA5882 FORMATION PROFESSIONNELLE AU MINISTÈRE: STAGE II (6cr.)
En collaboration avec un superviseur, l'étudiant évalue une partie du ministère exercé au cours du Practicum I (c.-à-d., les relations, la communauté ou l'individu). Formulation et mise en œuvre de plans d'action. Incidences sur les structures religieuses, la liturgie, l'homélie et les sacrements. Accent mis sur la participation critique et compétente, la gestion du temps et des ressources dans l'exercice collégial et co-responsable du ministère, laïque ou ordonné, de la prédication, de la présidence des célébrations liturgiques et de l'animation communautaire. Supervision en petits groupes sous la direction d'un superviseur de l'Université Saint-Paul. Préalable : IPA 5881.
La supervision du programme se fait par rétroaction des autres étudiants, de comptes rendus, échantillonnage de travaux, enregistrements sonores, échanges et autres rapports.

Eighteen hours (including a minimum of ten hours on site) of preparation and work each week, over one semester. Program supervision takes place by way of feedback from other students, debriefing, work samples, tape recordings and verbatims or other reports.

**Translation Studies (PhD)**

The primary objective of the doctoral program in translation studies is to produce qualified scholars in the field for academic teaching and research.

The doctoral program will focus on:

- Theories, history and pedagogy of translation as inter-lingual and intercultural communication.
- Lexicology, terminology, and technologies as applied to translation.

Since translation is interdisciplinary, the doctoral program may collaborate with disciplines in other units such as Law, English, Canadian Studies, French, Modern Languages and Literatures, Linguistics, Philosophy, as well as the School of Information Technology and Engineering (SITE). However, the administration of the program is the sole responsibility of the School of Translation and Interpretation.

This full-time program consists of four courses, a comprehensive exam, and a thesis.

**Admission**

**Admission Requirements**

MA in Translation Studies or equivalent, with a minimum average of B+ (75%). Applicants are required to submit a one- or two-page summary of their proposed research project. Applicants are also required to respond to a questionnaire concerning their background preparation.

Students with a master's containing a translation component but which is not equivalent to a master's in translation studies may be considered for admission at the master's level, with the possibility of transferring into the doctoral program after four courses, if they obtain an average of A- (80%).

Students registered in the master's program in Translation Studies at the University of Ottawa who have obtained excellent results may exceptionally be admitted into the doctoral program without a master's thesis. To take advantage of this option, they must: a) obtain A- average in six master’s courses, and b) submit a major research paper of about 30 pages (TRA7998). This paper will be evaluated for research potential by a committee consisting of at least two members of the Faculty of Graduate and Postdoctoral Studies (FGPS). Admission will be dependent on the availability of a thesis supervisor in the applicant’s area of research interest.

**Transfert from MA to PhD**

In exceptional circumstances, it is possible to transfer from the MA program at the School of Translation and Interpretation (STI) directly into the PhD program under the following conditions:

- Completion of the 3 mandatory MA courses, plus one more MA course, with a grade of A in each course;
- Completion of a 40 page research paper (TRA7998) under the supervision of a professor who is the potential PhD thesis supervisor;
- Written recommendation for transfer from the supervisor of the paper and from the Graduate Studies Committee.

The transfer must take place within sixteen months of initial registration in the master's. Students permitted to transfer will complete a total of 8 courses (24 credits), 6 courses while registered in the master’s and 2 while registered in the PhD. Following transfer, the following requirements must be met: 2 courses (6 credits), the comprehensive exam, the thesis proposal and the thesis.

**Language requirements**

Students must meet one of the following requirements:

1. Proficiency in English and French. Knowledge of a third language will be an asset.

or

2. Proficiency in English and another language. In this case, a good passive knowledge of French is required.
3. Proficiency in French and another language. In this case, a good passive knowledge of English is required.

The School of Translation and Interpretation (STI) reserves the right to test the linguistic knowledge of applicants.

**Admission Procedure**

Applications for admission are reviewed by the Graduate Studies Committee of the School of Translation and Interpretation, and must also meet the general requirements of the Faculty of Graduate and Postdoctoral Studies of the University. In addition to completing our on-line application and paying the application fee to the Ontario Universities' Application Centre, students must also assemble all relevant documentation and forward the complete application package to the director of the School of Translation and Interpretation. Applications will not be processed without the application fee and the complete file.

To find the application deadline, please check the “program-specific requirements” under Application Procedures and Information at the following address: www.grad.uottawa.ca/apply.

To be admitted to the program, students must be registered in or have successfully completed at least one graduate course in history with Canadian content. The mention “Specialization in Canadian Studies” will be added to the diploma of students who pass the CDN 6910 seminar and successfully defend a thesis on a Canadian topic in Translation. For further details, please consult the Canadian Studies brochure of the Faculty of Graduate and Postdoctoral Studies.

**Program Requirements**

**Program Requirements**

**Residence requirements**

Doctoral candidates who hold a master's degree or the equivalent in the same discipline must spend at least six sessions in full-time residence, at the beginning of their program. Candidates admitted to a doctoral program who do not hold a master's degree must spend at least nine sessions in full-time residence.

**Summary of the Program**

1. Four courses (12 credits) of which two are compulsory:

   TRA6984 COURANTS ACTUELS EN TRADUCTOLOGIE I / DEVELOPMENTS IN TRANSLATION STUDIES I (3cr.)

   TRA6985 COURANTS ACTUELS EN TRADUCTOLOGIE II / DEVELOPMENTS IN TRANSLATION STUDIES II (3cr.)

   Two other graduate courses related to the student's fields of interest. These courses, chosen in consultation with the student's faculty advisor, may be taken in Translation and/or in other related fields.

   N.B. Upon admission, one or two additional or substitute courses at the 5000 or 6000 level may, at the discretion of the STI, be added to complete the student's background.

2. TRA9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION

   This exam has two parts, the first designed to assess the student's knowledge of the discipline, the second to assess the student's ability to successfully complete the thesis research.

3. TRA9999 THÈSE DE DOCTORAT / DOCTORAL THESIS

   Thesis regulations are those required by the Faculty of Graduate and Postdoctoral Studies.

**Courses**

**Séminaires et cours / Seminars and Courses**

TRA5901 HISTOIRE DE LA TRADUCTION / HISTORY OF TRANSLATION (3cr.)

TRA5902 THÉORIES DE LA TRADUCTION / THEORIES OF TRANSLATION (3cr.)

TRA5903 INFORMATIQUE ET TRADUCTION / COMPUTERS AND TRANSLATION (3cr.)
Women's Studies (PhD)
The primary objective of the Doctoral program is to prepare candidates for a career in teaching and research. The program, however, also prepares candidates for other careers by giving them a comprehensive foundation in feminist theory, methodology and analysis in a context that highlights the need for scholarship engaged with the realities of an increasingly transnational world. PhD graduates will have acquired and demonstrated their aptitude to produce scholarly work engaged with some of the most urgent issues in the global and local socio-political, cultural and economic landscape while identifying new directions for feminist scholarship and intervention.

The doctoral program includes two fields:

1. Gender, Power and Representations
2. Women, Rights and Citizenship in a Globalized World

The program is offered full-time. Courses are offered both in English and in French. In accordance with University of Ottawa regulations, students can write their papers, exams, and theses in the official language of their choice (either English or French).

The program operates under the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) which can be accessed at www.grad.uottawa.ca.

**Admission**

To be eligible for admission to the PhD program, students must hold a master’s degree (thesis or research paper) in women’s studies or a master’s degree with specialization in women’s studies and have a minimum average of 75% (B+) calculated in accordance with FGPS guidelines. Applicants with a master’s degree in a related discipline will also be considered if the subject of their thesis or research paper is linked to women’s studies.

Students must understand, speak, and write either English or French fluently at the time of admission. Proof of proficiency may be required.

**Transfer to the PhD Program**

Students enrolled in the MA program in Women’s Studies, whose academic performance is exceptional and who have demonstrated good aptitude for doctoral research (as evaluated by the Women’s Studies Graduate Committee) may be admitted to the PhD program without having to complete their MA. To qualify for transfer to the PhD program, students must have completed four graduate courses (12 credits) including three FEM courses with a minimum average of 80% (A-); have demonstrated potential for doctoral-level research; and have received approval from the Women’s Studies Graduate Committee.

Transfer to the PhD program must take place within the 16 months following initial registration for the master’s degree. Following transfer, students must successfully complete two graduate FEM courses (6 credits), the comprehensive examination (within the 24 months following transfer), the thesis proposal and prepare the doctoral thesis.

The request for transfer must be made during the third session of full-time registration (or equivalent), and the transfer must take place before the end of the fourth session.

The application file must include a curriculum vitae, official transcripts and two letters of recommendation. Applicants must also submit a letter of intent describing their interest in studying in one of the fields of the program, their research interests and their university and practical experience deemed relevant for admission to the program.

**Program Requirements**

**Degree Requirements**

The doctoral program consists of:

a) **Four compulsory courses (12 credits):**
   - FEM5103 FEMINIST METHODOLOGIES (3cr.)
   - FEM5300 FEMINIST THEORIES (3cr.)
   - FEM6101 GENDER, POWER AND REPRESENTATIONS (3cr.)
   or
   - FEM6102 WOMEN, RIGHTS AND CITIZENSHIP IN A GLOBALIZED WORLD (3cr.)
   - FEM8101 SEMINAR IN WOMEN’S STUDIES (3cr.)

b) **Thesis Proposal**
   - FEM9997 PROJET DE THÈSE DE DOCTORAT / DOCTORAL THESIS PROPOSAL

c) **Comprehensive Examination**
   - FEM9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION

d) **Ph.D. Thesis**
FEM9999 THÈSE DE DOCTORAT / PhD THESIS

Students who have already taken the compulsory courses (FEM 5103 and FEM 5300) prior to admission may replace these courses with FEM elective courses or electives from other disciplines. The choice of electives is subject to the approval of the supervisor of graduate studies or a delegate.

Language Requirements

Proficiency in either English or French is required. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS.

Minimum Standards

The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits), or the thesis proposal, or the comprehensive exam or whose research progress is deemed unsatisfactory are required to withdraw.

Residence

All full-time students must complete a minimum of six sessions of full-time registration. In the case of transfer to the PhD, the residency period for the PhD is nine full-time sessions from the initial registration in the program.

Duration of the program

Students are expected to fulfill all requirements within four years. The maximum time permitted is six years from the date of initial registration in the program, or seven years in the case of the students transferring from the master’s to the doctorate.

Courses

FEM5103 FEMINIST METHODOLOGIES (3cr.)
Methodologies developed in Women's Studies. Critical examination from both multidisciplinary and interdisciplinary perspectives. Prerequisite: Two undergraduate courses in Women's Studies or the permission of the supervisor of graduate studies in Women's Studies.

FEM5300 FEMINIST THEORIES (3cr.)
Approaches to contemporary feminist theory. Critical examination from both multidisciplinary and interdisciplinary perspectives. Prerequisite: Two undergraduate courses in Women's Studies or the permission of the supervisor of graduate studies in Women's Studies.

FEM5503 MÉTHODOLOGIES FÉMINISTES (3cr.)
Méthodologies élaborées en études des femmes. Examen critique dans une perspective à la fois pluridisciplinaire et interdisciplinaire. Préalable : Deux cours de premier cycle en études des femmes ou la permission de la personne responsable des études supérieures en études des femmes.

FEM5700 THÉORIES FÉMINISTES (3cr.)
Différentes approches de la théorie féministe contemporaine. Examen critique dans une perspective à la fois pluridisciplinaire et interdisciplinaire. Préalable : Deux cours de premier cycle en études des femmes ou la permission de la personne responsable des études supérieures en études des femmes.

FEM6100 SPECIAL TOPICS IN WOMEN'S STUDIES (3cr.)

FEM6101 GENDER, POWER AND REPRESENTATIONS (3cr.)
This course analyses the diverse body of feminist scholarship theorizing conceptions of gender, power and representation. Examining the construction and representation of gender/sex differences, the course explores the power relations inherent in these representations, while also examining how gender roles and expectations are linked to representations of class, race, sexuality, age, nationality and ability. Prerequisites: FEM 5103 and FEM 5300

FEM6102 WOMEN, RIGHTS AND CITIZENSHIP IN A GLOBALIZED WORLD (3cr.)
This course examines women’s rights and citizenship; gender and development; and gender, migration and health in the context of globalization. Topics include the following: mainstreaming gender and health development; initiatives bringing feminist Southern voices across the world; health consequences of the massive incorporation of Third World women into a transnational labour force; women’s agency and resistance; social capital and pluralism in health services and health care. Prerequisites: FEM 5103 and FEM 5300

FEM6103 DIRECTED READINGS (3cr.)

FEM6500 THÈMES SPÉCIAUX EN ÉTUDES DES FEMMES (3cr.)

FEM6501 RAPPORTS SOCIAUX DE SEXE, POUVOIR ET PRÉSENTATIONS (3cr.)
Ce cours analyse les diverses théories féministes qui visent à formaliser les concepts de genre, de pouvoir et de représentation. Les représentations des différences entre les genres/ses sont abordées sous l’angle de leur construction sociale, ainsi que des rapports de pouvoir qui leur sont intrinsèquement
liés. Le cours examinera également la façon dont les rôles et les attentes quant au genre sont aussi façonnés par des représentations concernant la classe, la “race” et l’ethnité, la sexualité, l’âge, la nationalité et la présence/l’absence de handicap. Préalables : FEM 5503 et FEM 5700

FEM6502 FEMMES, DROITS ET CITOYENNÉTÉ DANS UN MONDE GLOBALISÉ (3cr.)
Ce cours englobe les domaines d’études connexes touchant aux droits des femmes et à la citoyenneté : genre et développement international; genre, migrations et santé dans un contexte mondialisé. Des sujets variés y sont abordés, qu’il s’agisse de l’intégration des rapports sociaux de sexe dans le développement de la santé, des initiatives novatrices permettant de faire entendre les voix féministes du sud ou encore des conséquences sur la santé de l’enrôlement massif des femmes du Tiers monde dans un marché du travail multinational et mondialisé. On s’intéressera aussi à l’agentivité et aux résistances de ces femmes, à leur capital social et au pluralisme en matière de services et de soins de santé. Préalables : FEM 5503 et FEM 5700

FEM6503 LECTURES DIRIGÉES (3cr.)

FEM6900 THÈMES SPÉCIAUX EN ÉTUDES DES FEMMES / SPECIAL TOPICS IN WOMEN’S STUDIES (3cr.)

FEM6997 PROJET DE THÈSE DE MAÎTRISE / MASTER’S THESIS PROPOSAL
Préalables : FEM 5503, FEM 5700 et 3 cr. de la banque de cours au choix. / Prerequisites: FEM 5103, FEM 5300 and 3 cr. from the list of electives.

FEM6999 MÉMOIRE / RESEARCH PAPER (6cr.)
Préalables : FEM 5503, FEM 5700 et 12 cr. de la banque de cours au choix. / Prerequisites: FEM 5103, FEM 5300 and 12 cr. from the list of electives.

FEM7999 THÈSE DE MAÎTRISE / MASTER’S THESIS (12cr.)
Préalable / Prerequisite: FEM 6997.

FEM8101 SEMINAR IN WOMEN’S STUDIES (3cr.)
This seminar deals with professional development (the preparation of grant applications, conference papers and articles), and reviews the central issues and debates of the discipline. Prerequisites: FEM 5103 and FEM 5300. Reserved for students registered in the PhD program in Women’s Studies.

FEM8501 SEMAINE EN ÉTUDES DES FEMMES (3cr.)
Ce séminaire porte sur le développement professionnel (préparation de demandes de subvention, conférences, articles) et sur les enjeux principaux de la discipline. Préalables : FEM 5503 et FEM 5700. Réservé aux étudiantes et étudiants inscrits au doctorat en étude des femmes.

FEM9997 PROJET DE THÈSE DE DOCTORAT / DOCTORAL THESIS PROPOSAL
Préalable / Prerequisite: FEM 9998.

FEM9998 EXAMEN DE SYNTHÈSE / COMPREHENSIVE EXAMINATION
Préalables : FEM 5303, FEM 5700, FEM 6501 ou FEM 6502, et FEM 8501. / Prerequisites: FEM 5103, FEM 5300, FEM 6101 or FEM 6102, and FEM 8101.

FEM9999 THÈSE DE DOCTORAT / PhD THESIS
Préalable / Prerequisite: FEM 9997.

Cours au choix / Electives


Les étudiantes et étudiants doivent s’assurer d’avoir les préalables aux cours qu’ils désirent suivre ou obtenir la permission de l’unité scolaire, le cas échéant.

The following list of electives is not exhaustive, and is provided as a guideline for students and their advisors. Each year a list of elective courses approved and offered for students in the program will be posted on the program’s website. Graduate courses other than those posted on the program website may be selected with the approval of the Women’s Studies Graduate Committee.

It is the students’ responsibility to verify that they have the prerequisites for the elective courses they wish to take and to obtain the permission of the academic unit if required.
CRM6367 WOMEN AND CRIMINAL JUSTICE (3cr.)
Women as criminals and victims; the impact of the operation of the criminal justice system on women.

CRM6767 LA FEMME ET LA JUSTICE PÉNALE (3cr.)
La femme comme justiciable et victime; l'impact du fonctionnement de la justice pénale sur les femmes.

DCL5305 FEMINIST ANALYSIS OF LAW (3cr.)
Exploration of feminist perspectives, theories and themes and the application of these to particular problems or issues. Development of techniques for analyzing social meaning of law.

DCL5505 ANALYSE FÉMINISTE DU DROIT (3cr.)
Statut juridique, droits et obligations des femmes dans les domaines de la santé, de la famille, du travail, de la criminalité, de la fiscalité, du commerce, etc. Analyse critique du droit à partir d’une perspective féministe. Étude des différentes théories féministes du droit.

DCL5721 PERSPECTIVES FÉMINISTES DU DROIT (3cr.)

DCL7306 LEGAL PERSPECTIVES ON CYBERFEMINISM (3cr.)
This course analyses issues relating to application of feminist principles to the legal regulation of communication technologies. Topics covered include the gendered dynamics of networked capitalist society; women's relationships with communication technologies; technology's potential impact on equality for women; and questions surrounding whether and how to legally regulate communication technologies.

FRA5502 LECTURES FÉMINISTES (3cr.)

HIS7331 SEMINAR ON THE HISTORY OF WOMEN AND GENDER (3cr.)

HIS7731 SÉMINAIRE EN HISTOIRE DES FEMMES ET DU GENRE (3cr.)

SOC7156 GENDER RELATIONS AND INTERETHNIC RELATIONS (3cr.)
Examination of modes of differentiation according to gender, ethnicity, and race in contemporary societies and of the theoretical linkages among them.

SOC7166 DEVELOPMENT AND GENDER RELATIONS (3cr.)
Deconstruction of the concepts of gender and development. International power relations and gender. Women in the global South and their theorizing of gender relations.

SOC7176 GENDER DIFFERENCES IN POLITICAL SOCIOLOGY (3cr.)
Examination of the notion of gender difference, in relation, for example, to citizenship, the private/public divide, political representation, women’s rights, kinship, and power.

SOC7556 RAPPORTS SOCIAUX DE SEXES ET MINORISATION (3cr.)
Examen des modes de différenciation selon le sexe, l'ethnie et la race dans les sociétés contemporaines et leur articulation théorique.

SOC7566 DÉVELOPPEMENT: RAPPORTS SOCIAUX DE SEXES (3cr.)
Décomposition des concepts de genre et de développement. Réflexion sur les rapports internationaux de domination. Étude des modalités d'organisation des femmes dans les sociétés du Sud et analyse de leur théorisation des rapports sociaux de sexes.

SOC7576 DIFFÉRENCE DES SEXES EN SOCIOLOGIE POLITIQUE (3cr.)
Examen de la notion de la différence des sexes appliquée, par exemple, à la citoyenneté, le privé/public, la représentation politique, les droits des femmes, la filiation et le pouvoir.

SRS5106 GODDESSES AND WOMEN IN MYTH AND SYMBOL (3cr.)
SRS5912 LA FEMME ET LA TRADITION CHRÉTIENNE / WOMEN AND THE CHRISTIAN TRADITION (3cr.)

SRS7001 LA RELIGION DANS LA PENSEÉ FÉMINISTE CONTEMPORAINE / RELIGION AND CONTEMPORARY FEMINIST THOUGHT (6cr.)

SVS5535 INTERVENTION FÉMINISTE ET SERVICE SOCIAL (3cr.)
Analyse des approches d'intervention auprès des femmes et applications en service social.

SVS6705 PROBLÉMATIQUE DE LA VIOLENCE ET INTERVENTION SOCIALE (3cr.)
Examen des problèmes reliés à la violence au sein de la famille, compte tenu des personnes en cause. Stratégies d'intervention et évaluation de celles-ci.

SVS6706 FEMMES, SERVICE SOCIAL ET POLITIQUES SOCIALES (3cr.)
Promotion des femmes en milieu professionnel; impact des politiques sociales sur les femmes; étude des politiques en matière d'emploi : équité salariale, discrimination et harcèlement sexuel.

Les cours suivants peuvent être considérés s'ils comportent une dimension « femmes », rapports sociaux de sexe, ou une perspective féministe. L'approbation de la personne responsable des études supérieures en études des femmes est requise.

The following courses may be taken if there is a women, gender or feminist dimension to the course content. The approval of the supervisor of graduate studies in Women's Studies is required prior to registering to the course.

DCL5121 STUDIES IN HUMAN RIGHTS I (3cr.)

DCL5122 STUDIES IN HUMAN RIGHTS II (3cr.)

DCL5303 STUDIES IN LEGAL THEORY I (3cr.)
Survey of current theories of law. May be organized around a particular problem of writer or perspective. May include interdisciplinary materials.

DCL5731 PROBLÈMES CHOISIS DE DROIT DE LA PERSONNE I (3cr.)

EDU6651 ÉDUCATION À LA CITOYENNETÉ DANS UNE PERSPECTIVE PLANÉTAIRE (3cr.)

HIS7330 SEMINAR ON COMPARATIVE HISTORY (3cr.)

HIS7530 SÉMINAIRE EN HISTOIRE COMPARÉE (3cr.)

MUS6770 THÈMES EN MUSICOLOGIE (3cr.)

MUS6930 SÉMINAIRE DE THÉORIE ET D'ANALYSE / SEMINAR IN THEORY AND ANALYSIS (3cr.)
Graduate Certificate / Diploma Programs

Auditory-Verbal Studies (Graduate Certificate)

The graduate certificate in Auditory-Verbal Studies program is offered by the Faculty of Health Sciences in conjunction with the Faculty of Graduate and Postdoctoral Studies (FGPS). The program seeks to provide in-depth training beyond what is currently offered through programs in Audiology, Speech-Language Pathology, and Education of Hearing-Impaired Children.

Graduates of the program will acquire a good foundation in the development of spoken communication in children with hearing impairment, and will learn the specialized skills and therapeutic/teaching strategies applied in auditory-verbal practice in clinical, community or school environments.

Teaching and practicum placements will focus on the development of listening and spoken communication from childhood to adolescence.

The graduate certificate operates within the framework of the master’s program in Audiology and Speech-Language Pathology and both are governed by the “General regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS), which are posted on the website.

The certificate can be pursued either full- or part-time. The courses are offered in English and in French; the clinical placements may be in either language or in both. In accordance with the University of Ottawa regulation, assignments, examinations, research papers and theses can be produced in either English or French.

Admission

Admission to the graduate certificate in Auditory-Verbal Studies program is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applicants must have a master’s degree in Audiology, in Speech-Language Pathology, in Education of children with hearing impairment, or a diploma in the Education of children with hearing impairment.

It is essential to have completed at least one university course in acoustics and speech perception and another course on basic concepts in audiology. Students requiring these courses may be able to take them as co-requisites upon admission to the program.

The minimum average for admission is 70% (B), calculated in accordance with FGPS guidelines.

All applicants must be able to understand speak and write proficiently either English or French. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable tests is indicated in the “Admission” section of the General Regulations of the FGPS.

Given that the scientific literature in the field is mainly published in English, it is necessary to have at least a passive knowledge of English.

Program Requirements

Graduate certificate in Auditory-verbal studies

Certificate Requirements

The graduate certificate in Auditory-Verbal Studies program requires 15 credits, of which 9 are compulsory courses and 6 are practicum placements. If, prior to being admitted, a student has successfully completed one of the certificate courses at the University of Ottawa with “special student” or “out-of-program” status, that course will be recognized in the graduate certificate.

Minimum Standards

The passing grade in all courses is 65% (C+). Students who fail two courses (equivalent to 6 credits) or the same course twice are required to withdraw from the program.

Duration of the program

The requirements of the certificate are usually fulfilled within three years of initial registration to the program.

Compulsory courses (9 credits):

1. AVB 6100 FUNDAMENTAL CONCEPTS IN AUDITORY-VERBAL STUDIES (3cr.)
2. AVB 6105 AUDITORY-VERBAL TECHNIQUES AND PROCEDURES I (3cr.)
3. AVB 6110 AUDITORY-VERBAL TECHNIQUES AND PROCEDURES II (3cr.)

Compulsory practica (6 credits):

1. AVB 6900 PRACTICUM I (3cr.)
2. AVB 6905 PRACTICUM II (3cr.)

Courses

Cours/Courses
AVB6100 FUNDAMENTAL CONCEPTS IN AUDITORY-VERBAL STUDIES (3cr.)
Foundations of auditory-verbal practice, including its history, philosophy and principles, as a means of facilitating spoken communication in children with hearing loss. Focus on the development of maximal use of residual hearing through the application of technology, the participation of parents as primary language facilitators, and the integration of auditory-verbal techniques and strategies into everyday life. Discussion of the evidence-base for an auditory-based approach to spoken communication development.

AVB6105 AUDITORY-VERBAL TECHNIQUES AND PROCEDURES I (3cr.)
Topics to include diagnostic evaluation and intervention in listening, speech, language, and communication for children with an emphasis on infants and preschool children. Interpretation of the results of formal assessments and identification of goals for intervention. Planning of family-centred auditory and linguistic experiences to facilitate the development of spoken communication. Demonstration of the application of auditory-verbal techniques and strategies in various teaching contexts.

AVB6110 AUDITORY-VERBAL TECHNIQUES AND PROCEDURES II (3cr.)
Topics to include the multidisciplinary assessment of school-age children, educational placement, academic and social functioning. Role of the auditory-verbal therapist in planning and facilitating the participation of children with hearing loss in regular classroom and social settings. Planning of school-based therapy sessions and education of school professionals. Discussion of the application of auditory-verbal therapy techniques with special populations (e.g., children with multiple disabilities and late-implanted adolescents and adults). This course will include problem-based learning through case discussions with a focus on the school-age population. Prerequisite: AVB6105

AVB6500 CONCEPTS FONDAMENTAUX EN ÉTUDES AUDITIVE-VERBALES (3cr.)
Éléments fondamentaux de la pratique auditive-verbale, incluant son histoire, sa philosophie et ses principes, comme moyen pour faciliter la communication orale chez les enfants avec déficience auditive. Accent particulier sur le développement de l’utilisation maximale des restes auditifs par l’application de technologies, la participation des parents comme facilitateurs principaux du langage, et l’intégration de techniques et stratégies auditive-verbales dans la vie de tous les jours. Discussion de la base factuelle pour une approche auditive au développement de la communication verbale.

AVB6505 TECHNIQUES ET PROCÉDURES AUDITIVE-VERBALES I (3cr.)

AVB6510 TECHNIQUES ET PROCÉDURES AUDITIVE-VERBALES II (3cr.)
Les sujets abordés incluent les suivants : évaluation pluridisciplinaire d’enfants d’âge scolaire, le placement scolaire et le fonctionnement social et scolaire. Rôle du thérapeute audifi-verb dans la planification et l’aide à la participation des enfants avec déficience auditive en milieu scolaire et social. Planification de sessions de thérapie en milieu scolaire et d’éducation pour les enseignants et autres professionnels. Discussion de l’application de techniques de thérapie auditive-verbale auprès de populations spéciales (e.g., enfants atteints de multiples incapacités et adolescents et adultes implantés tardivement). On encouragera l’apprentissage basé sur la résolution de problèmes et l’analyse des cas en mettant l’accent sur les enfants d’âge scolaire. Préalable : AVB6505

AVB6900 PRACTICUM I / STAGE I (3cr.)
Stage of 150 hours sous la supervision d’un thérapeute. Accent sur les enfants d’âge préscolaire avec déficience auditive. Ce stage permettra à l’étudiant d’intégrer la théorie et le travail pratique dans le but d’offrir des services en intervention auditive-verbale auprès des jeunes enfants et de leurs familles. Noté S/NS. Préalable : AVB 6500. Under the supervision of an auditory-verbal therapist, students will complete 150 hours of practicum with a focus on preschool age children with hearing impairment. This practicum will allow students to integrate theory and practical skills to provide auditory-verbal intervention services for young children and their families. Graded S/NS. Prerequisite: AVB 6100.

AVB6905 PRACTICUM II / STAGE II (3cr.)
Stage de 150 heures sous la supervision d’un thérapeute. Accent sur les enfants d’âge scolaire avec déficience auditive. Ce stage permettra à l’étudiant d’intégrer la théorie et le travail pratique dans le but d’offrir des services en intervention auditive-verbale en milieu scolaire. Noté S/NS Under the supervision of an auditory-verbal therapist, students will complete a 150 hours of practicum with a focus on school age children with hearing impairment. This practicum will allow students to integrate theory and practical skills to provide auditory-verbal intervention services in the school environment. Graded S/NS.
**Canon Law (Graduate Certificate)**

The Graduate Certificate in Canon Law (GCCL), offered by the Faculty of Canon Law, is a graduate program that provides advanced training in canon law for non-specialists whose occupation requires them to have additional expertise in this area.

The GCCL is granted jointly by Saint Paul University and the University of Ottawa under the terms of the federation agreement between them.

The GCCL is intended for two types of student: (1) Students who already have an adequate training in a related discipline, e.g. theology, religious studies, philosophy (eclesiastical), mission studies.

(2) Students and practitioners of civil or common law who wish to acquire a further specialization in canon law.

The GCCL is offered in both French and English. All required courses are available in each language. Some elective courses may be offered in one language only.

On completion of the certificate, qualified students meeting admission requirements may apply for admission to the master’s in Canon Law program and, on admission, complete the requirements of this program with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually.

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: [www.etudesup.uottawa.ca/generalregulations](http://www.etudesup.uottawa.ca/generalregulations)

**Admission**

1. Prospective students must hold an honours baccalaureate, or complete an equivalent program, with an average grade of at least “B”.

2. The baccalaureate or equivalent program must include, or be supplemented by, at least 18 credits in one of the following disciplines:
   - 18 credits in theology and philosophy (eclesiastical), which suffice for admission to any of the concentrations;
   - 18 credits in religious studies or mission studies, which suffice for admission to the concentrations in church governance or liturgical law;
   - 18 credits in civil law or common law, which suffice for admission to the concentrations in matrimonial law or comparative law.

3. The Faculty of Canon Law reserves the right to assess individual applications and stipulate specific prerequisites for a concentration or a course, or to waive one or more prerequisites in view of the candidate’s proven pastoral or professional experience.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master’s**

Students registered in the graduate certificate program can request to transfer to the master in canon law (MCL) or to the master of arts in canon law (MA (CL)) in accordance with section A.7.1 of the "General regulations" of the FGPS.

**Program Requirements**

**Certificate Requirements**

The program consists of 15 credits of courses, including the required course DCA 5102 General Norms I. The remaining courses are chosen, in consultation with the Dean, from among the graduate courses in canon law according to each student’s educational needs and career goals.

Students may complete the certificate requirements full-time in one session or part-time over the course of one, two, or at most three years.

The passing grade in all courses is C+. Students who fail six credits or the same course twice, must withdraw from the program.

They may choose one of the following concentrations described below.

**Concentration: Matrimonial Law**

DCA5102 GENERAL NORMS I (3cr.)
DCA5125 MATRIMONIAL LAW I: MATRIMONIAL CONSENT (3cr.)
DCA5126 MATRIMONIAL LAW II: SPECIAL ISSUES AND CASES (3cr.)
DCA5125 MATRIMONIAL LAW I: MATRIMONIAL CONSENT (3cr.)
Marriage: General Introduction; Matrimonial Consent.

DCA5126 MATRIMONIAL LAW II: SPECIAL ISSUES AND CASES (3cr.)
Preparation for marriage; matrimonial impediments; separations of spouses; validation special procedures: cases of separation of spouses, of dispensation from a ratified and non-consummated marriage, of presumed death of a spouse.

**DCA5133 JUDICIAL PROCEDURES (3cr.)**
Theoretical part: competent forum, different grades and kinds of tribunals, rules of practice, parties in the case, actions and exceptions.

**DCA5203 INSTITUTES OF CONSECRATED LIFE AND SOCIETIES OF APOSTOLIC LIFE (3cr.)**
Norms common to all institutes of consecrated life and societies of apostolic life. Religious institutes: religious houses, governance of institutes, admission of candidates and formation of members, obligations and rights of the institutes and of their members, apostolate of institutes, separation of members from the institute, religious who are bishops, conferences of major superiors. Secular institutes. Societies of apostolic life.

**DCA5204 SACRAMENTAL AND LITURGICAL LAW (6cr.)**
Sacraments: baptism; confirmation; Eucharist; penance; anointing of the sick; order. Other acts of divine worship: sacramentals; liturgy of the hours; Church funerals; cult of saints, of sacred images, and of relics; vows and oaths. Sacred places and times: churches, oratories, private chapels, shrines, altars, cemeteries; feast days and days of penance.

**DCA5207 SPECIAL SECTORS OF LAW (6cr.)**
Elements of Roman Law, Civil Law and Common Law in reference to Canon Law. Introduction to the law of the Eastern Catholic Churches.

**DCA5208 THE FAITHFUL, THE MAGISTERIUM, THE CHURCH AND CIVIL SOCIETY (6cr.)**

**DCA5301 WORKSHOP ON CANONICAL DRAFTING**
Practical workshops on the drafting of legislative and administrative documents in the context of the administration of dioceses and of institutes of consecrated life; drafting of briefs by advocates, defenders of the bond, promoters of justice, and of judgments by ecclesiastical judges.

**DCA5302 CANON LAW AND THE ECCLESIOLOGY OF VATICAN II (3cr.)**
How is canon law related to the ecclesiology of Vatican II and how does it apply that ecclesiology? The hypothesis of "the two ecclesologies" of Vatican II in relation to canon law. Study of the Vatican II documents in relation to canon law. Ecumenism and canon law.

**DCA5303 THE PROCESS OF REVISION OF CANON LAW IN THE 20TH CENTURY (3cr.)**
The process of revision which gave rise to the 1917 and 1983 Codes of Canon Law and to the 1990 Code of Canons of the Eastern Churches.

**DCA5304 COMPARATIVE PARTICULAR LAW (3cr.)**
Comparative study of the development of particular canon law at the level of conferences of bishops.

**DCA5306 GENERAL NORMS II (3cr.)**
General decrees and instructions; singular administrative acts; statutes and ordinances; ecclesiastical offices; prescription; computation of time in canon law.

**DCA5396 DIRECTED STUDIES I (3cr.)**

**DCA5397 DIRECTED STUDIES II (3cr.)**

**DCA5398 DIRECTED STUDIES III (3cr.)**

**DCA5502 NORMES GÉNÉRALES I (3cr.)**
Concepts and terminologies of the right canonique; lois and coutumes; personnes physiques et juridiques; acts juridiques; pouvoir de gouvernance.

**DCA5503 STRUCTURES DE L'ÉGLISE UNIVERSELLE ET SUPRADIROCÉSAINÈ (3cr.)**

**DCA5512 FONDATIONS DU DROIT CANONIQUE (3cr.)**
Méthodologie canonique, philosophie du droit, théologie du droit canonique.

**DCA5521 HISTOIRE DU DROIT CANONIQUE (3cr.)**
Histoire des sources canoniqes : sources bibliques, conciles et synodes, canons patristiques, décrétales des papes; collections chronologiques et systématiques; le Décret de Gratien et les collections de Décétales; le Corpus juris canonici; codification du droit latin au XVe siècle; codification du droit oriental. Histoire des institutions canoniqes : analyse dichronique de quelques institutions de l'Église catholique et de son droit, par ex. : l’épiscopat, le ministère du pontifex romanum, le mariage, procédures judiciaires et administratives...
DCA5523 ORGANISATION INTERNE DES ÉGLISES PARTICULIÈRES I: QUESTIONS FONDAMENTALES (3cr.)

DCA5524 ORGANISATION INTERNE DES ÉGLISES PARTICULIÈRES II: QUESTIONS ADMINISTRATIVES (3cr.)
Synode diocésain; curie diocésaine : vicaires généraux et épiscopaux, chancelier, conseil pour affaires économiques, économie; conseil presbytéral; collège des consulteurs; chapitre des chanoines; conseil pastoral; paroisses, curés, vicaires paroissiaux; vicaires forains; recteurs d'églises, chapellains. Associations de fidèles (publiques, privées, de laïcs).

DCA5525 DROIT MATRIMONIAL I: CONSENTEMENT (3cr.)
Mariage : Introduction générale: le consentement matrimonial.

DCA5526 DROIT MATRIMONIAL II: QUESTIONS ET CAUSES SPÉCIALES (3cr.)
Mariage, séparation des époux, conciliation. Procédures spéciales : causes de séparation des époux, de dispense d'un mariage conclu et non consommé, de présomption de la mort d'un conjoint.

DCA5533 PROCÉDURES JUDICIAIRES (3cr.)
Les règlements en général: for compétent, divers degrés et genres de tribunaux, règles de pratique, parties dans la cause, actions et exceptions.

DCA5603 INSTITUTS DE VIE CONSCRÉE ET SOCIÉTÉS DE VIE APOSTOLIQUE (3cr.)

DCA5604 DROIT SACRAMENTEL ET LITURGIQUE (6cr.)
Sacraments: baptême; confirmation; Eucharistie; pénitence; onction des malades; ordre. Autres actes du culte divin: sacraments; liturgie des heures; funérailles ecclésiastiques; culte des saints, des saintes images et des reliques; v u et serment. Lieux et temps sacrés: églises, oratoires, chapelles privées, sanctuaires, autels, cimetières; jours de fête et de pénitence.

DCA5607 SECTEURS SPÉCIAUX DU DROIT (6cr.)

DCA5608 FIDÈLES, MAGISTÈRE, ÉGLISE ET SOCIÉTÉ CIVILE (6cr.)

DCA5701 ATELIER DE RÉDACTION CANONIQUE
Ateliers pratiques de rédaction de documents législatifs et administratifs dans le contexte des administrations des diocèses et des instituts de vie consacrée; rédaction de plaidoyers d'avocats, de remarques de défenseurs du lien et de promoteurs de la justice ainsi que de jugements de juges ecclésiastiques.

DCA5702 LE DROIT CANONIQUE ET L'ECCLÉSIOLOGIE DE VATICAN II (3cr.)

DCA5703 LE PROCESSUS DE RÉVISION DU DROIT CANONIQUE AU XXE SIÈCLE (3cr.)
Le processus de révision qui a donné naissance aux Codes de droit canonique de 1917 et de 1983 ainsi qu'au Code des canons des Églises orientales de 1990.

DCA5704 LE DROIT PARTICULIER COMPARÉ (3cr.)
Étude comparative de l'élaboration du droit canonique particulier au niveau des conférences des évêques.

DCA5706 NORMES GÉNÉRALES II (3cr.)
Décrets généraux et instructions; actes administratifs particuliers; statuts et règlements; offices ecclésiastiques; prescription; le calcul du temps en droit canonique.

DCA5796 ÉTUDES DIRIGÉES I (3cr.)
DCA5797 ÉTUDES DIRIGÉES II (3cr.)
DCA5798 ÉTUDES DIRIGÉES III (3cr.)
DCA6112 SELECTED ISSUES IN CHURCH ADMINISTRATION (3cr.)
Loss of clerical state, laicization; archives; civil court cases; statutes of diocesan bodies; merging and suppression of parishes; arbitration, mediation, settlement.
DCA6113 SELECTED ISSUES IN CHURCH ADMINISTRATION II (3cr.)
Acquisition of goods; their administration; contracts and in particular, alienation; pious dispositions and pious foundations. Temporal goods in religious institutes. Recourse against administrative decrees: norms and jurisprudence. The removal and transfer of parish priests.

DCA6114 TRIBUNAL PROCEDURES (3cr.)
Practical part: progress of the ordinary contentious trial and of the oral contentious process; cases concerning the declaration of nullity of marriage; processes for the declaration of nullity of ordination. Ways of avoiding trials. Jurisprudence in cases of declaration of nullity of marriage as well as of recourse against administrative decrees.

DCA6115 PENAL LAW (3cr.)
Offenses and punishments: penal law and penal precept; penalties and other punishments; application and cessation of penalties. Penalties for particular offences: offences against religion and the unity of the Church, against Church authorities and the freedom of the Church; usurpation of ecclesiastical offices and offences committed in their exercise; the false accusation; offences against special obligations, against human life and liberty. Penal processes. Recent laws and regulations of the Holy See in disciplinary and penal matters; special norms.

DCA6302 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA6315 LITURGICAL LAW OUTSIDE THE CODE (3cr.)
Selected Praenotanda of liturgical books and post-Code legislation on the Liturgy.

DCA6316 THE LAITY AND THE CHURCH'S OFFICE OF GOVERNANCE (3cr.)
Collaboration of the lay faithful in the exercise of the power of governance: law, theory, and practice.

DCA6321 SEMINAR ON TRIBUNAL PRACTICE (3cr.)
Preparation of advocate's and defender's observations; judicial decrees and sentences. Prerequisites: Courses on Marriage consent and judicial procedures, or equivalent knowledge and experience as determined by the Executive Committee of the Faculty.

DCA6322 SEMINAR ON CHANCERY PRACTICE (3cr.)
The format and drafting of singular and general decrees, precepts, and rescripts for routine and exceptional matters. Prerequisite: DCA 5306.

DCA6363 SPECIAL PROBLEMS IN CANON LAW III (1.5cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law. Each academic year the details of the course will be made available in advance to the students.

DCA6364 SPECIAL PROBLEMS IN CANON LAW IV (1.5cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law. Each academic year the details of the course will be made available in advance to the students.

DCA6395 MASTER'S SEMINAR (3cr.)
Study of a particular subject which is concluded by a presentation to the seminar group and director, followed by the submission of a text.

DCA6396 SELECTED TOPICS IN CANON LAW I (3cr.)

DCA6397 SELECTED TOPICS IN CANON LAW II (3cr.)

DCA6398 SELECTED TOPICS IN CANON LAW III (3cr.)

DCA6512 QUESTIONS D'ADMINISTRATION ECCLÉSIASTIQUE (3cr.)
Perte de l’état clérical, laïcisation; archives; procès dans les cours civiles; statuts des organismes diocésains; union et suppression des paroisses; transactions, compromis, arbitrage, médiation.

DCA6513 QUESTIONS D'ADMINISTRATION ECCLÉSIASTIQUE II (3cr.)
Acquisition et administration des biens temporels; contrats et aliénations; pieuses volontés et fondations pieuses. Biens temporels et leur administration dans les instituts religieux. Recours contre les décès administratifs : normes et jurisprudence. Révocation et transfert des curés.

DCA6514 PROCÉDURES DES TRIBUNAUX ECCLÉSIASTIQUES (3cr.)
Déroulement du procès contentieux ordinaire et du procès contentieux oral; causes en déclaration de nullité de mariage; causes en déclaration de nullité de l'ordination. Moyens d'éviter les procès. Jurisprudence dans les causes en déclaration de nullité de mariage ainsi que dans les recours administratifs.

DCA6515 DROIT PÉNAL (3cr.)
Les délits et les peines en général; loi pénale et précepte pénal; les peines et les autres punitions; l’application et la cessation des peines. Les peines pour des délits particuliers : délits contre la religion et l’unité de l’église, contre les autorités ecclésiastiques et la liberté de l’église; usurpation des charges ecclésiastiques et délits dans l’exercice de ces charges; le crime de faux; délits contre les obligations spéciales, contre la vie et la liberté humaines. Le procès pénal. Législation
et réglementation récentes du Saint-Sièg en matière disciplinaire et pénale; normes particulières.

**DCA6701 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE I** (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

**DCA6702 PROBLÈMES SPÉCIAUX DU DROIT CANONIQUE II** (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

**DCA6715 DROIT LITURGIQUE EN DEHORS DU CODE** (3cr.)
Règles préliminaires des livres liturgiques; autres textes législatifs et réglementaires sur la liturgie, postérieurs au code de droit canonique.

**DCA6716 LAÏC ET POUVOIR DE GOUVERNEMENT DANS L'ÉGLISE** (3cr.)
Participation des fidèles laïcs à l’exercice du pouvoir de gouvernement : droit, théorie et pratique.

**DCA6721 SÉMINAIRE DE PRATIQUE DES TRIBUNAUX** (3cr.)
Préparation des mémoires d'avocat, des observations du défenseur du lien etc., des décrets et sentences. Préalables : cours sur le consentement matrimonial et les procédures judiciaires, ou connaissances et expérience équivalentes par décision du Comité exécutif de la Faculté.

**DCA6722 SÉMINAIRE DE PRATIQUE DES CHANCELLERIES** (3cr.)

**DCA6763 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE III** (1.5cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique. Le programme précis sera communiqué à l’avance aux étudiants pour chaque année académique.

**DCA6764 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE IV** (1.5cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique. Le programme précis sera communiqué à l’avance aux étudiants pour chaque année académique.

**DCA6795 SÉMINAIRE DE MAÎTRISE** (3cr.)
Étude d'un sujet particulier qui s'achève par sa présentation devant les pairs et le directeur du séminaire, suivie de la remise d'un texte.

**DCA6796 THÈMES CHOISIS EN DROIT CANONIQUE I** (3cr.)
**DCA6797 THÈMES CHOISIS EN DROIT CANONIQUE II** (3cr.)
**DCA6798 THÈMES CHOISIS EN DROIT CANONIQUE III** (3cr.)

**DCA6921 LATIN CANONIQUE / CANONICAL LATIN** (3cr.)
Compréhension du Codex Juris Canonici, du Codex Canonum Ecclesiærum Orientalium et d'autres documents canoniques rédigés en latin. Préalables : DCA 3109 ou connaissances équivalentes déterminées par un examen. / Understanding the Codex Juris Canonici, the Codex Canonum Ecclesiærum Orientalium, and other canonical documents in Latin. Prerequisite: DCA 3109 or equivalent knowledge as determined by examination.

**DCA6922 STAGE EN MILIEU DE TRAVAIL / FIELD PRACTICUM** (3cr.)
Stage supervisé de pratique canonique : six semaines (minimum 18 h/semaine) dans un milieu de travail approuvé. Noté selon les résultats du rapport écrit et l'évaluation du superviseur de stage. / A six-week (minimum 18 hours per week) of supervised internship in canonical practice at an approved site. Assessment based on a written report as well as the evaluation of the internship supervisor.

**DCA6961 VOYAGE DE FORMATION À LA CURIE ROMAINE / STUDY VISIT TO THE ROMAN CURIA** (1.5cr.)
Séminaire sur la Curie romaine comprenant des échanges sur les lieux avec le personnel de plusieurs organismes : congrégations, tribunaux, conseils pontificaux. Préalables : DCA 5502 ou DCA 5503 ou connaissances équivalentes au jugement du doyen. / Seminar on the Roman Curia involving on-site interchange with personnel from a variety of Roman congregations, tribunals, and pontifical councils. Prerequisite: DCA 5502 or DCA 5503 or equivalent knowledge as determined by the Dean.

**DCA6962 QUESTIONS SPÉCIALES RELATIVES À LA VIE CONSACRÉE / SPECIAL ISSUES IN CONSECRATED LIFE** (1.5cr.)
Séminaire sur des questions légales et canoniques concernant la vie consacrée, surtout dans le contexte du Canada. Préalables : DCA 5603, ou connaissances équivalentes au jugement du doyen. / Seminar on legal and canonical issues concerning consecrated life, especially in the context of Canada. Prerequisite: DCA 5603 or equivalent knowledge as determined by the Dean.

**DCA6999 THÈSE DE M.A. / MA THESIS**
DCA7998 EXAMEN DE SYNTHÈSE DE MAÎTRISE / MASTER'S COMPREHENSIVE EXAMINATION

DCA8101 SPECIAL PROBLEMS IN CANON LAW I (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA8102 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA8175 POWER OF GOVERNANCE (3cr.)
Certain particular or specialized questions related to the concept or to the exercise of power of governance in the Church.

DCA8176 JURISPRUDENCE (3cr.)
Matrimonial or administrative jurisprudence in specialized areas of interest.

DCA8501 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE I (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA8502 PROBLÈMES SPÉCIAUX DE DROIT CANONIQUE II (3cr.)
Étude de problèmes interdisciplinaires avec une forte composante canonique ou de questions spécialisées qui ne sont pas couvertes par le Code de droit canonique.

DCA8575 LE POUVOIR DE GOUVERNEMENT (3cr.)
Certaines questions particulières ou spécialisées reliées au concept ou à l'exercice du pouvoir de gouvernement dans l'Église.

DCA8576 JURISPRUDENCE (3cr.)
Jurisprudence matrimoniale ou administrative dans des domaines d'intérêt spécialisés.

DCA8981 LECTURE OF SOURCES CANONIQUES (LATINITAS CANONICAL) / READINGS IN CANONICAL SOURCES (LATINITAS CANONICAL) (3cr.)
Interprétation de sources canoniques dans leur texte original latin. Préalables : DCA 6921 ou connaissances équivalentes déterminées au moyen d'un examen / Interpreting canonical sources in the original Latin. Prerequisite: DCA 6921 or equivalent knowledge as determined by examination

DCA9997 PROJET DE THÈSE DE DOCTORAT / PhD THESIS PROPOSAL

DCA9998 EXAMEN DE SYNTHÈSE DE DOCTORAT / PhD COMPREHENSIVE EXAMINATION

DCA9999 THÈSE DE DOCTORAT / PhD THESIS

DCA5302 CANON LAW AND THE ECCLESIOLOGY OF VATICAN II (3cr.)
How is canon law related to the ecclesiology of Vatican II and how does it apply that ecclesiology? The hypothesis of "the two ecclesiologies" of Vatican II in relation to canon law. Study of the Vatican II documents in relation to canon law. Ecumenism and canon law.

DCA5502 NORMES GÉNÉRALES I (3cr.)
Concepts et terminologie du droit canonique; lois et coutumes; personnes physiques et juridiques; actes juridiques; pouvoir de gouvernance.

HAH6212 HEALTH CARE ETHICS (1.5cr.)
Definition, resolution and handling of ethical problems of administrators, physicians and other health care professionals. Codes of ethics. Principles of biomedical ethics. Relationships among biomedical ethics, law, health policy and resource allocation. Ethical analytical techniques. Prerequisite: HAH 6260.

HAH6260 HEALTH CARE SYSTEM ORGANIZATION AND POLICY (1.5cr.)

IPA5149 PROFESSIONAL ISSUES AND ETHICS IN SPIRITUAL CARE (3cr.)

IPA5549 QUESTIONS PROFESSIONNELLES ET QUESTIONS D'ÉTHIQUE EN SOINS SPIRITUELS (3cr.)

IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)

IPA6552 THÉOLOGIE ET SOINS SPIRITUELS (3cr.)

THO6345 ETHICS AND SPIRITUALITY (3cr.)
Examination of a problem in bioethics (e.g., human experimentation, medical genetics, allocation of limited resources). The study of a question in clinical ethics.
(e.g., informed consent, cessation of treatment, professional responsibility). Methodological and theological problems posed by this kind of applied ethics.

**THO6742 ÉTHIQUE ET SCIENCES DE LA SANTÉ (3cr.)**
Examen d'un problème de bioéthique (e.g., expérimentation humaine, génétique médicale, allocation des ressources). Étude d'une question d'éthique clinique (e.g. consentement éclairé, arrêt de traitement, responsabilité professionnelle). Problèmes théologiques et méthodologiques que pose ce type d'éthique sectorielle.

**Canonical Practice (GCCP)**

The Graduate Certificate in Canonical Practice (GCCP) is a graduate program in canonical practice. The GCCP aims to provide students with the skills and information needed for various canonical professions.

1. The GCCP is open to students who have a degree in canon law or have already completed significant training in canon law and need a specialization to obtain employment in careers involving the practice of canon law. It allows them to acquire or deepen the knowledge and skills required for occupations and professions such as: judge, defender of the bond, promoter of justice, chancery personnel, lawyer, canonical consultant for various religious bodies, etc.

2. The GCCP is also available as a refresher program for canon lawyers and others who are already employed in the above mentioned positions, and who need updated or additional knowledge and specialized skills in particular areas of canonical practice.

The GCCP is granted jointly by Saint Paul University and the University of Ottawa under the terms of the federation agreement between them. The GCCP is offered in both French and English. All required courses are available in each language. Some elective courses may be offered in one language only.

On completion of the certificate, qualified students meeting admission requirements may apply for admission to the master’s in Canon Law program and, on admission, complete the requirements of this program with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually.

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: [www.etudesup.uottawa.ca/generalregulations](http://www.etudesup.uottawa.ca/generalregulations)

**Admission**

1. Prospective students must hold an honours baccalaureate, or provide evidence of an equivalent four-year program, with an average grade of at least "B".

2. The baccalaureate or equivalent program must include, or be supplemented by, at least 18 credits in the theological disciplines, or equivalent studies and pastoral or professional experience as determined by the Executive Committee of the Faculty of Canon Law.

3. The candidate’s previous studies must either include, or be supplemented by, a degree in canon law, or at least 15 credits of course work and seminars in canon law, including a course on the general norms of canon law.

4. Courses that are part of parent programs other than canon law may have other prerequisites.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master’s**

Students registered in the graduate certificate program can request to transfer to the master in canon law (MCL) or to the master of arts in canon law (MA (CL)) in accordance with section A.7.1 of the "General regulations" of the FGPS.

**Program Requirements**

**Certificate Requirements**

The certificate program consists of 15 credits of course or seminar work. Nine credits are required core courses. The remaining are drawn from elective courses chosen, in consultation with the Dean, according to each student’s educational needs and career plans.
Students may complete the certificate requirements full-time in one session or part-time over the course of one, two, or at most three years.

The passing grade in all courses is C+. Students who fail six credits or the same course twice, must withdraw from the program.

Required Core Courses: 9 credits

DCA5133 PROCEDURES I (3cr.)
DCA6114 PROCEDURES II (3cr.)

and one of the following two seminars:

DCA6321 SEMINAR ON TRIBUNAL PRACTICE (3cr.)
DCA6322 SEMINAR ON CHANCERY PRACTICE (3cr.)

Recommended courses: 6 credits are to be chosen from among the following:

DCA5125 MATRIMONIAL LAW I: MATRIMONIAL CONSENT (3cr.)
DCA5126 MATRIMONIAL LAW II: SPECIAL ISSUES AND CASES (3cr.)
DCA5204 SACRAMENTAL AND LITURGICAL LAW (6cr.)
DCA5306 GENERAL NORMS II (3cr.)
DCA6302 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
DCA6315 LITURGICAL LAW OUTSIDE THE CODE (3cr.)

and the seminar not taken as required course:

DCA6321 SEMINAR ON TRIBUNAL PRACTICE (3cr.)
DCA6322 SEMINAR ON CHANCERY PRACTICE (3cr.)

The Dean may permit a student to choose elective courses from among other graduate courses. Except for a justifiable reason, the choice is limited to courses offered at the Faculty of Canon Law, the Faculty of Theology of Saint Paul University (sacramental theology), and the Faculty of Law of the University of Ottawa (family law).

Course credits obtained for another degree or certificate cannot be applied to the GCPP.

Courses

DCA5125 MATRIMONIAL LAW I: MATRIMONIAL CONSENT (3cr.)
Marriage: General Introduction; Matrimonial Consent.

DCA5126 MATRIMONIAL LAW II: SPECIAL ISSUES AND CASES (3cr.)
Preparation for marriage; matrimonial impediments; separations of spouses; validation special procedures: cases of separation of spouses, of dispensation from a ratified and non-consummated marriage, of presumed death of a spouse.

DCA5133 JUDICIAL PROCEDURES (3cr.)
Theoretical part: competent forum, different grades and kinds of tribunals, rules of practice, parties in the case, actions and exceptions.

DCA5204 SACRAMENTAL AND LITURGICAL LAW (6cr.)
Sacraments: baptism; confirmation; Eucharist; penance; anointing of the sick; order. Other acts of divine worship: sacramentals; liturgy of the hours; Church funerals; cult of saints, of sacred images, and of relics; vows and oaths. Sacred places and times: churches, oratories, private chapels, shrines, altars, cemeteries; feast days and days of penance.

DCA5301 WORKSHOP ON CANONICAL DRAFTING
Practical workshops on the drafting of legislative and administrative documents in the context of the administration of dioceses and of institutes of consecrated life; drafting of briefs by advocates, defenders of the bond, promoters of justice, and of judgments by ecclesiastical judges.

DCA5306 GENERAL NORMS II (3cr.)
General decrees and instructions; singular administrative acts; statutes and ordinances; ecclesiastical offices; prescription; computation of time in canon law.

DCA5525 DROIT MATRIMONIAL I: CONSENTEMENT (3cr.)
Mariage : Introduction générale: le consentement matrimonial.

DCA5526 DROIT MATRIMONIAL II: QUESTIONS ET CAUSES SPÉCIALES (3cr.)
Couple Counselling and Spirituality (Graduate Certificate)

The Faculty of Human Sciences at Saint Paul University offers a graduate program leading to a Graduate Certificate in Couple Counselling and Spirituality. This certificate is conferred jointly by the Senates of Saint Paul University and the University of Ottawa under the terms of the federation agreement between them.

Program Description

Professionals who seek to update their credentials and skills in the area of couple therapy, by completing the Certificate, will have met the requirements, in the area of theory and therapy, of the six marriage and family courses required towards certification by the American
Association of Marriage and Family Therapists (AAMFT). AAMFT Clinical Membership pre-requisites include three master's courses in MFT theory and three courses in MFT training.

**Objectives of the program**

This program is intended for professionals who are already experienced counselors and who would like to specialize in couple counselling.

**Admission**

Admission to the graduate program in counselling and spirituality is governed by the “General Regulations” of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Applications are evaluated based on the following criteria:

1. Hold a bachelor’s degree with honours or with a major in a related discipline such as counselling, spirituality, practical theology, health care, psychology, social work, pastoral studies or a discipline judged equivalent to these;
2. Completion of 24 credits in total in psychology and sociology;
3. Completion of a counselling training with clinical experience (a minimum of 120 face-to-face hours with clients);
4. An average of at least 70% (B) calculated in accordance with FGPS guidelines.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Certificate to MA Degree Program**

Students registered in the graduate certificate program can request to transfer to the MA in Counselling and Spirituality in accordance with regulation A. 7.1 of the "General regulations" of the FGPS.

**Program Requirements**

**Program Requirements**

**Core Courses (12 cr.)**
- IPA5138 THEORIES OF FAMILY SYSTEMS AND INTERVENTION (3cr.)
- IPA5144 SPIRITUALITY AND COUNSELLING (3cr.)
- IPA7104 THEORIES OF COUPLE COUNSELLING (3cr.)
- IPA7107 COUPLE DYSFUNCTION AND ASSESSMENT IN COUPLE COUNSELLING (3cr.)

**Optional Courses (6 cr.)**
Two courses from the following:
- IPA5134 PRACTICAL THEOLOGY (3cr.)
- IPA5142 WORKING WITH TRAUMA AND VIOLENCE IN COUPLES AND FAMILIES (3cr.)
- IPA5161 UNDERSTANDING THE TRAUMA OF SEXUAL ABUSE (3cr.)
- IPA7109 SURVEY OF SEXUAL DYSFUNCTION AND TREATMENT (3cr.)
- ECS5112 TRAUMA, HEALING AND RECONCILIATION (3cr.)

**Course Sequence**

The compulsory courses will be offered every year. The optional courses IPA 5134 Practical Theology, and IPA 5142 Working with Trauma and Violence in Families will be offered every year. IPA 5161 Understanding the Trauma of Sexual Abuse, IPA 7109 Survey of Sexual Dysfunction and Treatment and ECS 5112 Trauma, Healing and Reconciliation will be offered on a two-year cycle.

**Minimum Standards**

The passing grade in all courses is C+. Students who fail two courses (equivalent to 6 credits) or the same course twice must withdraw from the program.

**Duration of the program**

The requirements of the certificate must be fulfilled within three years of initial registration in the program.
### Courses

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<td>IPA5122</td>
<td>BASIC CONCEPTS IN COUNSELLING</td>
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<tr>
<td>IPA5123</td>
<td>PSYCHOLOGY OF LEARNING</td>
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<td>IPA5124</td>
<td>SOCIAL PSYCHOLOGY</td>
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<td>IPA5127</td>
<td>ABNORMAL BEHAVIOUR</td>
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<td>IPA5128</td>
<td>HUMAN SEXUALITY</td>
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<td>IPA5131</td>
<td>METHODOLOGY OF EMPIRICAL RESEARCH</td>
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<tr>
<td>IPA5134</td>
<td>PRACTICAL THEOLOGY</td>
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<td>IPA5142</td>
<td>WORKING WITH TRAUMA AND VIOLENCE IN FAMILIES</td>
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<tr>
<td>IPA5144</td>
<td>THEOLOGY AND COUNSELLING</td>
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<tr>
<td>IPA5146</td>
<td>PROFESSIONAL ISSUES AND ETHICS IN PASTORAL COUNSELLING</td>
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<td>STUDIES IN PRACTICAL THEOLOGY I</td>
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<td>IPA5160</td>
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<td>IPA5161</td>
<td>UNDERSTANDING THE TRAUMA OF SEXUAL ABUSE</td>
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<td>IPA5162</td>
<td>COUNSELLING AND SPIRITUALITY: SELECTED TOPICS II</td>
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<td>IPA5163</td>
<td>COUNSELLING AND SPIRITUALITY: SELECTED TOPICS III</td>
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<tr>
<td>IPA5164</td>
<td>COUNSELLING AND SPIRITUALITY: SELECTED TOPICS IV</td>
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<tr>
<td>IPA5517</td>
<td>DYNAMIQUE DE LA MALADIE ET DE SES EFFETS</td>
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<tr>
<td>IPA5522</td>
<td>CONCEPTS DE BASE EN COUNSELLING</td>
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IPA5523 PSYCHOLOGIE DE L'APPRENTISSAGE (3cr.)
IPA5524 PSYCHOLOGIE SOCIALE (3cr.)
IPA5527 COMPORTEMENT ANORMAL (3cr.)
IPA5528 SEXUALITÉ HUMAINE (3cr.)
IPA5531 MÉTHODOLOGIE DE LA RECHERCHE EMPIRIQUE (3cr.)
IPA5534 THÉOLOGIE PRATIQUE (3cr.)
Ce cours présente la théologie pratique comme un lieu privilégié où s’articulent la foi et la pratique. Après avoir exposé la genèse et le développement des théologies pratiques en vue de dégager les aspects majeurs de sa méthode et de son contenu, on situa, de façon particulière, le discours pastoral à l’intérieur de ce champ théologique. Il y aura donc une initiation aux grandes coordonnées de l’action pastorale en vue de permettre à chacun de mieux préciser son propre projet pastoral.
IPA5538 THÉORIES DU SYSTÈME FAMILIAL ET DE SES MODES D’INTERVENTION (3cr.)
Le cours trace une brève histoire des professions d’aide dans leur intervention auprès des familles. On présente les théories des systèmes familiaux et on étudie les systèmes fonctionnels et dysfonctionnels des familles, ainsi que les différents modèles de familles. On apprend les techniques d’entrevues, d’évaluation et d’intervention auprès des familles, en particulier les habiletés de communication et de structuration.
IPA5542 LES TRAUMATISMES ET LA VIOLENCE DANS LES FAMILLES (3cr.)
Ce cours se penche sur la théorie, la recherche et les pratiques d’interventions portant sur la violence et l’abus qui surviennent dans le contexte des relations maritales et familiales. Ce cours s’adresse aux conseillers maritais et familiaux et à tout professionnel désireux d’accroître ses connaissances sur la violence et l’abus ainsi que sa sensibilité aux situations potentiellement abusives, et de parfaire ses habiletés d’intervention.
IPA5544 THÉOLOGIE ET COUNSELLING (3cr.)
Ce cours présente le counselling et la spiritualité dans le contexte élargi de l’existence humaine et des relations interpersonnelles à la lumière des grands courants spirituels et religieux. Il fait appel à la théologie pratique, aux courants spirituels/religieux, et aux sciences sociales, plus précisément à la psychologie, pour montrer comment le counselling et la spiritualité répondent aux besoins de la société. Il souligne comment les développements dans le champ du counselling et de la spiritualité contribuent à l’acquisition de connaissances nouvelles en ce qui concerne la croissance sociale et spirituelle/religieuse. De nouveaux modèles pour une pratique efficace sont proposés. Les étudiants apprennent à évaluer les besoins spirituels/religieux, à établir des buts spirituels/religieux en vue de la croissance, et à acquérir des stratégies en vue de leur implantation.
IPA5546 ÉTHIQUE PROFESSIONNELLE (3cr.)
IPA5549 QUESTIONS PROFESSIONNELLES ET QUESTIONS D’ÉTHIQUE EN SOINS SPIRITUELS (3cr.)
IPA5552 ÉTUDES DE THÉOLOGIE PRATIQUE I (3cr.)
IPA5553 ÉTUDES DE THÉOLOGIE PRATIQUE II (3cr.)
IPA5560 ÉTUDES EN COUNSELLING ET SPIRITUALITÉ (3cr.)
IPA5561 L’ABUS SEXUEL ET SES TRAUMATISMES (3cr.)
L’abus sexuel fait l’objet d’un examen en profondeur : la théorie, la recherche ainsi que les approches thérapeutiques sont mises à la partie. Ce cours s’adresse aux conseillers appelés à travailler avec des individus, des couples et des familles qui ont fait l’objet d’abus dans leur vie. Il leur permettra de comprendre la dynamique de l’abus sexuel selon différents cadres théoriques, de favoriser la réflexion sur les valeurs et l’éthique et de concevoir des plans et des stratégies de traitement.
IPA5562 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI II (3cr.)
IPA5563 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI III (3cr.)
IPA5564 COUNSELLING ET SPIRITUALITÉ : THÈME CHOISI IV (3cr.)
IPA6103 SPIRITUALITY AND HUMAN DEVELOPMENT (3cr.)
IPA6108 PSYCHOPATHOLOGY AND TREATMENT (3cr.)
IPA6114 NORMAL PERSONALITY (3cr.)
IPA6115 PERSONAL DEVELOPMENT SEMINAR
IPA6120 THEORIES OF INDIVIDUAL COUNSELLING (3cr.)
IPA6121 THEORIES OF PERSONALITY (3cr.)
IPA6151 SPIRITUALITY AND ADAPTATION TO ILLNESS (3cr.)
IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)
IPA6156 RESEARCH SEMINAR (3cr.)
IPA6157 SUPERVISION (3cr.)
IPA6160 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM I (4cr.)
IPA6161 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM II (4cr.)
IPA6181 CLINICAL PASTORAL EDUCATION (CPE) EXTENDED PRACTICUM I (4cr.)
IPA6182 CLINICAL PASTORAL ECUATION (CPE) EXTENDED PRACTICUM II (4cr.)
IPA6183 CLINICAL PASTORAL EDUCATION (CPE) EXTENDED PRACTICUM III (4cr.)
IPA6184 CLINICAL PASTORAL EDUCATION (CPE) EXTENDED PRACTICUM IV (3cr.)
IPA6221 PRACTICUM IN INDIVIDUAL COUNSELLING I (6cr.)
IPA6257 MA THESIS (12cr.)
IPA6260 CLINICAL PASTORAL EDUCATION (CPE) SUMMER PRACTICUM (6cr.)
IPA6301 THEOLOGICAL QUESTIONS IN FAMILY LIFE (3cr.)
IPA6310 LAW AND THE FAMILY (1cr.)
IPA6312 FAMILY DEVELOPMENT AND GROWTH (3cr.)
IPA6508 PSYCHOPATHOLOGIE ET TRAITEMENT (3cr.)
IPA6514 PERSONNALITÉ NORMALE (3cr.)
IPA6515 SÉMINAIRE DE DÉVELOPPEMENT PERSONNEL
IPA6520 THÉORIES DU COUNSELLING INDIVIDUEL (3cr.)
IPA6521 THÉORIES DE LA PERSONNALITÉ (3cr.)
IPA6551 SPIRITUALITÉ ET ADAPTATION À LA MALADIE (3cr.)
IPA6552 THÉLOGIE ET SOINS SPIRITUELS (3cr.)
IPA6556 SÉMINAIRE DE RECHERCHE (3cr.)
IPA6557 SUPERVISION (3cr.)
IPA6560 PRACTICUM I EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6561 PRACTICUM II EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6581 PRACTICUM I ÉTALÉ EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6582 PRACTICUM II ÉTALÉ EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6583 PRACTICUM III ÉTALÉ EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA6584 PRACTICUM IV ÉTALÉ EN ÉDUCATION PASTORALE CLINIQUE (3cr.)

IPA6621 PRACTICUM DU COUNSELING INDIVIDUEL I (6cr.)

IPA6657 SÉMINAIRE DE RECHERCHE (12cr.)

IPA6660 PRACTICUM ESTIVAL EN ÉDUCATION PASTORALE CLINIQUE (6cr.)

IPA6701 QUESTIONS THÉOLOGIQUES RELATIVES À LA FAMILLE (3cr.)

IPA6703 SPIRITUALITÉ ET DÉVELOPPEMENT HUMAIN (3cr.)

IPA6710 LE DROIT CONCERNANT LA FAMILLE (3cr.)

IPA6712 DÉVELOPPEMENT ET CROISSANCE FAMILIALE (3cr.)

IPA7102 PHENOMENOLOGY OF HUMAN RELATIONSHIPS IN LOVE AND MARRIAGE (3cr.)

IPA7103 THEOLOGICAL QUESTIONS IN MARITAL COUNSELLING (3cr.)

IPA7104 THEORIES OF COUPLE COUNSELLING (3cr.)

History and nature of marital/couple therapy; theoretical developments. Elements common to all theories of marital/couple therapy and their difference from theories in individual therapy. An overview of major clinical theories of marital couple and family therapy.

IPA7105 ASSESSMENT PROCEDURES IN PASTORAL COUNSELLING (3cr.)

IPA7108 INTEGRATIVE SEMINAR

IPA7109 SURVEY OF SEXUAL DYSFUNCTION AND TREATMENT (3cr.)

The purpose of this course is to present the dysfunctions of human sexuality and to survey various treatments. Male and female dysfunctions; the biological and psychological determinants; sexual dysfunction and marital interaction. Modes of sexual therapy; when and where to refer clients. The moral and ethical considerations.

IPA7162 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM III (4cr.)

IPA7163 CLINICAL PASTORAL EDUCATION (CPE) PRACTICUM IV (3cr.)

IPA7205 PRACTICUM IN COUPLE COUNSELLING (6cr.)

IPA7221 PRACTICUM IN INDIVIDUAL COUNSELLING III (6cr.)

IPA7502 PHÉNOMÉNOLOGIE DES RELATIONS HUMAINES DANS L’AMOUR ET DANS LE MARIAGE

IPA7503 QUESTIONS THÉOLOGIQUES ET VIE DE COUPLE

IPA7505 PROCÉDURES D’ÉVALUATION EN COUNSELLING ET SPIRITUALITÉ (3cr.)

IPA7507 DIAGNOSTIC ET INTERACTIONS DYSFONCTIONNELLES DANS LE COUPLE (3cr.)


IPA7508 SÉMINAIRE D’INTÉGRATION

IPA7509 DYSFONCTIONNEMENT SEXUEL : ÉTUDE ET TRAITEMENT (3cr.)

Ce cours offre aux étudiants une connaissance du dysfonctionnement de la sexualité humaine et des divers traitements en usage chez les sexologues et les psychologues. Les dysfonctions chez les hommes et chez les femmes; les facteurs biologiques et psychologiques; la dysfonction sexuelle et l’interaction de couple. Quand et où référer un client. Considérations éthiques et morales.

IPA7562 PRACTICUM III EN ÉDUCATION PASTORALE CLINIQUE (4cr.)
IPA7563 PRACTICUM IV EN ÉDUCATION PASTORALE CLINIQUE (3cr.)

IPA7605 PRACTICUM DU COUNSELING DE COUPLE (6cr.)

IPA7621 PRACTICUM DU COUNSELING INDIVIDUEL III (6cr.)

IPA8101 SPIRITUALITY AND COUNSELLING (3cr.)
Study of qualitative and hermeneutical methods as these are used in the social sciences and in theological study of spirituality. Comparative study of one or more Christian spiritual traditions and one or more spiritual traditions within other religions and secular culture to increase understanding and practice of spirituality. The course is designed to highlight the role of spirituality in the emotional well-being and adjustment of individuals. This course will treat the question of personal and spiritual growth. The importance of spiritual practices and the overall relationship of spirituality to the counselling process will also be considered.

IPA8102 COUNSELLING IN MULTI-FaITH AND CROSS-CULTURAL SETTINGS (3cr.)
This course examines counselling in a culturally pluralistic spiritual and religious context. It examines the possibility of mutuality and dialogue using a comparative religions approach from social science and theological perspectives. The theory and practice proposed focuses on the differing spiritual and secular humanist journeys of the counsellor and the client, and the possibility of meeting in difference. Topics covered include: the impact of enculturation, intercultural identity, inter-religious dialogue, intercultural competence on both parties; the ways in which intercultural competence and intercultural growth contribute to spiritual growth. The course enables counsellors and their clients to assess the extent to which spiritual values, beliefs and practices are an asset or a liability for clients in reaching their counselling goals.

IPA8103 ISSUES IN SPECIAL POPULATIONS (3cr.)
This course treats issues related to the needs and social status of certain special populations. Accumulated data on group characteristics and challenges facing some special populations, such as those who are aged or those who are homeless, are critically reviewed. Membership in some social groups may involve loss of social privileges, as well as diminished access to mental and health care resources. Students explore issues related to the unique spiritual and mental health needs of these groups, their social circumstances, and the implications for service provision. Growing problems concerning assessment, intervention, and the increased barriers to services are examined from the point of view of community approaches to research and intervention. The role of counsellors working with persons with unique needs, individually or at the community level, will be addressed.

IPA8104 EXISTENTIAL ISSUES IN COUNSELLING (3cr.)
This course explores meaning-of-life issues often presented by clients in a variety of contexts, including, but not limited to, the quest for increased well-being, existential crises, life transitions, loss and death, end-of-life, and trauma. Qualitative methods of data collection and analysis are critically reviewed to gain insight into the meaning participants give to their lived experience, the meaning they place on events, processes, perceptions and into the ways in which they connect these meanings to the social world around them. A variety of religious, spiritual and secular humanist sources of and responses to existential issues are treated.

IPA8105 RESEARCH METHODS AND DESIGN PROBLEMS IN COUNSELLING AND SPIRITUALITY (3cr.)
The focus of this course is the critical analysis and discussion of the challenges that counsellors face in choosing and applying qualitative and quantitative methods to spirituality. In-depth study of design pitfalls that arise from the complexity and unpredictability of working with human subjects given the multi-cultural complexity of pluralistic societies. Potential topics include sampling issues, measurement issues, and special analytic techniques.

IPA8106 DOCTORAL SEMINAR (3cr.)
The doctoral seminar helps prepare students for their doctoral thesis. Students will develop their thesis proposals and present drafts in oral and written format for critique. Guest lecturers will select readings and lead seminars related to relevant research topics such as proposal writing, conceptual frameworks, ethics, methods and procedures, and statistical analysis.

IPA8201 INTERNAL CLINICAL PRACTICUM
The internal clinical practicum takes place in the Saint Paul University Counselling Centre. The goal of the practicum is to put into practice the theoretical knowledge of counselling and spirituality. Supervisors will specify the goals, objectives and syllabus of practicum. They will use observation, debriefing, peer review, written and oral feedback, and direct intervention and observation, to instruct and evaluate students. Minimum number of hours: 250. Graded S/NS.

IPA8202 EXTERNAL CLINICAL PRACTICUM
Clinical practice in an external location that must be approved by the program director. Graded S/NS. Students complete a minimum of 1500 hours of supervised training, internal and external practicum combined.

IPA8501 SPIRITUALITÉ ET COUNSELLING (3cr.)
Analyse des méthodes qualitatives et herméneutiques utilisées en sciences sociales et dans l’étude théologique de la spiritualità. Étude comparée d’une ou de plusieurs traditions spirituelles au sein des religions chrétiennes et autres confessions religieuses ainsi que de la culture laïque, afin d’accroître la compréhension et la pratique de la spiritualité. Le cours est conçu de façon à mettre en lumière le rôle de la spiritualité dans le bien-être de l’individu sur le plan affectif. Ce cours traitera de la question de la croissance personnelle et spirituelle. On y abordera également l’importance des pratiques spirituelles et le lien entre spiritualité et processus de counselling dans son ensemble.

IPA8502 LE COUNSELLING DANS UN CONTEXTE MULTICULTUREL ET INTERCONFESSIONNEL (3cr.)
Ce cours aborde la pratique du counselling dans un contexte multicultural et interconfessionnel. Il étudie la possibilité de la réciprocity et du dialogue utilisant une approche comparée des religions à partir des perspectives des sciences sociales et de la théologie. La théorie et la pratique proposées mettent l’accent sur la différence entre le cheminement du conseiller et celui du client dans les contextes spirituels et humanistes laïques, et sur la possibilité de rencontres dans la
E-Business (Graduate Certificate)

Electronic business focuses on organizational transformations based on information technologies. Web-based electronic commerce is having a major impact on the activities of business organizations. A number of different forms of integration among or inside organizations have become feasible, for example: B2B (business-to-business), B2C (business-to-consumer), B2E (business-to-employee), in the areas of customer relationship management, supply chain management, aggregation of information assets, and other areas. Organizations that undertake e-commerce often make radical changes in their business models, and offer new products and services in ways that were not envisaged or possible previously. These new practices are referred to as "electronic business". Therefore, the concept of e-business, as described above, differs from the concept of e-commerce, which targets the technological context of online transactions.
There is an acute, global shortage of skilled personnel trained to develop electronic business solutions in a principled, systematic way. Developers and educators agree that expertise in electronic business must combine advanced knowledge of electronic commerce, business administration, information technology, and law. The University of Ottawa is particularly strong at the graduate level in all of these areas. The graduate certificate in electronic business, is based primarily on the expertise and resources within the graduate programs in business administration, computer science and law. The certificate is multidisciplinary and modular: it consists of common core courses, as well as optional courses.

On completion of the certificate, qualified students meeting admission requirements may apply to one of our existing master’s programs, in particular the MBA and, on admission, complete the requirements for those programs with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually with relation to the student’s chosen master’s program.

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link:
www.etudesup.uottawa.ca/generalregulations

Admission

Admission is competitive. The minimum requirement is a bachelor's degree with honours in business administration or computer science, or an equivalent degree in electrical engineering or business information, with a minimum average of 75 per cent (B+). The admissions committee may admit candidates who do not meet the above requirement but who meet the minimum requirements of the Faculty of Graduate and Postdoctoral Studies and have demonstrated knowledge of these subjects through relevant training and/or experience. Candidates for whom a list of additional qualifying courses is required may be considered in exceptional cases. In the latter situation, candidates must obtain a minimum grade of B+ in all their qualifying courses.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master’s

Students registered in the graduate certificate program can request to transfer to the Master in Electronic Business Technologies (MEBT) in accordance with section A.7,1 of the “General regulations” of the FGPS.

Language Requirements

Some of the requirements of the Program must be fulfilled in English. A very good knowledge of the English language is therefore required. Students whose first language is neither English nor French are required to take the TOEFL examination or an equivalent (as determined by the Faculty of Graduate and Postdoctoral Studies) as a condition of admission. The minimum required score on the TOEFL examination is 237 points (computer version) or 580 points (pencil and paper version).

Program Requirements

Certificate Requirements

The certificate requirements consist of 12 credits of core courses and six credits of electives. The passing grade in all courses is B. A student who fails 4.5 credits or more of the same course twice must withdraw from the program.

A. Core Courses (12 credits)

ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)
ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)
DCL.7301 REGULATION OF INTERNET COMMERCE (3cr.)
EBC6210 ELECTRONIC COMMERCE ARCHITECTURE (1.5cr.)
EBC6220 DATA MINING FOR BUSINESS APPLICATIONS (1.5cr.)
EBC6230 ELECTRONIC SUPPLY CHAIN TECHNOLOGIES AND APPLICATIONS (1.5cr.)
EBC6240 MOBILE COMMERCE (1.5cr.)

B. Optional Courses (6 credits to be chosen from the following)

ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)
ADM6279 SOCIO-TECHNICAL CHANGE (1.5cr.)
ADM6420 ELECTRONIC MARKETING (1.5cr.)
DCL.7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
DCL.7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
EBC6130 WEB SERVICES (1.5cr.)
EBC6170 INTERNET SECURITY (1.5cr.)
EBC6180 ELECTRONIC HUMAN RESOURCES MANAGEMENT (1.5cr.)
Courses

ADM6260 PROJECT MANAGEMENT I (1.5cr.)

ADM6261 PROJECT MANAGEMENT II (1.5cr.)

ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)

ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)

ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)

ADM6279 SOCIO-TECHNICAL CHANGE (1.5cr.)
This course explores the structural, cultural and process based organizational change management challenges facing business strategists during new technology implementation initiatives. Toward this, the course draws upon management frameworks, support tools and best practices for the joint optimization of technology and social subsystems within organizations. Adopting a complex adaptive system viewpoint of the organization, the course will highlight issues of technological and social embeddedness, and illustrate the use of configuration modeling and analysis tools for enterprise engineering and strategy models to facilitate change sustainability and continuity.

ADM6420 ELECTRONIC MARKETING (1.5cr.)

CSIS105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4185 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

CSIS115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decompostition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.
CSI5175 MOBILE COMMERCE TECHNOLOGIES (3cr.)

CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S) (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)

CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5780 (COMP 5405) SYSTÈMES ET ARCHITECTURES DES LOGICIELS POUR LE COMMERCE ÉLECTRONIQUE (3cr.)

CSI5787 (COMP 5706) FOUILLE DES DONNÉES ET APPRENTISSAGE DES CONCEPTS (3cr.)

CSI5789 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE (3cr.)

CSI5903 STAGE EN COMMERCE ÉLECTRONIQUE/ ELECTRONIC COMMERCE WORK TERM (3cr.)
Expérience en milieu de travail. Noté: S (satisfaisant) / NS (non satisfaisant) selon les résultats du rapport écrit et l'évaluation de l'employeur. Préalables : recevoir la permission du Comité du programme. / Practical experience. S (satisfactory) / NS (not satisfactory) grade, to be based on the grades obtained for the written report as well as on the evaluations of the employer. Prerequisites: permission of the Program Committee.

CSI5904 PROJET DE RECHERCHE AVANCÉ EN COMMERCE ÉLECTRONIQUE/GRADUATE PROJECT IN ELECTRONIC COMMERCE (3cr.)
Projet sur un sujet précis en commerce électronique mené sous la direction d'un professeur. Ne peut être combiné pour crédits avec CSI 5903. / Project on a specific topic in electronic commerce under the supervision of a professor. Exclusion: CSI 5903.

DCL7301 REGULATION OF INTERNET COMMERCE (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the traditional commercial law framework. Topics include intellectual property issues, on-line contracts, digital signatures, taxation, securities regulation, and the provision of online legal services.

DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the rights of free speech and privacy. Topics include online obscenity, hate speech, defamation, as well as national and international approaches to data privacy protection.

DCL7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
Practice-oriented seminar analyzing the legal issues and implications of electronic commerce. Topics include licensing, privacy and acceptable use policies, Web development agreements, and regulatory issues.
DCL7501 RÉGLEMENTATION DU CYBERCOMMERCE (3cr.)
Séminaire consacré à l’étude des défis juridiques que pose l’Internet en matière du droit commercial traditionnel. Les sujets à l’étude sont la propriété intellectuelle, les contrats en ligne, les signatures numériques, les impôts, la réglementation des valeurs mobilières et la prestation de services juridiques en ligne.

EBC5990 ÉTUDE DIRIGÉE / DIRECTED READING (1.5cr.)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le comité du programme. Préalable : MPC d’au moins 7 et permission du comité du programme. / Independent study under the supervision of a faculty member in the program. The topic and requirements must be approved by the program committee. Prerequisite: CGPA of at least 7 and permission of the program committee.

EBC5991 ÉTUDE DIRIGÉE / DIRECTED READING (1.5cr.)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le comité du programme. Préalable : MPC d’au moins 7 et permission du comité du programme. / Independent study under the supervision of a faculty member in the program. The topic and requirements must be approved by the program committee. Prerequisite: CGPA of at least 7 and permission of the program committee.

EBC6130 WEB SERVICES (1.5cr.)
Web services business models. Enterprise Application Integration. Web services technologies. Web services platforms and networks. Security and scalability. Prerequisites: EBC 6250 or equivalent.

EBC6170 INTERNET SECURITY AND E-PAYMENT SYSTEMS (1.5cr.)

EBC6180 ELECTRONIC HUMAN RESOURCES MANAGEMENT (1.5cr.)
The human resource functions needed for technology. Recruitment and selection via the internet. Internet and intranet applications for training personnel and enabling self-management. Measurement and management of employee performance using web-based applications. Using the web to maximize knowledge acquisition and sharing among employees. Knowing when and when not to use technology to effectively manage human resources.

EBC6210 ELECTRONIC COMMERCE ARCHITECTURE (1.5cr.)

EBC6220 DATA MINING AND CUSTOMER RELATIONSHIP MANAGEMENT (1.5cr.)

EBC6230 ELECTRONIC SUPPLY CHAIN TECHNOLOGIES AND APPLICATIONS (1.5cr.)

EBC6240 WIRELESS ELECTRONIC COMMERCE (1.5cr.)

EBC6250 DOCUMENT ENGINEERING FOR E-BUSINESS (1.5cr.)

EBC6260 INTEGRATED NETWORKS FOR THE ENTERPRISE (1.5cr.)

EBC6900 STAGE INTERNATIONAL / INTERNATIONAL WORK TERM (3cr.)
Expérience pratique dans un milieu de travail international. Note S (satisfaisant) / NS (non satisfaisant) selon les résultats de rapport écrit et l'évaluation de l'employeur. Préalables : être accepté au programme de certificat et recevoir la permission du comité du programme. Exclusions : CSI 5903, CSI 5904. / Practical international experience. Grades S (satisfactory) / NS (not satisfactory), based on the written report as well as on the evaluations of the employer. Prerequisites: Acceptance in the Graduate Certificate and permission of the Program Committee. Exclusions: CSI 5903, CSI 5904.

EBC6997 PROJET DE RECHERCHE / RESEARCH PROJECT (6cr.)
Students registered in the graduate certificate program can request to transfer to the MA in communication or the Master of Communication in accordance with section A.7.1 of the General Regulations of the FGPS. The research topic and the professor who will direct it must be approved by the program director prior to registration in the third session. The topic can be theoretical (for instance, based on a documentation assessment or a review of the scientific literature) or applied (based on case studies). A research paper, about 30 pages long, must be written and approved by the project director and another professor.

**EBC7100 RESEARCH METHODS IN ELECTRONIC BUSINESS TECHNOLOGIES** (3cr.)

**EBC7990 PROPOSITION DE THÈSE / THESIS PROPOSAL**
Les étudiants du programme de M.Sc. doivent, avant la fin de leur deuxième session d’inscription à temps plein, soumettre à leur directeur de thèse/comité du programme une proposition de recherche qui définit la question à traiter, en la plaçant dans le contexte de la littérature savante et en indiquant les hypothèses, les objectifs, la méthodologie, les résultats préliminaires et l’approche choisie. Une fois la proposition approuvée, les étudiants s’inscrivent à la cote de thèse (EBC 7999). Si la proposition n’est pas approuvée la première fois, on pourra permettre à l’étudiant de la soumettre et de la présenter une deuxième fois à la session suivante. Si la proposition n’est pas approuvée lors de la deuxième soumission, l’étudiant recevra une note de NS pour la proposition et devra se retirer du programme de M.Sc. Noté S/NS. / Students in the MSc program must submit to their thesis supervisor/program committee, by the end of the second session of full-time registration, a research proposal that defines the problem to be addressed, relating it to the scholarly literature, and outlining the hypotheses, goals, research methodology, initial results and validation approach. Upon successfully defending their proposal, students register in the master’s thesis (EBC 7999). A student whose proposal is not approved on the first attempt may be permitted to submit and present it a second time in the following session. Failure to obtain approval on the second attempt leads to a grade of NS for the proposal and withdrawal from the MSc program. Graded S/NS.

**EBC7999 THÈSE DE MAÎTRISE / MASTER’S THESIS** (12cr.)

**ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS** (3cr.)

**ELG5373 (EACJ 5105) DATA ENCRYPTION** (3cr.)

**MBA6225 HIGH TECHNOLOGY MARKETING** (1.5cr.)
High-tech business buying behaviour, competitive and environmental analysis. Implications for marketing inside the tornado: target segments, performance objectives, positioning, product, place, price and promotion. Implementation and profitability analysis. Case studies drawn from several high-tech sectors. Prerequisite: MBA 5320 or ADM 6420 (for students in Electronic Business Technologies).

**MBA6262 HIGH-TECH ENTREPRENEURSHIP** (1.5cr.)
Creating, growing, and sustaining or exiting a new firm in a technology-intensive industry. Issues important to the technology (the scope and nature of technological knowledge and intellectual property protection), financing (seed capital, venture capital, and initial public offerings), and inter-firm relationships (spin-offs, alliances and equity alliances, and acquisitions). The course is practically oriented and will draw upon local expertise to enhance its pertinence and appeal.

**MBA6662 ENTREPRENEURSHIP ET HAUTE TECHNOLOGIE** (1.5cr.)
Création, croissance, maintien et sortie d'une nouvelle entreprise dans un secteur industriel intensivement technologique. Questions importantes en matière de technologie (la portée et la nature des connaissances technologiques et de la protection de la propriété intellectuelle), de financement (capitaux d'amorçage, capital de risque et placement initial de titres) et de relations interentreprises (entreprises dérivées, alliances et alliances avec participation en capitaux et acquisitions). Le cours est axé sur la pratique et mise sur l'expertise locale pour accroître sa pertinence et son attrait.

**E-Commerce (Graduate Certificate)**

Electronic Commerce is an emerging economic sector experiencing exponential growth. Expertise in electronic commerce must combine advanced knowledge of information technology, business administration and law, all disciplines in which the University of Ottawa offers graduate programs. The graduate certificate in electronic commerce provides advanced expertise explicitly in e-commerce.

The certificate is based primarily on the expertise and resources within the master's programs in computer science and business administration, while drawing on the expertise and specialized courses offered in a number of other disciplines. The certificate is multidisciplinary and modular: it consists of common core courses, as well as optional courses. The optional courses will focus either on technology, business administration,
law, or mathematics.

On completion of the certificate, qualified students meeting admission requirements may apply to one of the master's programs, in particular the master of computer science or the MBA. Credit is granted for relevant courses completed in the certificate. The number of credits remaining are assessed individually in relation to the student's chosen master's program.

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: www.etudesup.uottawa.ca/generalregulations

**Admission**

Admission is competitive. Minimum requirements are a bachelor's degree with honours in computer science, computer engineering, software engineering or electrical engineering, or an equivalent degree in engineering or business information, with a minimum average of 75 per cent (B+). The degree must cover the following areas: data structures, file management, operating systems, database management systems and systems programming.

The admissions committee may recommend candidates who do not meet the above requirements but who meet the minimum requirements of the Faculty of Graduate and Postdoctoral Studies and who demonstrate knowledge of these subjects through relevant training and/or experience.

Exceptionally, admission may be offered to candidates who are required to complete a number of additional qualifying courses prior to taking any of the courses specified for the certificate. A minimum grade of B+ will be required in each of the additional courses.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master's**

Students registered in the graduate certificate program can request to transfer to a related master's program in accordance with section A.7.1 of the "General Regulations" of the FGPS.

Applications should be addressed to the director, graduate certificate in e-commerce, Telfer School of Management.

**Language Requirements**

Candidates who have not graduated from a French-speaking or an English-speaking university must pass the computerized Test of English as a Foreign Language (TOEFL), or equivalent, before admission. For additional information, please click on "Apply Now" or visit the website: http://www.etudesup.uottawa.ca/Default.aspx?tabid=1624.

**Work Term**

**Work Term Procedures**

The Work Term will extend over a period of four (4) months. The student is required to sign a contract with the Co-operative Education Programs (CO-OP) and therefore cannot withdraw. Once the contract is signed, the Co-operative Education Programs representative will arrange a meeting with the students to explain the procedures for the Work Term. Employers who are willing to hire Work Term students will interview candidates.

**Prerequisites**

The candidates must either be registered in or have successfully completed CSI 5380 prior to the commencement of the Work Term.

**Program Requirements**

**Certificate Requirements**

The certificate requirements are as follows: 12 credits of core courses and six credits of electives. The passing grade in all courses is C+. Students who fail 4.5 credits or more, or the same course twice, must withdraw from the program.

**A. Core courses (12 credits):**

- ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)
- ADM6420 ELECTRONIC MARKETING (1.5cr.)
- DCL7301 REGULATION OF INTERNET COMMERCE (3cr.)
- CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (3cr.)
CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)

B. Optional courses (six credits) to be chosen from the following:

ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)
ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)
ADM6279 SOCIO-TECHNICAL CHANGE (1.5cr.)
CS5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
CS5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
CS5175 MOBILE COMMERCE TECHNOLOGIES (3cr.)
CS5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)
DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
DCL7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
EBC6180 ELECTRONIC HUMAN RESOURCES MANAGEMENT (1.5cr.)
EBC6230 ELECTRONIC SUPPLY CHAIN TECHNOLOGIES AND APPLICATIONS (1.5cr.)
ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

EBC6900 STAGE INTERNATIONAL / INTERNATIONAL WORK TERM (3cr.)

or

CS5903 STAGE EN COMMERCE ÉLECTRONIQUE/ ELECTRONIC COMMERCE WORK TERM (3cr.)

or

CS5904 PROJET DE RECHERCHE AVANCÉ EN COMMERCE ÉLECTRONIQUE / GRADUATE PROJECT IN ELECTRONIC COMMERCE (3cr.)

1. With permission of the Program Committee

Courses

ADM6260 PROJECT MANAGEMENT I (1.5cr.)

ADM6261 PROJECT MANAGEMENT II (1.5cr.)

ADM6274 ELECTRONIC BUSINESS STRATEGIES (1.5cr.)

ADM6275 BUSINESS PROCESS TRANSFORMATION (1.5cr.)

ADM6276 ENTERPRISE RESOURCE PLANNING SYSTEMS MANAGEMENT (1.5cr.)

ADM6279 SOCIO-TECHNICAL CHANGE (1.5cr.)
This course explores the structural, cultural and process based organizational change management challenges facing business strategists during new technology implementation initiatives. Toward this, the course draws upon management frameworks, support tools and best practices for the joint optimization of technology and social subsystems within organizations. Adopting a complex adaptive system viewpoint of the organization, the course will highlight issues of technological and social embeddedness, and illustrate the use of configuration modeling and analysis tools for enterprise engineering and strategy models to
facilitate change sustainability and continuity.

ADM6420 ELECTRONIC MARKETING (1.5cr.)
Customer retention, customization, value-based pricing, branding, advertising in the context of Electronic Commerce. WWW and the pricing, promotion and distribution of goods.

CSI5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4185 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decomposition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.

CSI5175 MOBILE COMMERCE TECHNOLOGIES (3cr.)

CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S) (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master’s programs in e-business technologies or the certificate in e-commerce.

CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)

CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master’s programs in e-business technologies or the certificate in e-commerce.

CSI5780 (COMP 5405) SYSTÈMES ET ARCHITECTURES DES LOGICIELS POUR LE COMMERCE ÉLECTRONIQUE (3cr.)

CSI5787 (COMP 5706) FOUILLE DES DONNÉES ET APPRENTISSAGE DES CONCEPTS (3cr.)

CSI5789 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE (3cr.)

CSI5903 STAGE EN COMMERCE ÉLECTRONIQUE/ ELECTRONIC COMMERCE WORK TERM (3cr.)
Expérience en milieu de travail. Noté: S (satisfaisant)/ NS (non satisfaisant) selon les résultats du rapport écrit et l'évaluation de l'employeur. Préalables : recevoir la permission du Comité du programme. / Practical experience. S (satisfactory) / NS (not satisfactory) grade, to be based on the grades obtained for the written report as well as on the evaluations of the employer. Prerequisites: permission of the Program Committee.
CS15904 PROJET DE RECHERCHE AVANCÉ EN COMMERCE ÉLECTRONIQUE / GRADUATE PROJECT IN ELECTRONIC COMMERCE (3cr.)
Projet sur un sujet précis en commerce électronique mené sous la direction d'un professeur. Ne peut être combiné pour crédits avec CSI 5903. / Project on a specific topic in electronic commerce under the supervision of a professor. Exclusion: CSI 5903.

DCL7301 REGULATION OF INTERNET COMMERCE (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the traditional commercial law framework. Topics include intellectual property issues, on-line contracts, digital signatures, taxation, securities regulation, and the provision of online legal services.

DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the rights of free speech and privacy. Topics include online obscenity, hate speech, defamation, as well as national and international approaches to data privacy protection.

DCL7303 ELECTRONIC COMMERCE PRACTICE WORKSHOP (3cr.)
Practice-oriented seminar analyzing the legal issues and implications of electronic commerce. Topics include licensing, privacy and acceptable use policies, Web development agreements, and regulatory issues.

DCL7501 RÉGLEMENTATION DU CYBERCOMMERCE (3cr.)
Séminaire consacré à l’étude des défis juridiques que pose l’Internet en matière du droit commercial traditionnel. Les sujets à l’étude sont la propriété intellectuelle, les contrats en ligne, les signatures numériques, les impôts, la réglementation des valeurs mobilières et la prestation de services juridiques en ligne.

EBC5990 ÉTUDE DIRIGÉE / DIRECTED READING (1.5cr.)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le comité du programme. Préalable : MPC d’au moins 7 et permission du comité du programme. / Independent study under the supervision of a faculty member in the program. The topic and requirements must be approved by the program committee. Prerequisite: CGPA of at least 7 and permission of the program committee.

EBC5991 ÉTUDE DIRIGÉE / DIRECTED READING (1.5cr.)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le comité du programme. Préalable : MPC d’au moins 7 et permission du comité du programme. / Independent study under the supervision of a faculty member in the program. The topic and requirements must be approved by the program committee. Prerequisite: CGPA of at least 7 and permission of the program committee.

EBC6130 WEB SERVICES (1.5cr.)
Web services business models. Enterprise Application Integration. Web services technologies. Web services platforms and networks. Security and scalability. Prerequisites: EBC 6250 or equivalent.

EBC6170 INTERNET SECURITY AND E-PAYMENT SYSTEMS (1.5cr.)

EBC6180 ELECTRONIC HUMAN RESOURCES MANAGEMENT (1.5cr.)
The human resource functions needed for technology. Recruitment and selection via the internet. Internet and intranet applications for training personnel and enabling self-management. Measurement and management of employee performance using web-based applications. Using the web to maximize knowledge acquisition and sharing among employees. Knowing when and when not to use technology to effectively manage human resources.

EBC6210 ELECTRONIC COMMERCE ARCHITECTURE (1.5cr.)

EBC6220 DATA MINING AND CUSTOMER RELATIONSHIP MANAGEMENT (1.5cr.)

EBC6230 ELECTRONIC SUPPLY CHAIN TECHNOLOGIES AND APPLICATIONS (1.5cr.)

EBC6240 WIRELESS ELECTRONIC COMMERCE (1.5cr.)
EBC6250 DOCUMENT ENGINEERING FOR E-BUSINESS (1.5cr.)

EBC6260 INTEGRATED NETWORKS FOR THE ENTERPRISE (1.5cr.)

EBC6900 STAGE INTERNATIONAL / INTERNATIONAL WORK TERM (3cr.)
Expérience pratique dans un milieu de travail international. Noté S (satisfaisant) / NS (non satisfaisant) selon les résultats de rapport écrit et l'évaluation de l'employeur. Préalables : être accepté au programme de certificat et recevoir la permission du comité du programme. Exclusions : CSI 5903, CSI 5904. / Practical international experience. Grades S (satisfactory) / NS (not satisfactory), based on the written report as well as on the evaluations of the employer. Prerequisites: Acceptance in the Graduate Certificate and permission of the Program Committee. Exclusions: CSI 5903, CSI 5904.

EBC6997 PROJET DE RECHERCHE / RESEARCH PROJECT (6cr.)
Le sujet de recherche, ainsi que le professeur qui va le diriger, doivent être approuvés par la direction du programme avant l’inscription à la troisième session. Le sujet peut être de nature théorique (par exemple, une évaluation de la documentation ou une étude de la littérature scientifique) ou appliqué (par exemple, des études de cas). Un mémoire, d’une cinquantaine de pages, doit être rédigée et approuvée par le professeur qui le dirige ainsi qu’un autre professeur. / The research topic and the professor who will direct it must be approved by the program director prior to registration in the third session. The topic can be theoretical (for instance, based on a documentation assessment or a review of the scientific literature) or applied (based on case studies). A research paper, about 50 pages long, must be written and approved by the project director and another professor.

EBC7100 RESEARCH METHODS IN ELECTRONIC BUSINESS TECHNOLOGIES (3cr.)

EBC7990 PROPOSITION DE THÈSE / THESIS PROPOSAL
Les étudiants du programme de M.Sc. doivent, avant la fin de leur deuxième session d’inscription à temps plein, soumettre à leur directeur de thèse/comité du programme une proposition de recherche qui définit la question à traiter, en la plaçant dans le contexte de la littérature savante et en indiquant les hypothèses, les objectifs, la méthodologie, les résultats preliminaires et l’approche choisie. Une fois la proposition approuvée, les étudiants s’inscrivent à la cote de thèse (EBC 7999). Si la proposition n’est pas approuvée la première fois, on pourra permettre à l’étudiant de la soumettre et de la présenter une deuxième fois à la session suivante. Si la proposition n’est pas approuvée lors de la deuxième soumission, l’étudiant recevra une note de NS pour la proposition et devra se retirer du programme de M.Sc. Noté S/NS. / Students in the MSc program must submit to their thesis supervisor/program committee, by the end of the second session of full-time registration, a research proposal that defines the problem to be addressed, relating it to the scholarly literature, and outlining the hypotheses, goals, research methodology, initial results and validation approach. Upon successfully defending their proposal, students register in the master’s thesis (EBC 7999). A student whose proposal is not approved on the first attempt may be permitted to submit and present it a second time in the following session. Failure to obtain approval on the second attempt leads to a grade of NS for the proposal and withdrawal from the MSc program. Graded S/NS.

EBC7999 THÈSE DE MÎÂTRISE / MASTER'S THESIS (12cr.)

ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

ELG5373 (EACJ 5105) DATA ENCRYPTION (3cr.)

MBA6225 HIGH TECHNOLOGY MARKETING (1.5cr.)
High-tech business buying behaviour, competitive and environmental analysis. Implications for marketing inside the tornado: target segments, performance objectives, positioning, product, place, price and promotion. Implementation and profitability analysis. Case studies drawn from several high-tech sectors. Prerequisite: MBA 5320 or ADM 6420 (for students in Electronic Business Technologies).

MBA6262 HIGH-TECH ENTREPRENEURSHIP (1.5cr.)
Creating, growing, and sustaining or exiting a new firm in a technology-intensive industry. Issues important to the technology (the scope and nature of technological knowledge and intellectual property protection), financing (seed capital, venture capital, and initial public offerings), and inter-firm relationships (spin-offs, alliances and equity alliances, and acquisitions). The course is practically oriented and will draw upon local expertise to enhance its pertinence and appeal.
The certificate courses are offered in both official languages, English and French. The certificate is bilingual in that it includes a requirement to study government communication (graduate certificate).

**Ecclesiastical Administration (Graduate Certificate)**

The Graduate Certificate in Ecclesiastical Administration (GCECA) is a graduate program that offers an advanced specialization, within the general discipline of canon law, suited to careers in church administration.

The GCEA is open to students who have a university degree in canon law, or have already completed significant training in canon law, and are interested in careers in the administration of various church institutions and organizations. The program provides students with specialized knowledge, from the perspective of canon law, of issues related to the governance and management of dioceses and religious institutes, church tribunals, ecclesiastical educational and health care institutions, and other similar bodies.

The GCEA is conferred jointly by Saint Paul University and the University of Ottawa under the terms of the federation agreement between them.

The GCEA is offered in both French and English. All required courses are available in each language. Some elective courses may be offered in one language only.

On completion of the certificate, qualified students meeting admission requirements may apply for admission to the master's in Canon Law program and, on admission, complete the requirements of this program with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually.

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link:

[www.etudesup.uottawa.ca/generalregulations](http://www.etudesup.uottawa.ca/generalregulations)

**Admission**

1. Prospective students must hold an honours baccalaureate, or provide evidence of an equivalent four-year program, with an average grade of at least “B”.

2. The baccalaureate or equivalent program must include, or be supplemented by, at least 18 credits in the theological disciplines, or equivalent studies and pastoral or professional experience as determined by the Executive Committee of the Faculty.

3. The candidate's previous studies must either include, or be supplemented by, a degree in canon law, or at least 15 credits of course work and seminars in canon law, including a course on the general norms of canon law.

4. Courses that are part of parent programs other than canon law may have other prerequisites.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master’s**

Students registered in the graduate certificate program can request to transfer to a related master's program in accordance with section A.7.1 of the "General Regulations” of the FGPS.

**Program Requirements**

**Certificate Requirements**

The certificate program requires 15 credits of courses, consisting of 9 credits of core courses and 6 credits of specialized courses OR 12 credits of core courses and 3 credits of specialized courses, in keeping with the student's own educational needs and career plans.

Students may complete the certificate requirements full-time in one session or part-time over the course of one, two, or three years.

The passing grade in all courses is C+. Students who fail six credits or the same course twice, must withdraw from the program.
Core Courses:

- The following two courses are required:
  DCA5309 SPECIAL TOPICS IN CODE II
  DCA6112 ADMINISTRATIVE PROCEDURES (3cr.)

- At least 3 credits must be taken from among the following two courses:
  DCA5308 SPECIAL TOPICS IN CODE I
  DCA6114 PROCEDURES II (3cr.)

Specialized courses:

DCA5123 THE INTERNAL ORDERING OF PARTICULAR CHURCHES I: FOUNDATIONAL QUESTIONS (3cr.)
DCA5124 THE INTERNAL ORDERING OF PARTICULAR CHURCHES II: ADMINISTRATIVE ISSUES (3cr.)
DCA5203 INSTITUTES OF CONSECRATED LIFE AND SOCIETIES OF APOSTOLIC LIFE (3cr.)
DCA5133 PROCEDURES I (3cr.)
DCA6302 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
DCA6316 THE LAITY AND THE POWER OF GOVERNANCE IN THE CHURCH (3cr.)
HAH6212 HEALTH CARE ETHICS (1.5cr.)
HAH6260 HEALTH CARE SYSTEM ORGANIZATION AND POLICY (1.5cr.)
IPA5149 PROFESSIONAL ISSUES AND ETHICS IN SPIRITUAL CARE (3cr.)
IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)
THO6342 ETHICS AND HEALTH SCIENCES (3cr.)

With permission of the Dean, a student may also choose other elective graduate courses, whether offered by the Faculty of Canon Law or another faculty of Saint Paul University or the University of Ottawa—especially in Law, Pastoral Theology, Administration, or Management. Course credits obtained for another degree or certificate cannot be applied to the GCCA.

Courses
DCA6112 SELECTED ISSUES IN CHURCH ADMINISTRATION (3cr.)
Loss of clerical state, laicization; archives; civil court cases; statutes of diocesan bodies; merging and suppression of parishes; arbitration, mediation, settlement.

DCA6114 TRIBUNAL PROCEDURES (3cr.)
Practical part: progress of the ordinary contentious trial and of the oral contentious process; cases concerning the declaration of nullity of marriage; processes for the declaration of nullity of ordination. Ways of avoiding trials. Jurisprudence in cases of declaration of nullity of marriage as well as of recourse against administrative decrees.

DCA6302 SPECIAL PROBLEMS IN CANON LAW II (3cr.)
Study of interdisciplinary problems with a large canonical component or of specialized questions not covered by the Code of Canon Law.

DCA6316 THE LAITY AND THE CHURCH'S OFFICE OF GOVERNANCE (3cr.)
Collaboration of the lay faithful in the exercise of the power of governance: law, theory, and practice.

DCA6512 QUESTIONS D'ADMINISTRATION ECCLESIAISTIQUE (3cr.)
Perte de l'état clérical, laïcisation; archives; procès dans les cours civiles; statuts des organismes diocésains; union et suppression des paroisses; transactions, compromis, arbitrage, médiation.

DCA6514 PROCÉDURES DES TRIBUNAUX ECCLESIAISTIQUES (3cr.)
Déroulement du procès contentieux ordinaire et du procès contentieux oral; causes en déclaration de nullité de mariage; causes en déclaration de nullité de l'ordination. Moyens d'éviter les procès. Jurisprudence dans les causes en déclaration de nullité de mariage ainsi que dans les recours administratifs.

DCA6716 LAÏCAT ET POUVOIR DE GOUVERNEMENT DANS L’ÉGLISE (3cr.)
Participation des fidèles laïcs à l'exercice du pouvoir de gouvernement : droit, théorie et pratique.

HAA6212 HEALTH CARE ETHICS (1.5cr.)
Definition, resolution and handling of ethical problems of administrators, physicians and other health care professionals. Codes of ethics. Principles of biomedical ethics. Relationships among biomedical ethics, law, health policy and resource allocation. Ethical analytical techniques. Prerequisite: HAA 6260.

HAA6260 HEALTH CARE SYSTEM ORGANIZATION AND POLICY (1.5cr.)

IPA5149 PROFESSIONAL ISSUES AND ETHICS IN SPIRITUAL CARE (3cr.)
IPA5549 QUESTIONS PROFESSIONNELLES ET QUESTIONS D'ÉTHIQUE EN SOINS SPIRITUELS (3cr.)
IPA6152 THEOLOGY AND SPIRITUAL CARE (3cr.)
IPA6552 THÉOLOGIE ET SOINS SPIRITUELS (3cr.)
THO6342 ETHICS AND HEALTH SCIENCES (3cr.)
Examination of a problem in bioethics (e.g., human experimentation, medical genetics, allocation of limited resources). The study of a question in clinical ethics (e.g., informed consent, cessation of treatment, professional responsibility). Methodological and theological problems posed by this kind of applied ethics.

THO6742 ÉTHIQUE ET SCIENCES DE LA SANTÉ (3cr.)
Examen d'un problème de bioéthique (e.g., expérimentation humaine, génétique médicale, allocation des ressources). Étude d'une question d'éthique clinique (e.g. consentement éclairé, arrêt de traitement, responsabilité professionnelle). Problèmes théologiques et méthodologiques que pose ce type d'éthique sectorielle.

Enseignement postsecondaire (Certificat d'études supérieures)
Renseignements généraux
Le Certificat d'études supérieures en enseignement postsecondaire vise à donner une formation théorique et pratique en enseignement postsecondaire aux professionnels (instructeurs et professeurs) en exercice. Il est accepté depuis longtemps que les enseignants aux niveaux primaires et secondaires ont besoin de formation à l'enseignement. Ce n'est que récemment qu'on a pris pleinement conscience de ce même besoin au niveau postsecondaire. Les cours du certificat s'articulent autour des axes suivants : enseignement et apprentissage des adultes, technologies de l'information et de la communication et évaluation des apprentissages. On entend ici par le terme adultes, des étudiants en contexte collégial ou universitaire qui possèdent déjà un diplôme secondaire. Le certificat s'offre uniquement en français puisqu'il est destiné à leur institut, religieux évêques, conférences de supérieurs majeurs. Instituts séculiers. Sociétés de vie apostolique.
surtout à combler les besoins des instructeurs et professeurs enseignant aux étudiants francophones de l’Ontario, pour lesquels très peu de services de formation à l’enseignement postsecondaire en langue française sont disponibles en province.

Les étudiants qui obtiennent le certificat et qui répondent aux exigences d’admission peuvent, par la suite, faire une demande à l’un ou l’autre des programmes de maîtrise en éducation. Dès l'admission à l’un de ces programmes, les étudiants peuvent demander un transfert de crédits pour les cours déjà suivis au certificat. Le nombre de crédits est évalué cas par cas et en fonction du programme de maîtrise choisi.

**Admission**

**Exigences d’admission**

Pour être admis à ce programme, il faut répondre aux exigences suivantes :

1. Détenir un baccalauréat spécialisé en éducation ou l’équivalent (par exemple, un baccalauréat universitaire reconnu avec spécialisation et cinq cours du B.Éd.; un baccalauréat avec spécialisation et une année d’expérience en enseignement à temps complet en milieu collégial ou universitaire).

2. Avoir maintenu une moyenne minimale de B;

3. Avoir la compétence en langue française

Il se peut qu’un maximum de trois crédits en équivalences ou en crédits retenus soient accordés. Pour cela, les crédits de doivent pas avoir déjà compté pour un diplôme, un certificat ou un grade antérieur. Les candidats ayant déjà réussi des cours obligatoires du programme pourront remplacer ces crédits par des crédits au choix. Pour de plus amples renseignements, veuillez consulter l’article B.2.7. des Règlements généraux de la FESP.

**Passage du certificat d’études supérieures à la maîtrise**

Les étudiants inscrits au certificat d’études supérieures peuvent demander de passer au programme de maîtrise en éducation (M.Éd.) conformément à l’article A. 7.1 des «Règlements généraux» de la FESP.

**Program Requirements**

**Exigences du certificat**

Les étudiants et étudiantes doivent réussir 15 crédits de cours, dont quatre cours de trois crédits et trois crédits au choix. La note de passage est de C+. En cas d’échec, il est possible de répéter le cours. Les étudiants qui échouent six crédits ou plus ou deux fois le même cours doivent se retirer du programme.

**Les cours suivants sont obligatoires :**

EDU5584 DIMENSIONS, STRATÉGIES ET GESTION DES APPRENTISSAGES (3cr.)
EDU6600 L’APPRENTISSAGE D’UNE AUTRE LANGUE (3cr.)
EDU687 MODÈLES D’INTEGRATION DES TECHNOLOGIES DE L’INFORMATION ET DE LA COMMUNICATION EN CONTEXTES ÉDUCATIFS (3cr.)
EDU6600 FORMATEURS D’ADULTES ET CONTEXTES DE FORMATION (3cr.)

**et trois crédits au choix, soit :**

EDU5794 ÉVALUATION DES APPRENTISSAGES : PRINCIPES D’ÉQUITÉ (1cr.)
et
EDU5795 RESPONSABILITÉ DE L’APPRENTI ET DU SYSTÈME À L’ÉGARD DES APPRENTISSAGES (1cr.)
et
EDU5797 STRATÉGIES D’ÉVALUATION DES APPRENTISSAGES (1cr.)

ou

EDU5799 ÉLABORATION D’INSTRUMENTS D’ÉVALUATION DES APPRENTISSAGES (3cr.)

ou

EDU5899 ENJEUX ACTUELS EN ÉVALUATION DES APPRENTISSAGES (3cr.)

**Courses**
The government communication certificate program focuses on the mechanisms of internal and external communication in a bureaucratic and political environment. Teaching and research issues in this field can include topics such as communication challenges related to a multicultural and diverse public service; risk and crisis communications; the use of communication and information technologies in knowledge management and transfer; organizational networks and communication flow; the ways in which employee communication, employee satisfaction, and employee effectiveness are interrelated; strategic planning; group and interpersonal interactions; media relations; branding; and ethical and practical issues faced by professional communicators who are sometimes asked to perform functions of a political nature. Governments studied may function at the local, regional, national or international levels.

The graduate certificate program is intended to meet the needs of qualified students who plan to apply the concepts learned in a practical context. The knowledge acquired in the program will facilitate their effective functioning in government and give them additional tools to advance in their careers.

The certificate courses are offered in both official languages, English and French. The certificate is bilingual in that it includes a requirement to take three courses in one language and two in the other.

The certificate operates within the framework of the master’s in communication program and both are governed by the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) which are available on the Website at the following link: www.grad.uottawa.ca

**Admission**

The requirements for admission to the graduate certificate program in government communication are as follows:

1. an honours bachelor’s degree with a specialization or major or equivalent in Communication or a related discipline;
   
or
   an honours bachelor’s degree with a specialization or major in another discipline, with a minor in Communication and two or more years
of relevant experience;

or

an honours bachelor's degree with a specialization or major in another discipline, with three or more years of relevant experience;

2. a minimum overall average of 70% (B), calculated in accordance with FGPS guidelines;

3. ability to understand, speak and write proficiently both French and English. Proof of this ability may be required.

Candidates must indicate in their application the language in which they intend to take the majority of their courses.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master’s

Students registered in the graduate certificate program can request to transfer to the MA in communication or the Master of Communication in accordance with section A.7.1 of the General Regulations of the FGPS.

Deadline

To find the application deadline, please check the “program-specific requirements” under “Application Procedures and Information” at the following address: www.grad.uottawa.ca/apply

Program Requirements

Graduate Certificate Requirements

The graduate certificate program requires 15 credits, of which 9 are compulsory and 6 are optional. Students must take a minimum of 6 credits in the second language. In all courses, examinations and assignments must be submitted in the language of the course.

The passing grade in the 3 courses of the major language is C+. For the 2 courses in the other language, the student can choose to receive an alphanumeric grade or a qualitative grade, that is, either Satisfactory (S) or Not Satisfactory (NS). Note that this possibility applies to a maximum of two courses taken in the second language. To find out how to request a qualitative grade, students should contact the Immersion Program Office before the drop date for the course.

Students are also encouraged to register for the Second Language Certification (ESL 3100) offered by the Official Languages and Bilingualism Institute (OLBI).

Students who fail six credits or the same course twice, must withdraw from the program. All requirements must be met within three years.

Compulsory courses (9 credits):

CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)
CMN5135 COMMUNICATION MANAGEMENT (3cr.)
CMN5141 GOVERNMENT COMMUNICATION (3cr.)

Optional courses (6 credits) to be chosen from the following:

CMN5115 COMMUNICATION ETHICS (3cr.)
CMN5130 DIVERSITY IN THE WORKPLACE: COMMUNICATION CHALLENGES (3cr.)
CMN5131 ORGANIZATIONAL COMMUNICATION THEORIES (3cr.)
CMN5132 THEORIES AND EFFECTS OF THE MEDIA (3cr.)
CMN5136 VIRTUAL WORK TEAMS (3cr.)
CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)
CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
CMN5155 ADVANCED RESEARCH IN TRADITIONAL AND EMERGING MEDIA (3cr.)
CMN5160 POLITICAL USES OF MEDIA (3cr.)
CMN5165 NEW DIRECTIONS IN JOURNALISM (3cr.)
CMN5170 INTERNATIONAL COMMUNICATION (3cr.)

Courses
Pour connaître les cours offerts à chaque session, veuillez consulter l'horaire / Please consult the schedule to know the courses offered at each session.

CMN5100 RESEARCH METHODS (3cr.)
Research design and methods relevant to the Master's thesis or research paper project.

CMN5500 MÉTHODES DE RECHERCHE (3cr.)
Différentes étapes de l'élaboration du projet de thèse ou du mémoire de maîtrise.

CMN5105 CONTEMPORARY COMMUNICATION ISSUES (3cr.)
State of the art of the discipline. Exploration of major domains of communication research, along with contemporary issues being addressed by scholars in these fields of specialization.

CMN5505 ENJEUX CONTEMPORAINS EN COMMUNICATION (3cr.)
Étude des avancées les plus récentes de la discipline. Exploration des principaux domaines de recherche en communication et des enjeux contemporains étudiés par les spécialistes œuvrant dans différents champs de la discipline.

CMN5110 SOCIAL HISTORY OF COMMUNICATION TECHNOLOGIES (3cr.)
Exploration of the social, political, economic, cultural and ethical ramifications of communication technologies as they have evolved over time. Relationship between innovation in new communication technologies and social and cultural change.

CMN5510 HISTOIRE SOCIALE DES TECHNOLOGIES DE COMMUNICATION (3cr.)
Exploration de l’évolution historique des ramifications sociales, politiques, économiques, culturelles et éthiques du développement des technologies de communication. Étude des liens entre les innovations en matière de technologie de communication et les changements sociaux et culturels.

CMN5115 COMMUNICATION ETHICS (3cr.)
Emphasis on the significance of ethical principles and responsibilities of public communicators, as well as sanctions faced when communicators fail to uphold these principles. Critique of self-regulation of the media. Analysis of argumentation. Study of legal precedents with respect to defamation.

CMN5515 ÉTHIQUE DE LA COMMUNICATION (3cr.)
L’accent sera mis sur la signification des principes éthiques et de la responsabilité des communicateurs publics ainsi que sur les sanctions auxquelles s’exposent les communicateurs qui ne respectent pas ces principes. Critique de l’autorégulation des médias. Analyse de l’argumentation. Étude de la jurisprudence en matière de diffamation.

CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)
Theories and applications relevant to campaigns that promote issues and causes in the public interest. Strategies and techniques. Cases studies in the areas of health, environment, education and other public domains.

CMN5520 CAMPAGNES DE COMMUNICATION PUBLIQUE : THÉORIES ET APPLICATIONS (3cr.)
Théories et pratiques relatives aux campagnes de communication faisant la promotion d’enjeux ou de causes d’intérêt public. Stratégies et techniques. Études de cas dans les secteurs de la santé, de l’environnement et d'autres domaines.

CMN5130 DIVERSITY IN THE WORKPLACE : COMMUNICATION CHALLENGES (3cr.)
Theories and pragmatics of intercultural communication as applicable to various forms of communication (verbal and nonverbal) between and among individuals of different ethnicities, races, cultures, age groups, sexual orientations, genders, classes, abilities, language, religion, and value orientations. Focused on workplace interactions.

CMN5530 DIVERSITÉ AU TRAVAIL : DÉFIS COMMUNICATIONNELS (3cr.)
Theories et pratiques de communication interculturelle en milieu de travail. Étude des différentes formes de communication (verbale et non verbale) impliquant des individus de culture, d’âge, d’orientation sexuelle, de genre, de langue, de religion et de compétences différents. Les cas présentés dans le cours se concentreront sur les interactions en milieu de travail.

CMN5131 ORGANIZATIONAL COMMUNICATION THEORIES (3cr.)
Different approaches (e.g., interactionist, narrative, critical) to organizational communication research, with a focus on benchmark studies and key researchers. Role of theories in understanding communication challenges faced by contemporary organizations. Issues related to communication networks, organizational learning, management of diversity, computerization of organizations, and management of risks, among others.

CMN5531 THÉORIÈS DE LA COMMUNICATION ORGANISATIONNELLLE (3cr.)
Revue de diverses approches en communication organisationnelle (interactionniste, narrative, critique). L’accent sera mis sur les études et les principaux chercheurs qui représentent des points de référence dans le domaine. Le rôle des théories dans la compréhension des défis auxquels font face les organisations modernes. Enjeux reliés aux réseaux de communication, à l’apprentissage organisationnel, à la gestion de la diversité, à l’informatisation des organisations, à la
CMN5132 THEORIES AND EFFECTS OF THE MEDIA (3cr.)
Critique of traditional (e.g., cultivation, social learning, and dependency), interpretive (e.g., narrative and genre), and critical/cultural (e.g., political economy) theories of the mass media. Contemporary research directions in the field of mass and emerging communications. Study of the effects on audience behavior.

CMN5532 THÉORIÈRES ET EFFETS DES MÉDIAS (3cr.)
Analyse critique des théories classiques des médias de masse (cultivation, apprentissage social et conditionnement), interprétatives (narrative et identité sexuelle), critique et culturelle (économie politique). Nouvelles perspectives de la recherche dans le domaine des médias de masse traditionnels et émergents. Étude des effets sur le comportement des récepteurs.

CMN5133 HEALTH COMMUNICATION THEORIES (3cr.)
Concepts, research, and theories regarding health communication issues at the micro level (e.g., interactions between patient and healthcare provider), mezio level (e.g., role of information in healthcare organizations) and macro level (e.g., role of media in shaping public perceptions of health and illness). Qualitative, quantitative, and mixed-method research, with a stress on interdisciplinary approaches to health communication and public health research.

CMN5533 THÉORIÈRES DE LA COMMUNICATION ET DE LA SANTÉ (3cr.)
Théories, concepts et recherches reliés au domaine de la communication et de la santé au niveau micro (interactions entre le patient, le médecin et les dispensateurs de soins), au niveau intermédiaire (rôle de l'information dans les organisations de soins de santé) et au niveau macro (le rôle des médias dans la construction des représentations sociales de la santé et de la maladie). Analyse quantitative, qualitative et mixte avec accent sur les approches interdisciplinaires et les recherches en santé publique.

CMN5135 COMMUNICATION MANAGEMENT (3cr.)
Role of communication in organizational development, team development, and corporate/institutional positioning. Internal and external communication in public and private organizations. Case studies of Canadian and international organizations.

CMN5535 GESTION DES COMMUNICATIONS (3cr.)
Rôle de la communication dans le développement organisationnel, dans le développement des équipes et dans la projection de l'image de l'organisation. Communication interne et externe dans les organisations publiques et privées. Études de cas d'organisations canadiennes et internationales.

CMN5136 VIRTUAL WORK TEAMS (3cr.)
Theoretical and practical issues raised by the integration of mediated and distance communication into the workplace, including those specific to the functioning of virtual teams (e.g., E-leadership, cohesion, communication, and trust).

CMN5536 ÉQUIPES VIRTUELLES: ENJEUX COMMUNICATIONNELLES (3cr.)
Différentes problématiques théoriques et pratiques soulevées par l'intégration de modes de communication médiatisée et à distance au sein des collectifs de travail, incluant des problématiques spécifiques liées notamment au fonctionnement d'équipes virtuelles (e.g., E-leadership, cohésion, communication et confiance dans les équipes virtuelles).

CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)
Impact of information and communication technologies and political, cultural, and global dynamics on organizations. Theoretical and critical reflections on the strategic management of change in organizations, the transformation of organizational cultures, and intervention practices. Case studies of hybrid cultures.

CMN5540 COMMUNICATION, MONDIALISATION ET CHANGEMENT (3cr.)
Influence des technologies d’information et de communication, de la dynamique politique, culturelle et globale sur les organisations. Réflexions théoriques et critiques portant sur les stratégies de gestion du changement dans les organisations, sur la transformation des cultures organisationnelles et les interventions pratiques. Études de cas de cultures hybrides.

CMN5141 GOVERNMENT COMMUNICATION (3cr.)
Issues and concerns of particular relevance to the public service communication community. Preparation of a consultation report that focuses on a specific communication challenge faced by professional communicators.

CMN5541 COMMUNICATION GOUVERNEMENTALE (3cr.)
Enjeux et préoccupations spécifiques à la communauté des communicateurs d'agences publiques. Préparation d'un rapport de consultation qui met l'accent sur un défi particulier qu'on a relevé les communicateurs professionnels.

CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
The role of communication in general—and mass media and the Internet in particular—in high risk situations such as conflict, war, disaster, emergency, and acts of terrorism (including biological threats) in a variety of cultural contexts. Characteristics of modern risk societies, risk identification and management, the relationship between risk and crisis communication, and crisis management strategies. Case studies.

CMN5542 COMMUNICATION DE CRISE ET DU RISQUE (3cr.)
Le rôle de la communication en général, des médias de masse et d'Internet en particulier, dans des situations de crise comme la guerre, les désastres naturels, les urgences et les actes terroristes (incluant les menaces biologiques) dans une variété de contextes culturels. Caractéristiques des sociétés modernes à haut risque,
identification et gestion des risques et des crises, relations entre les risques et la communication de crise, étude des stratégies de gestion de crise. Études de cas.

CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
Research directions in organizational learning, collective intelligence and information architecture, situated in the technical context of the general digitization of communication and the socio-cultural context of knowledge societies and human development policies. Interdisciplinary perspectives. Case studies from the work place, education, health, and cultural industries.

CMN5550 GESTION DES CONNAISSANCES (3cr.)
Principales orientations de la recherche sur l’apprentissage organisationnel, l’intelligence collective et l’architecture de l’information, situées à la fois dans le contexte technique de la numérisation généralisée de la communication et dans le contexte socioculturel de la société de la connaissance et des politiques de développement humain. Une perspective interdisciplinaire sera privilégiée. Des études de cas en milieu de travail, en éducation, en santé et dans les industries culturelles.

CMN5155 ADVANCED RESEARCH IN TRADITIONAL AND EMERGING MEDIA (3cr.)
Empirical and critical studies of traditional and emerging media in various social contexts: organizational, domestic, educational, etc. Emerging research trends (qualitative and quantitative).

CMN5555 RECHERCHES AVANCÉES SUR LES MÉDIAS TRADITIONNELS ET CEUX EN ÉMERGENCE (3cr.)
Études empiriques et critiques des médias traditionnels et en émergence dans différents contextes : monde du travail, vie quotidienne, éducation, etc. Nouveaux courants de recherche (qualitative et quantitative).

CMN5160 POLITICAL USES OF MEDIA (3cr.)
Critical review of key aspects of contemporary theory, research, and practice in political communication. Uses of traditional and emerging media by governments, politicians, and civil society (NGOs, activist groups and citizens) to communicate with their publics, influence public and policy agendas, effect social and political change, monitor public opinion, manage their reputation, and/or build networks of resistance. Impact of changing communication technologies on government media relations. Case studies.

CMN5161 CONSTRUCTION OF SOCIAL REALITY BY THE MEDIA (3cr.)
Study of the media strategies that aim to create the verisimilitude of everyday life. Analysis of the contemporary production of authenticity (or its simulation) in media genres such as televised reality shows, mock news shows, cringe comedy, and polemical documentaries.

CMN5162 REPRÉSENTATION ET SIMULATION DE LA RÉALITÉ PAR LES MÉDIAS (3cr.)
Étude des stratégies médiatiques de construction des effets de réel. Analyse de la production contemporaine de l'authentique (ou de sa simulation) dans les genres médiatiques comme la téléréalité, les parodies de bulletin d'information et les documentaires polémiques.

CMN5165 NEW DIRECTIONS IN JOURNALISM (3cr.)
Theoretical and empirical studies of recent trends and changes in journalistic practices. Impact of social, economic and technological factors on journalism (e.g., commoditization of information, concentration of ownership, and digital media convergence). New socio-critical practices. Audience research.

CMN5165 NOUVELLES ORIENTATIONS EN JOURNALISME (3cr.)

CMN5170 INTERNATIONAL COMMUNICATION (3cr.)
Contemporary approaches to international communication. The role of traditional and emerging media, international institutions, governmental agencies, and NGOs. Analysis of problems related to participatory communication and alternative models.

CMN5170 COMMUNICATION INTERNATIONALE (3cr.)
Approches contemporaines de la communication internationale. Le rôle des médias traditionnels et des nouveaux médias, des institutions internationales, agences gouvernementales, ONGs. Analyse de questions spécifiques telles que la communication participative et les modèles alternatifs.

CMN5190 MEDIA, IDENTITY AND DIVERSITY (3cr.)
Study of identity issues as seen through the prism of the media and relating to ethnicities, races, cultures, age groups, sexual orientations, genders, classes, abilities, language, religion, and value orientations. Study of the representations and challenges posed by "otherness" and diversity in an era of globalization and accelerated circulation of information.
Health Professions Education (Graduate Certificate)

The graduate certificate in health professions education allows candidates to gain expertise in university health professions education. It is offered in both English and French.

In accordance with University of Ottawa regulations, examinations and assignments may be written in either one of the two official languages (English or French).

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: www.etudesup.uottawa.ca/generalregulations

Admission

To be admitted, candidates must have:

a) an honours bachelor’s degree in Education or the equivalent (a bachelor’s degree with at least 120 credits in another discipline and the equivalent of at least 3 years full-time teaching experience at the undergraduate, graduate, or continuing professional development levels); OR

a professional or graduate university degree such as an MD, Master’s or PhD, with at least one year’s full-time teaching experience, either in a classroom setting and/or as a clinical supervisor as a health professional;

b) an overall average of 70% (B), calculated in accordance with FGPS guidelines;

c) proficiency in either English or French.

On completion of the graduate certificate, qualified students meeting admission requirements could apply to one of the related master's programs, in particular the MA in Education or the MEd and, upon admission, complete the requirements for those programs with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually, at the time of...
admission, with relation to the student’s chosen master's program. The regulation governing the articulation between graduate certificates and related master’s programs can be found in the general Regulations of the FGPS (section A.7).

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Certificate to a Master's Program

Students registered in the graduate certificate program can request to transfer to the Master of Education (MEd) program in accordance with section A.7.1 of the "General regulations" of the FGPS.

Program Requirements

Certificate Requirements

The certificate requires successful completion of five courses (15 credits), with at least one course from each of the five themes listed below. The passing grade in all courses is C+. Students who fail six credits or the same course twice, must withdraw from the program. The program can be completed either full-time or part-time. Full-time students should expect to take evening courses. All students must complete all the requirements of the certificate within three years following initial registration.

At least one health professions education course (EDU 5602/5202; EDU 5661/5261; EDU 5686/5286; EDU 5698/5298) is offered each session. All students must take at least one of these courses.

Teaching and Learning:
EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRAXIS (3cr.)
EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5466 RACISM AND ANTI-RACISM IN EDUCATION (3cr.)
EDU6204 LEARNING IN ADULTHOOD (3cr.)
EDU6200 THE ADULT EDUCATOR: ROLES AND BEHAVIOUR (3cr.)

Curriculum:
EDU5206 PROGRAM PLANNING IN ADULT EDUCATION (3cr.)
EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION (3cr.)

Learning Assessment:
EDU6193 FOUNDATIONS OF MEASUREMENT AND TESTING (3cr.)
EDU6293 ASSESSMENT FOR LEARNING (3cr.)
EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)

Technology and Education:
EDU5188 INTEGRATION OF TECHNOLOGY IN EDUCATION (3cr.)
EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION (3cr.)
EDU5287 EMERGING TECHNOLOGIES AND LEARNING (3cr.)

Program Evaluation:
EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE (3cr.)
EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES (3cr.)

Courses

EDU5188 INTEGRATION OF TECHNOLOGY IN EDUCATION (3cr.)
Examination of the implications on teaching practice and learning outcomes in the integration of technology studies across the curriculum.

EDU5202 TEACHING STRATEGIES FOR HEALTH PROFESSIONS EDUCATION (3cr.)
Exploration of the concepts and strategies, methods of instruction in health education; examination of how instruction supports student learning.

EDU5206 PROGRAM PLANNING IN ADULT EDUCATION (3cr.)
Exploration of the fundamental concepts necessary to understand program development in adult education; review of conceptual frameworks for planning.
recruitment, evaluation and research on program implementation and program building, procedures for making programs more meaningful to adult learners.

**EDU5261 CURRICULUM DESIGN FOR HEALTH PROFESSIONS EDUCATION** (3cr.)
Examination of theory for current practices related to curriculum design in health professions.

**EDU5286 TECHNOLOGY AND HEALTH PROFESSIONS EDUCATION** (3cr.)
Study of the impact of computer technology on communication and instructional techniques for health professions education; exploration of distance education, on-line learning, and low and high fidelity simulation.

**EDU5287 EMERGING TECHNOLOGIES AND LEARNING** (3cr.)
Research, theory and practice concerning the use of emerging technologies to facilitate learning; the impact of new media on teaching and learning strategies, on curriculum change, on learner attitudes and motivation, and on higher order learning.

**EDU5298 STUDENT ASSESSMENT STRATEGIES FOR HEALTH PROFESSIONS EDUCATION** (3cr.)
Exploration of the assessment formats used to evaluate the domains of clinical competence in health care professional training at both the undergraduate and postgraduate levels; analysis of written and oral examinations, oral and performance-based testing.

**EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE** (3cr.)
Exploration of principles of effective program evaluation methods; planning; instrument development; data collection, processing and analysis; reporting and follow-up; survey of diverse models of evaluation.

**EDU5463 CULTURAL STUDIES AND EDUCATION: THEORY AND PRACTICE** (3cr.)
Introduction to the interdisciplinary study of contemporary popular culture including theories of representation, texts, social identities, and their implications for school practices.

**EDU5466 RACISM AND ANTIRACISM IN EDUCATION** (3cr.)
Theories of "race", racism and antiracism in education; exploration of the challenges of anti-racist education and change.

**EDU5600 L'APPRENTISSAGE À L'ÂGE ADULTE** (3cr.)
Examen des théories de l'apprentissage appliquées à l'éducation de l'apprenant adulte. Analyse critique des modèles de mises en pratique de ces théories en situation d'apprentissage.

**EDU5602 STRATÉGIES D'ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ** (3cr.)
Études des concepts, des stratégies et des enjeux de la formation des professionnels de la santé. Examen de la manière dont les pratiques d'enseignement favorisent l'apprentissage des étudiants.

**EDU5660 THÉORIE ET PRATIQUE DES PROGRAMMES D'ÉTUDES** (3cr.)
Étude des théories des programmes d'études explicites et implicites. Analyse des étapes de la mise en œuvre.

**EDU5661 CONCEPTION DE PROGRAMMES EN ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ** (3cr.)
Étude des fondements et des pratiques en matière de conception de programmes d'études pour les professionnels de la santé.

**EDU5686 TECHNOLOGIE EN ENSEIGNEMENT PROFESSIONNEL DANS LE DOMAINE DE LA SANTÉ** (3cr.)
Étude de l'impact de la technologie de l'information sur la communication et des stratégies d'enseignement dans la formation des professionnels de la santé. Exploration de l'apprentissage à distance, de l'apprentissage en ligne ainsi que des simulations à basse et haute-fidélité.

**EDU5687 MODÈLES D'INTÉGRATION DES TECHNOLOGIES DE L'INFORMATION ET DE LA COMMUNICATION EN CONTEXTES ÉDUCATIFS** (3cr.)
Examen des mécanismes d'exploitation des technologies de l'information et de la communication (TIC) et de leurs liens avec les théories d'apprentissage. Analyse des pratiques exemplaires et des modèles émergents.

**EDU5698 STRATÉGIES D'ÉVALUATION DES APPRENTISSAGES DANS LE DOMAINE DE LA SANTÉ** (3cr.)
Étude des modèles utilisés pour évaluer les domaines de compétence clinique au cours de la formation des professionnels de la santé, tant au niveau des études de premier cycle que des études supérieures. Analyse des examens écrits et oraux et d'épreuves portant sur l'accomplissement de tâches.

**EDU5699 ÉVALUATION DE PROGRAMMES** (3cr.)

**EDU5752 ENSEIGNEMENT EN MILIEU MINORITAIRE FRANCOPHONE** (3cr.)
Examen des enjeux liés à l'apprentissage et l'enseignement en milieu minoritaire francophone, permettant de préciser les démarches éducatives pertinentes.

**EDU5833 ÉDUCATION ET CHANGEMENT SOCIAL** (3cr.)
Étude de l'impact des changements sociaux, technologiques, économiques, législatifs et médiatiques sur l'éducation. Redéfinition des liens entre l'école et la
EDU6193 FOUNDATIONS OF MEASUREMENT AND EVALUATION IN EDUCATION (3cr.)
Standardization and normalization of test scores; item types for specific kinds of tests; classical test theory; composite variables; reliability; validity; applications to norm-referenced and criterion-referenced tests.

EDU6200 THE ADULT EDUCATOR: ROLES AND BEHAVIOUR (3cr.)
Study of functions and tasks, and the various roles of adult educators as volunteers, as trainers, as teachers of adults, as researchers; examination of the pre-service and on-going training of adult educators and professionalization in adult education.

EDU6204 LEARNING IN ADULTHOOD (3cr.)
Examination of theories and stages of adulthood with emphasis on adult psychological development and implications for education. Critical study of adult characteristics, motivation, gender roles and other concepts related to development.

EDU6293 FORMATIVE EVALUATION OF LEARNING (3cr.)
An examination of the nature and role of formative evaluation in instructional settings; design of formative assessment instruments.

EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES (3cr.)
Critical exploration of theoretical orientations to program evaluation and in-depth examination of selected contemporary issues confronting evaluators. Prerequisite: EDU 5299 or PSY 7103 or PSY 7503 or CRM 6359 or CRM 6759 (Certificate in Program Evaluation).

EDU6593 FONDEMENTS DE LA MESURE ET DE L'ÉVALUATION EN ÉDUCATION (3cr.)
Études des procédures de transformation des scores. Analyse de la nature des tests et différentes catégories d'items. Examen de la théorie classique des tests : fiabilité et validité. Étude de scores composites. Applications des notions précédentes dans le contexte d'une évaluation normative et d'une évaluation centrée sur un critère.

EDU6600 FORMATEURS D'ADULTES ET CONTEXTES DE FORMATION (3cr.)

EDU6693 ÉVALUATION FORMATIVE DES APPRENTISSAGES SCOLAIRES (3cr.)
Place de l'évaluation formative dans le cycle d'évaluation et d'enseignement. Nature et rôle de l'évaluation formative des apprentissages scolaires. Instrumentation.

EDU6699 ÉVALUATION DE PROGRAMMES : THÉORIE ET PROBLÈMES ACTUELS (3cr.)
Analyse critique des aspects théoriques et techniques des différentes approches en évaluation de programmes. Préalable : EDU 5699 ou PSY 7103 ou PSY 7503 ou CRM 6359 ou CRM 6759 (Certificat en Évaluation de programmes).

Health Services and Policy Research (Graduate Diploma)

The Graduate Diploma in Health Services and Policy Research is offered through the Ontario Training Centre (OTC), which is a consortium of six Ontario Universities (Lakehead, Laurentian, McMaster, Ottawa, Toronto and York). The diploma permits students to be sufficiently competent to carry out independent policy-relevant health services research. Although they may have acquired some of these competencies within their primary degree program, the Diploma will permit them to tailor their education to ensure that they have the relevant and sufficient competencies needed to engage in high quality research in this field. Diploma recipients will have the knowledge and skills to contribute to improved accessibility, quality, effectiveness, and efficiency of health services for Ontarians and all Canadians. They will work as effective partners with policy-makers to ensure that newly created information is shared with relevant decision-makers and is used to help create a healthier, more productive population.

Participating Units

The eight programs at the University of Ottawa that will be home to the diploma are: Master of Health Administration (MHA), MSc in Health Systems, MSc in Epidemiology, MSc in Nursing, PhD in Nursing, PhD in Population Health, PhD in Political Science and PhD in Public Administration.

Admission

Students who apply for the Diploma will already be in one of the parent programs. To receive the Diploma in Health Services and Policy Research, the student is required to fulfill all the parent program requirements as well as those of the Diploma. Both credentials will be awarded simultaneously upon successful completion.
Students who are interested in applying for the Diploma will be required to demonstrate the following:

1. academic excellence as evidenced by grades on completed graduate courses, scholarships and academic awards received, or stipend support from funding agencies;
2. aptitude for health services research (letter of recommendation from a graduate faculty member, usually the thesis supervisor in a thesis-based graduate program, commenting on the student’s academic abilities, oral and written communication skills, and potential for success as a health services researcher);
3. career plans (autobiographical letter describing why they want to become a health services researcher and their career plans); and
4. plan of study in the Diploma Program.

Application Deadline

The deadline to apply is March 31. To obtain the application form please communicate with the Academic Assistant.

Language Requirements

The University of Ottawa is a bilingual institution. The MSc (Nursing) program offers courses in both English and French, and the mode of delivery for each is either face-to-face or distance education. Laurentian University, one of the participating universities, also offers many programs and courses in English and French. Both the University of Ottawa and Laurentian University will collaborate to offer diploma courses in French as well as English. However, the Diploma program is offered mainly in English. A very good knowledge of English is therefore required. According to university regulations, students can write their papers and exams in the official language of their choice (either English or French).

Program Requirements

In addition to the requirements in each of the eight participating program, students must successfully complete 9 or 12 credits of course work as follows:

**STUDENTS REGISTERED IN A THESIS-STREAM PROGRAM (9 cr.):**

**Compulsory courses (6 cr.):**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>HSR6920</td>
<td>STAGE EN POLITIQUES / POLICY PRACTICUM</td>
<td>3 cr.</td>
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<tr>
<td>HSR6930</td>
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**Electives (3 cr.):**

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<td>SEMINAR IN HEALTH SERVICES AND POLICY RESEARCH</td>
<td>3 cr.</td>
</tr>
<tr>
<td>HSR6120</td>
<td>KNOWLEDGE TRANSFER FOR HEALTH SERVICES AND POLICY RESEARCH</td>
<td>3 cr.</td>
</tr>
<tr>
<td>HSR6130</td>
<td>CANADIAN HEALTH CARE SYSTEM: ORGANIZATION AND POLICY</td>
<td>3 cr.</td>
</tr>
<tr>
<td>HSR6140</td>
<td>WOMEN'S HEALTH RESEARCH, POLICY AND SERVICES</td>
<td>3 cr.</td>
</tr>
<tr>
<td>EPI7184</td>
<td>HEALTH POLICY</td>
<td>3 cr.</td>
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</table>

A course offered by the OTC consortium

**STUDENTS REGISTERED IN A NON-THESIS PROGRAM (12 cr.):**

**Compulsory courses (9 cr.):**

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<td>3 cr.</td>
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<tr>
<td>HSR6940</td>
<td>STAGE EN RECHERCHE / RESEARCH PRACTICUM</td>
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A Course offered by the OTC consortium
HSR 6940 is compulsory only for students in a non-thesis program.

Depending on the parent program of the student, the sequencing of the required activities will vary. For students not following the thesis option, a mentor will be assigned to work with them throughout the diploma program. For thesis students, their supervisors will be their mentors.

Courses

HSR6110 SEMINAR IN HEALTH SERVICES AND POLICY RESEARCH (3 cr.)
Discussion on the varying perspectives of epidemiology, nursing, health care management and population health and their relevance for the development of effective health services and policy research. Graded S(satisfactory)/NS (not satisfactory).

HSR6120 KNOWLEDGE TRANSFER FOR HEALTH SERVICES AND POLICY RESEARCH (3 cr.)
Critical appraisal of clinical practice guidelines, systematic reviews and published research for analysis of the evidence supporting the transfer of knowledge in a health care facility, professional organization, or an academic institution. Design of innovative transfer strategies (e.g. consumer, practitioner, multi-dimensional organizational supports). Methodological issues related to knowledge transfer including conceptualization, design and evaluation. Practical issues articulated by invited guests from national, provincial and regional health care organizations. Student opportunity to select a topic of their choice and develop a pragmatic intervention. Prerequisites: Completion of a graduate research design course or permission of the program director.

HSR6130 CANADIAN HEALTH CARE SYSTEM: ORGANIZATION AND POLICY (3 cr.)
Evolution of the Canadian health care sector, overview of its organization, governance structures, financing and delivery of services. Examination of systems in other industrialized countries with a view to drawing lessons relevant to Canada, and of policy-making processes and outcomes in health care. Discussion on specific thematic issues such as rural health, equity and access, population health and health care reform in the context of policy, organization and delivery.

HSR6140 WOMEN'S HEALTH RESEARCH, POLICY AND SERVICES (3 cr.)
Overview of approaches and issues in women’s health research, policy and services in Canada. Contributions of the women’s health movement in Canada and internationally. Critical analysis of policy and service responses to women’s health, including impact of citizen engagement, empowerment and equity.

HSR6920 STAGE EN POLITIQUES / POLICY PRACTICUM (3 cr.)
L'étudiant devra passer au moins 200 heures dans un contexte d'élaboration de politiques et de prise de décisions où il travaillera en collaboration avec les responsables et les parties intéressées dans le domaine des soins de santé. Le but est de permettre à l'étudiant de mieux comprendre ce milieu, d'y trouver sa place et d'apprendre des techniques de communication efficaces. Les membres et les décideurs du Centre ontarien de formation évalueront les étudiants d'après l'échelle S(satisfaisant)/NS(non satisfaisant). The Diploma student must spend at least 200 hours in a policy/decision-making environment working with stakeholders in the health care system to better understand that environment, how to relate to it, and how to communicate effectively with other stakeholders in the health care system. Ontario Training Center faculty and decision makers will evaluate students on a "satisfactory/not satisfactory" basis.

HSR6930 INSTITUT D'ÉTÉ / SUMMER INSTITUTE (3 cr.)
Formation intensive comprenant soit deux sessions d'une semaine chacune, soit une session de quinze jours dans l'une des six universités qui participent au Centre ontarien de formation. Les étudiants devront avoir une préparation préalable et faire des travaux complémentaires sous la direction de leur conseiller facultaire. Échanges avec les étudiants issus de toutes les universités participantes; réflexion et discussion sur les points importants relatifs à la recherche en matière de services de santé avec des professeurs et des décideurs éminents. Noté: S/NS par un professeur membre du programme. Intensive learning for a period of two weeks (either separately or consecutively) held at one of the six universities participating in the Ontario Training Centre. Students will be required to do prior preparation and follow-up work under the guidance of their faculty mentor. Institutes will bring diploma students together from all participating universities to reflect and discuss important issues in health services research with distinguished faculty and policy makers. Graded S/NS by a participating faculty member.

HSR6940 STAGE EN RECHERCHE / RESEARCH PRACTICUM (3 cr.)
Stage d'au moins 200 heures au sein d'une équipe de recherche sous l'égide du Centre ontarien de formation dans le domaine des services de santé afin de développer les aptitudes à mener un projet de recherche, comme le choix d'un plan, d'une stratégie d'échantillonnage et de vérification; la gestion et l'analyse de données; la présentation et la discussion des résultats avec les parties intéressées. Noté S/NS par un professeur membre du Centre ontarien de formation / Placement for at least 200 hours within a health services research team to home skills in the development of a research project including selection of design, sampling strategy and measurement; ongoing data management and analysis; and presentation and discussion of results with stakeholders. Graded S/NS by a faculty member of the Ontario Training Centre.

Information Studies (Graduate Certificate)

The School of Information Studies, located in the Faculty of Arts, offers a graduate program leading to the degree of Master of Information Studies (MIS) and to a graduate certificate in Information Studies.
Programs will be offered partly in English, partly in French. Approximately two thirds of the courses will be taught in English and one third in French. In accordance with University of Ottawa policy, students have a right to produce their written work and to answer examination questions in French or in English.

The programs, offered on a full-time and part-time basis, operate within the framework of the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) of the University of Ottawa, which are posted on the FGPS website.

**Admission**

Admission to the graduate programs in Information Studies is governed by the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS). Applicants to the graduate certificate program must have a master’s degree and a minimum cumulative average of 70% calculated in accordance with FGPS guidelines.

All applicants must be able to understand speak and write proficiently either English or French and have a passive knowledge (ability to understand the spoken and written word) of the other language. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS.

Applications are evaluated based on the following criteria:

1. academic performance in previous studies as shown by official transcripts from each post-secondary institution attended;
2. an example of a written text demonstrating writing ability (at least 800 to 1000 words) in English or French;
3. proof of second language abilities in either English or French
4. an up-to-date curriculum vitae providing evidence of relevant employment experience, leadership potential, and computer literacy.
5. the names and contact information for two people prepared to provide recommendations. One of the referees must be capable of evaluating the writing sample; the other should confirm employment experience.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master’s**

Students registered in the graduate certificate program can request to transfer to Master of Information Studies (MIS) in accordance with section A.7.1 of the “General regulations” of the FGPS.

**Program Requirements**

**Certificate Requirements**

The Graduate Certificate program requires completion of five ISI courses (15 credits), generally chosen from 6000-level courses. Up to six credits of relevant courses from other graduate programs at the University of Ottawa may be taken with the approval of the School of Information Studies Programs Committee and the other program concerned. Students are responsible for having completed the prerequisites for the selected courses. No equivalencies are granted.

**Duration of the program**

Students in the Graduate Certificate in Information Studies must meet all the certificate requirements within three years of initial registration in the program.

**Minimum standards**

The minimum passing grade in all courses taken as part of the Information Studies programs is 65% (C). Students who incur failures in two courses (equivalent to six credits) must withdraw from the program.

**Courses**

Tous les cours ne sont pas nécessairement offerts chaque année. / Not all of the listed courses are given each year.

Les cours sont offerts dans la langue dans laquelle ils sont décrits. / The course description appears in the language of instruction.
ISI5101 RESEARCH APPLICATIONS IN INFORMATION STUDIES (3cr.)
Quantitative and qualitative research and descriptive and inferential statistics for the investigation of both practical and theoretical problems in the information professions. Critical assessment of published research, including its data gathering and data analysis procedures.

ISI5102 ORGANIZATION OF INFORMATION (3cr.)
Principles and techniques for the organization and representation of information in multiple formats and across varied organizational environments are illustrated through the study of classification and indexing structures, subject representation with controlled vocabularies, bibliographic description, metadata, and taxonomies.

ISI5103 MANAGEMENT FOUNDATIONS FOR THE INFORMATION PROFESSIONAL (3cr.)
This survey of the role of effective administration in the provision of information services provides an introduction to selected theories, principles, administrative techniques, and issues in the management of information organizations including archives, libraries and information centres.

ISI5104 HUMAN ASPECTS OF INFORMATION SYSTEMS (3cr.)
The human aspects of systems and technology in contexts such as education, health, business and everyday life are introduced from the perspectives of the social, organizational, cognitive, behavioural and contextual aspects of information, the critical analysis of experimental and interview methodologies, concepts, models and frameworks relevant to studying human-information interaction, and the evaluation and design of information systems.

ISI5105 SOCIAL CONTEXT OF INFORMATION (3cr.)
Sociological, political and economic dimensions of an information-oriented society. Historical development of information studies, knowledge production and distribution, issues of information control (freedom of information, intellectual property and intellectual freedom) and the ethical and legal aspects of information services.

ISI5106 PHILOSOPHY AND PRACTICE IN THE INFORMATION PROFESSIONS (3cr.)
Overview of the library, information and archival professions and their associated intellectual, socio-political and economic challenges. Instructional project modules direct students toward their intended participation in the CO-OP program, thesis or course-based information studies specializations.

ISI5110 HISTORY OF INFORMATION (3cr.)
History and continuing evolution of published and unpublished information are explored in personal and public communication and government and corporate operations.

ISI5111 PRESERVATION AND CONSERVATION OF MATERIALS (3cr.)
Principles, methods and ethics of restoration; archival and rare book conservation practices; preservation microfilming and digitization; organization and administration of national and international efforts; emergency and disaster planning covering both restoration of the artefact and preservation of content. (Prerequisite: ISI5102)

ISI5112 ARCHIVES AND RECORDS APPRAISAL (3cr.)
Concrete examples of document appraisal strategy and methodology in Canada and internationally, considering personal and private as well as government, institutional and electronic records. Theoretical foundations of appraisal and the controversial responsibility of assigning cultural value to some documentary artefacts and not others within the broader contexts of history and the utility of such efforts. (Prerequisite: ISI5102)

ISI5113 ARCHIVES: ACCESS, ADVOCACY AND OUTREACH (3cr.)
Examination of the information requirements and behaviours of major user groups such as historians, genealogists, administrators, media specialists and students in an archival context. Principles, design, and implementation of archival access and outreach services, including remote and on-site access services that meet the needs of various groups through user education, public programming, advocacy and outreach are addressed. (Prerequisite: ISI5104)

ISI5120 CATALOGUES, CATALOGUING AND CLASSIFICATION (3cr.)
Presentation of library catalogues as information retrieval systems. Introduction of the principles and standards employed in the creation of catalogues and cataloguing records emphasizing a user perspective. Practice in descriptive and subject cataloguing and classification. (Prerequisite: ISI5102)

ISI5121 SUBJECT ANALYSIS OF INFORMATION (3cr.)
From the perspective of subject analysis and retrieval, knowledge organization using controlled vocabularies and natural language (thesauri, hypertext, expert systems) and with an emphasis on automated systems including the internet. Theories and principles, design, application and evaluation of various methods for accessing documents and information. (Prerequisite: ISI5102)

ISI5123 INFORMATION SYSTEMS PROCUREMENT (3cr.)
Study of the design, selection, negotiated acquisition, implementation and operation of automated integrated systems for information organizations. Project planning principles and documentation. Focus on present and future applications of technology, service and administrative implications. (Prerequisites: ISI5103 and ISI5104)

ISI5141 INFORMATION BEHAVIOURS AND RETRIEVAL (3cr.)
The relationships between search tools and information retrieval strategies and human behaviour. Analysis of documents and the process of leading users with
specific information objectives to satisfy their particular requirements. (Prerequisite: ISI5102)

ISI5160 ETHICS, VALUES AND INFORMATION DILEMMAS (3cr.)
Major ethical concerns currently confronting our information society. Application of moral and ethical values involved in information and technology-related incidents faced by today’s information professionals and agencies.

ISI5161 INFORMATION AND THE LAW (3cr.)
Information policy issues within a Canadian legal framework relevant to library, archives and information professionals: including the regulation, ownership and access of information, information collection and utilization practices that affect the privacy of individuals (surveillance, biometric identification, data mining, unauthorized entry and use of computer systems), negligence, malpractice and human rights. (Prerequisite: ISI5105)

ISI5162 GLOBAL INFORMATION AND COMMUNICATIONS POLICY (3cr.)
Examination of the trends, issues and policies affecting the development of information agencies in such dimensions as access to information and trans-border data flow, to understand the choices and values embedded in the design and use of information, its technologies, and its communication in various cultural contexts. Implications for policy networks, professional associations, international organizations and multinational enterprises. (Prerequisite: ISI5105)

ISI5163 POLITICAL ECONOMY OF INFORMATION (3cr.)
Political interests and financial issues related to determining priorities, allocating scarce resources and monitoring expenditures in the context of budgetary practices. Consideration of concepts such as human capital, investment, entrepreneurship, efficiency, profit and equity, and the economic value of information. (Prerequisites: ISI5103 and ISI5105).

ISI5164 INFORMATION POLICY AND GOVERNMENT PUBLICATIONS (3cr.)
Bibliographic control and the use of government publications and their organization, with an emphasis on on-line government information, are examined in the context of publishing and distribution policies and practices at the federal, provincial and municipal levels in Canada and the United States. Comparisons with foreign and intergovernmental sources of information. (Prerequisite: ISI5105)

ISI5501 APPLICATIONS DE RECHERCHE EN SCIENCES DE L’INFORMATION (3cr.)
Recherches qualitatives et quantitatives et statistiques descriptives et inférentielles nécessaires à l’étude des problèmes théoriques et pratiques inhérents aux professions de l’information. Évaluation critique des études publiées, y compris des méthodes utilisées pour la collecte et l’analyse des données.

ISI5502 ORGANISATION DE L’INFORMATION (3cr.)
Les principes et techniques d’organisation et de représentation de l’information, sous diverses formes et dans divers environnements de travail, sont illustrés par l’étude des structures d’indexation et de classification, de la représentation des sujets et matières à l’aide de vocabulaires contrôlés, de la description bibliographique, des méta données et des taxonomies.

ISI5503 INTRODUCTION À LA GESTION POUR LES SPÉCIALISTES DE L’INFORMATION (3cr.)
L’étude du rôle d’une gestion efficace des services d’information sert d’introduction aux théories, principes, techniques administratives et défis touchant la gestion des organismes d’information, y compris les archives, bibliothèques et centres d’information.

ISI5504 DIMENSIONS HUMAINES DES SYSTÈMES D’INFORMATION (3cr.)

ISI5505 CONTEXTE SOCIAL DE L’INFORMATION (3cr.)
Dimensions sociologique, politique et économique d’une société axée sur l’information. Évolution historique des sciences de l’information, production et diffusion du savoir, questions afférentes au contrôle de l’information (l’accès à l’information, la propriété intellectuelle et la liberté de pensée), et aspects éthiques et juridiques de la prestation de services d’information.

ISI5506 PHILOSOPHIE ET PRATIQUE DANS LES PROFESSIONS DE L’INFORMATION (3cr.)
Survol des diverses professions offertes en bibliothéconomie, en archivistique et en sciences de l’information, ainsi que des défis intellectuels, sociopolitiques et économiques qui y sont associés. Des modules de projet de formation orientent les étudiants vers le programme coopératif ou vers la spécialisation en sciences de l’information, avec ou sans thèse, au choix.

ISI5510 HISTOIRE DE L’INFORMATION (3cr.)
L’histoire et l’évolution de l’information, sous forme publiée ou autre, sont examinées dans les communications personnelles et publiques, ainsi que dans les activités des gouvernements et des entreprises.

ISI5511 PRÉSERVATION ET CONSERVATION DES DOCUMENTS (3cr.)
Principes, méthodes et éthique de la restauration; pratiques de conservation des livres rares et des archives; préservation des microfilms et des documents numérisés; organisation et gestion d’initiatives nationales et internationales; dispositions relatives à la préservation et à la restauration des documents et des objets d’archives qui doivent faire partie d’une planification de mesures d’urgence. (Prévalable: ISI5502)
A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted

development and verification of software. Common methodologies in the fields of specification, software development, and validation. Iterative programs: the method of

for the Internet to the rights of free speech and privacy. Topics include online obscenity, hate speech, defamation, anonymerity, intrusion detection, firewalls, defending network attacks and performance in communication networks.

The minimum admission requirement is an honours four-year Bachelor's degree in one of the following:

- the design and implementation of the systems. It also deals with the representation of contents and questions of normalisation and security, the protection of

of material, intellectual property issues, search and retrieval systems, content management systems and functional compatibility, the course also considers

of material, intellectual property issues, search and retrieval systems, content management systems and functional compatibility, the course also considers

of the thesis should be an original contribution. For additional information, please consult section G of the General Regulations of the

The principles and practice of leadership, governance and change as applied to information agencies are introduced.

Theories and pragmatics of intercultural communication as applicable to various forms of communication (verbal and nonverbal) between and among individuals

Exempts candidates from taking the course. Candidates who have already successfully completed some of the

Deadline.

To find the application deadline, please check the "program-specific requirements" under "Application Procedures ... examinations and assignments may be written in either one of the two official languages (English or French).

Supervised specialized study of subjects not included or covered to the

Current research issues.

The
Electrical Engineering, Computer Applications should be addressed to the Director, Graduate Certificate in Modelling and Animation for Computer Games Technology, School of engineering, software engineering, or computer science, with a minimum average of 75% (B+). The admissions committee may, however, also take into consideration relevant knowledge and/or experience. In some cases, candidates may be required to complete a certain number of assignments, examinations, research papers and theses in either English or French.

CS1530 Postdoctoral Studies and have demonstrated relevant knowledge and/or experience. In some cases, candidates may be required to complete a certain number of assignments, examinations, research papers and theses in either English or French.

ELG7186C TOPICS IN COMPUTERS I: SOFTWARE ENGINEERING PROJECT MANAGEMENT
Préalables: CSI 4528 et CSI 3540, ou l'équivalent, ou acceptation dans l'un des programmes de maîtrise en technologies des affaires électroniques et des télécommunications.

ELG5372 (EACJ 5504) ERROR CONTROL CODING
Covering all features of digital collection management and development, including definitions, digital object formats and standards, metadata, trends, evaluation and management.

ECI6101 STAGE COOP / CO-OP WORK TERM (6cr.)
Experience en milieu de travail comprenant une application pratique de recherche. Le stage est évalué Réussite / Echec (P/F) par un professeur de l'Ecole des sciences de l'information basé sur l'évaluation fournie par le superviseur de la partie pratique du stage et sur le rapport de stage rédigé par l'étudiant. (Préalable : 5506 et permission de l’École des sciences de l’information et du bureau du programme coop.) Experience in a workplace setting including practical application of research. Graded P (pass) / (F) fail by a professor from the School of Information Studies based on the work performance evaluation provided by the workplace supervisor and the student’s work term written report. ( Prerequisite: 5106 and permission of the School of Information Studies and the CO-OP office.)

ECI6102 STAGE COOP / CO-OP WORK TERM (6cr.)
Experience en milieu de travail comprenant une application pratique de recherche. Le stage est évalué Réussite / Echec (P/F) par un professeur de l'Ecole des sciences de l'information basé sur l'évaluation fournie par le superviseur de la partie pratique du stage et sur le rapport de stage rédigé par l'étudiant. (Préalable : 6001 et permission de l’École des sciences de l’information et du bureau du programme coop.) Experience in a workplace setting including practical application of research. Graded P (pass) / (F) fail by a professor from the School of Information Studies based on the work performance evaluation provided by the workplace supervisor and the student’s work term written report. ( Prerequisite: 6001 and permission of the School of Information Studies and the CO-OP office.)

ECI6100 SPECIAL TOPICS IN ARCHIVES, LIBRARY OR INFORMATION STUDIES (3cr.)
Particular subjects in library, archives or information studies not included or covered to the same extent in other Information Studies courses. May be repeated with distinct topics.

ECI6120 DESCRIPTIVE BIBLIOGRAPHY (3cr.)
Considering the evolution of papermaking, printing and binding prior to the twentieth century, this course covers the principles and practices associated with detailed bibliographic description. ( Prerequisite: ISI102)

ECI6121 RECORDS MANAGEMENT (3cr.)
Providing a comprehensive appreciation for the complex responsibilities associated with managing information resources in organizations, establishing information inventories, evaluating information policies, analyzing information flow and determining information life-cycles are considered in the context of a multiplicity of media formats and a variety of available records storage, retrieval and management technologies. ( Prerequisite: ISI5102)

ECI6122 ELECTRONIC RECORDS MANAGEMENT (3cr.)
Examining how new information technologies challenge established definitions, identification, control, management and preservation of electronic records, this survey of the concepts, practices and tools employed in organizing electronic records also considers the various organizational, technological, regulatory and cultural factors that influence long-term preservation strategies and continuing access to electronic records. ( Prerequisites: ISI5104 and ISI6121)

ECI6123 METADATA AND TAXonomies (3cr.)
An analysis of semantic and syntactic frameworks from administrative, structural, descriptive and information preservation perspectives, exploring the various types of metadata applications in such diverse areas as government and legal information, medicine, and socio-cultural institutions. The evolution of international metadata standards and the application of metadata systems to the development of taxonomies and content management. ( Prerequisite: ISI5102)

ECI6124 ADVANCED Cataloguing and Classification (3cr.)
Analysis of cataloguing theory focusing on catalogue code design, issues associated with the use of AACR2 standards, catalogue structure and on-line bibliographic control, and the utility and limitations of bibliographic databases and network sources. Provides advanced cataloguing knowledge and skills through extensive practice in the preparation of complex bibliographic records for print, non-print and electronic media. ( Prerequisites: ISI5102 and ISI5120)

ECI6125 MANAGING INFORMATION NETWORKS (3cr.)
Analyzing current and emerging telecommunication capabilities and their relationship to information transfer in the context of evolving societal expectations and continuing technological developments, this presentation of the principles and techniques applicable to the management of operations as diverse as local intranet and international internet systems also includes a comprehensive assessment of the technical, regulatory and organizational issues associated with managing voice, data and media telecommunications. ( Prerequisite: ISI5104)

ECI6126 INFORMATION RETRIEVAL SYSTEMS AND ARCHITECTURE (3cr.)
Examining the nature of information systems in their organizational contexts, this course includes an assessment of evolving systems technology, systems specifications, the interaction between system components and managerial issues, systems development, modelling, systems analysis and evaluation of performance. ( Prerequisites: ISI5102, ISI6123 and ISI6124)

ECI6127 ADVANCED WEB MANAGEMENT AND DESIGN (3cr.)
Considering planning, technical, production and management issues involved in the operations of major World Wide Web sites, this course provides an information architecture approach to the project management of complex web developments. With an emphasis on information organization and design, hardware innovations, and state-of-the-art software tools, the focus is on websites as sources of information and on the function of Web developers as managers of information resources. ( Prerequisites: ISI5102 and ISI5104)

ECI6128 DATABASE MANAGEMENT AND DESIGN (3cr.)
Focusing on the theoretical and practical aspects of relational database design, this course covers development from conception to implementation with an emphasis on the representation of content and issues of standardization and security, and considering data modelling, including the entity-relationship data model,
data normalization and structured query language. (Prerequisites: ISI5102 and ISI5104)

ISI6129 SOCIAL MEDIA AND GAMES IN AN INFORMATION CONTEXT (3cr.)
The popularity of computer games, virtual worlds and social networking is changing the way we learn, communicate and produce information. Students will explore these emerging technologies, analyzing implications and creating applications for innovative information services and programs. (Prerequisites: ISI5104 and ISI5105)

ISI6130 THE PUBLISHING BUSINESS: PAST, PRESENT AND FUTURE (3cr.)
Examining the historical and evolving nature of the book trade and publishing business, the industry is considered from the perspectives of its cultural contribution and profit generation. Subjects covered include the evolution of privately owned enterprises into publicly-traded and multinational corporations, the impact of new technologies, the growth of global markets, and the corporate health of Canadian publishing and its international relationships.

ISI6131 MANAGING DIGITAL COLLECTIONS (3cr.)
Covering all features of digital collection management and development, including definitions, digital object formats and standards, metadata, trends, evaluation of material, intellectual property issues, search and retrieval systems, content management systems and functional compatibility, the course also considers digitization/conversion project management, including proposal development, planning and evaluation. (Prerequisite: ISI5102)

ISI6132 EVALUATION OF INFORMATION PROGRAMS AND SERVICES (3cr.)
Employing a managerial framework, this course introduces the concepts, procedures and standards of professional practice involved in program evaluation. It critiques selected evaluation strategies and their applicability to operations in information organizations, using models from management and information science theory.

ISI6133 CRITICAL APPROACHES TO INFORMATION SOURCES (3cr.)
Analyzing the information mediation process, which involves determining information needs, searching for, and evaluating and presenting selected results, this course assesses the modalities of service delivery, examining associated concepts, processes, and information retrieval skills, as well as the creation, production, distribution, selection, and collection of information, and the provision of services to facilitate information access. (Prerequisite: ISI5102)

ISI6140 ORGANIZATIONAL ECOLOGY OF INFORMATION AGENCIES (3cr.)
The principles and practice of leadership, governance and change as applied to information agencies are introduced. Organizational structures, planning processes, decision-making models, and cultural characteristics of effective organizations are also covered. (Prerequisites: ISI5103 and ISI5105)

ISI6141 ENTREPRENEURIAL ASPECTS OF INFORMATION MANAGEMENT (3cr.)
Preparing for the challenges involved in starting a business or consulting in the information industry, development of a business plan that could direct a new commercial enterprise or service and encourage investors to provide the required venture capital. (Prerequisite: ISI5103)

ISI6142 MARKETING AND ADVOCACY FOR INFORMATION ORGANIZATIONS (3cr.)
Exploring market research, user studies, costing, development, pricing, promotion, and delivery in the profit and non-profit sectors, this course on marketing information products and services, and on their providers, focuses on the role of the information professional in meeting client expectations. (Prerequisites: ISI5103, ISI5105 and ISI5163)

ISI6143 BUDGETING AND FINANCIAL MANAGEMENT (3cr.)
Considering the principles and practice of advanced financial management in information organizations, this course includes budget forecasting, cost-benefit analysis, fiscal control of operating and capital budgets, investment and endowment planning, and strategies for managing cut-backs and expansion. (Prerequisite: ISI5103)

ISI6144 HUMAN RESOURCE MANAGEMENT (3cr.)
Examining human relations in the employment of personnel in information organizations, this course addresses recruitment, position description, evaluation and classification, performance assessment, salaries and benefits, motivation, collective bargaining, supervision, professional development, team building, discipline, termination, leadership and organizational change. (Prerequisite: ISI5104)

ISI6145 LEARNING AND KNOWLEDGE TRANSFER (3cr.)
Employing a variety of learning theory perspectives, models and promotional strategies for information literacy and bibliographic instruction programs are critiqued. (Prerequisite: ISI5103 and ISI5105)

ISI6146 FACILITY MANAGEMENT (3cr.)
The management of the physical infrastructure and allied resources supporting information organizations is analyzed from the perspectives of building development and renovation project planning, form vs. function considerations, on-going and deferred maintenance, capital improvement expenditures, health and safety issues, access for the physically challenged, public consultation requirements, and the employment of architectural, engineering and consultant expertise. (Prerequisite: ISI5103)

ISI6147 INFORMATION PARTNERSHIPS AND CONSORTIA (3cr.)
The development of partnerships, cooperative efforts and consortia in public, private and joint venture initiatives to expand access to information content, new technologies and specialized services are presented from a management perspective highlighting goals, governance, deliverables, financial advantages and operational considerations. (Prerequisite: ISI5103)
ISI6148 COLLECTION MANAGEMENT (3cr.)
Considering traditional and emerging electronic formats, this survey of collection development theories and methodologies presents issues associated with evaluation, acquisition policies, budget allocation, and vendor, donor and user relations. (Prerequisite: ISI5102)

ISI6500 THÈMES CHOISIS EN ARCHIVISTIQUE, EN BIBLIOTHÉCÉNOLOGIE OU EN SCIENCES DE L’INFORMATION (3cr.)
Ce cours porte sur des sujets particuliers en bibliothéconomie, en archivistique ou en sciences de l’information n’ayant pas été traités, ou l’ayant été de façon sommaire, dans les autres cours du programme. Peut être répété si les sujets diffèrent.

ISI6520 BIBLIOPHANIE ANALYTIQUE (3cr.)
En faisant un survol de l’évolution de la fabrication du papier, de l’impression et de la reliure au cours des siècles passés, ce cours traite des pratiques et des principes associés à une description bibliographique détaillée. (Préalable : ISI5502)

ISI6521 GESTION DES DOCUMENTS (3cr.)
Ce cours vise à fournir un aperçu global des responsabilités complexes associées à la gestion des ressources documentaires d’information dans les organismes, à examiner l’élaboration des inventaires d’information et l’évaluation des politiques d’information, et à analyser le mouvement de l’information et l’établissement de ses cycles de vie dans un contexte où on retrouve une multiplicité de formes médiatiques et de technologies de gestion, de récupération et de stockage des données. (Préalable : ISI5502)

ISI6522 GESTION DES DOCUMENTS ÉLECTRONIQUES (3cr.)
Regard sur la façon dont les nouvelles technologies de l’information bousculent les définitions, l’identification, le contrôle, la gestion et la préservation des données informatiques. Ce survol des concepts, des pratiques et des outils utilisés pour l’organisation des documents électroniques s’attarde également à l’étude des facteurs organisationnels, technologiques, réglementaires et culturels qui affectent les stratégies de conservation à long terme et l’accès sur une base continue. (Préalables : ISI5504 et ISI6521)

ISI6523 MÉTADONNÉES ET TAXONOMIES (3cr.)
Analyse des cadres sémantiques et syntaxiques à partir des perspectives de l’administration, de la structure, de la description et de la préservation de l’information. Exploration des diverses applications des métadonnées et leur utilisation dans des domaines aussi variés que l’information gouvernementale et juridique, la médecine et les établissements socioculturels. Évolution des normes internationales sur les métadonnées et utilisation de systèmes de métadonnées pour élaborer des taxonomies et gérer des contenus. (Préalable : ISI5502)

ISI6524 CATALOGAGE AVANCÉ ET CLASSIFICATION (3cr.)
Analyse des théories du catalogage mettant l’accent sur la conception de règles catalographiques, sur les questions associées à l’utilisation des normes AACR2, sur la structure de classification, sur le contrôle bibliographique en ligne et sur l’utilité et les limites des bases de données bibliographiques et des ressources électroniques. Acquisition de connaissances et compétences approfondies en catalogage par des exercices répétés d’élaboration de documents bibliographiques complexes pour divers médias (imprimés, électroniques et autres), (Préalables : ISI5502 et ISI5520)

ISI6525 GESTION DES RÉSEAUX D’INFORMATION (3cr.)
Analyse des capacités actuelles et emergentes en télécommunication et de leur lien avec le transfert de l’information, et ce, dans le contexte d’attentes sociétales en évolution et de progrès technologiques continuels. Survol des principes et des techniques applicables à la gestion d’activités aussi variées que les intranets et les systèmes Internet internationaux. Évaluation globale des questions organisationnelles, réglementaires et techniques associées à la gestion de télécommunications vocales, de contenus médiatiques et de données. (Préalables : ISI5504)

ISI6526 SYSTÈMES ET STRUCTURE DE RÉCUPÉRATION DE L’INFORMATION (3cr.)
Tout en examinant la nature des systèmes d’information dans leur contexte organisationnel, ce cours évalue l’évolution technologique des systèmes, de leurs spécifications, de l’interaction entre leurs composantes et les impératifs de gestion, du développement et de l’analyse des systèmes, de la modélisation et de l’évaluation de la performance. (Préalables : ISI5502, ISI6523 et ISI6524)

ISI6527 CONCEPTION ET GESTION AVANCÉES DE SITES WEB (3cr.)
Tout en explorant les questions de planification, de technologie, de production et de gestion qui sont associées au fonctionnement d’importants sites Web, ce cours offre une approche axée sur la structure de l’information dans la gestion du développement de sites Web complexes. Il examine d’une façon plus particulière l’organisation et la conception de l’information, les innovations en matière d’équipement, les logiciels de pointe, l’utilisation des sites Web comme sources d’information, et le rôle que jouent les auteurs de sites Web en tant que gestionnaires de ressources documentaires. (Préalables : ISI5502 et ISI5504)

ISI6528 CONCEPTION ET GESTION DE BASE DE DONNÉES (3cr.)
En mettant l’accent sur les aspects théoriques et pratiques de la conception de bases de données relationnelles, ce cours examine le développement des bases de données, de la création jusqu’à la mise en œuvre. Il traite aussi de la représentation des contenus et des questions de normalisation et de sécurité, des modèles de données, y compris les modèles entité-association, de la normalisation des données et du langage relationnel SQL. (Préalables : ISI5502 et ISI5504)

ISI6529 MÉDIA SOCIAL ET JEUX DANS LE CONTEXTE DE L’INFORMATION (3cr.)
La popularité du jeu électronique, du monde virtuel et des réseaux sociaux sur internet change notre manière d’apprendre, de communiquer et de produire l’information. Explorant ces technologies émergentes, les étudiants en analyseront les implications et produiront des programmes et des services innovateurs d’application d’information. (Préalables : ISI5504 et ISI5505)

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ISI6530 L’INDUSTRIE DE L’ÉDITION : HIER, AUJOURD’HUI ET DEMAIN (3cr.)
À travers l’histoire et l’évolution de l’édition et du commerce du livre, ce cours examine l’industrie du point de vue de son apport culturel et de sa rentabilité. Les sujets traités comprennent le passage des maisons d’édition privées en multinationales dont les actions sont cotées en bourse, l’impact des nouvelles technologies, la croissance des marchés mondiaux et la vitalité de l’industrie canadienne et ses relations internationales.

ISI6531 GESTION DES COLLECTIONS NUMÉRIQUES (3cr.)
Étude de tous les aspects de l’établissement et de la gestion de collections numériques, y compris les définitions et les formes d’objets numériques, les normes qui régissent leur élaboration, la métadonnée, les tendances, l’évaluation de documents, les questions de propriété intellectuelle, les systèmes de recherche et de récupération de l’information, et les systèmes de gestion de contenus et leur compatibilité fonctionnelle. Analyse des diverses étapes de la gestion des projets de conversion et de numérisation, y compris leur élaboration, leur planification et leur évaluation. (Préalable : ISI5502)

ISI6532 ÉVALUATION DES PROGRAMMES ET DES SERVICES D’INFORMATION (3cr.)
Par le biais d’un cadre administratif, ce cours initie aux concepts, processus et normes de pratique professionnelle associés à l’évaluation des programmes. Analyse critique des stratégies d’évaluation choisies et de leur applicabilité aux activités des organismes d’information à l’aide de modèles s’appuyant sur des théories de gestion et de sciences de l’information.

ISI6533 DÉMARCHES CRITIQUES EN MATIÈRE DE SOURCES D’INFORMATION (3cr.)
Par le biais de l’analyse du processus de médiation de l’information qui comprend la détermination des besoins, ainsi que la recherche, l’évaluation et la présentation de résultats choisis, ce cours décrit les modalités de la prestation des services ainsi que les capacités de récupération, les concepts et les processus qui y sont associés. Il examine en outre les mécanismes de la création, de la production, de la diffusion, de la sélection et de la collecte de l’information, de même que la prestation de services d’accès à l’information. (Préalable : ISI5502)

ISI6540 ÉCOLOGIE ET STRUCTURE DES ORGANISMES D’INFORMATION (3cr.)
Ce cours offre une initiation aux principes et à la pratique du leadership, de la gouvernance et du changement dans les organismes d’information. Il traite également des structures organisationnelles, des processus de planification, des modèles de prise de décisions et des caractéristiques culturelles des organismes efficaces. (Préalables : ISI5503 et ISI5505)

ISI6541 DIMENSION ENTREPRENURIALE DE LA GESTION DE L’INFORMATION (3cr.)
Afin de surmonter les défis liés au démarrage d’une entreprise ou d’un cabinet-conseil dans l’industrie de l’information, élaboration d’un plan d’affaires susceptible d’encourager les investisseurs à prêter le capital de risque nécessaire pour créer une nouvelle société commerciale. (Préalable : ISI5503)

ISI6542 COMMERCIALISATION ET PROMOTION DES SERVICES D’UN ORGANISME D’INFORMATION (3cr.)
Dans le cadre d’un examen des études de marché et de la clientèle, de l’établissement des coûts, de l’élaboration, de la promotion et de la prestation de services dans les secteurs commercial et sans but lucratif, ce cours portant sur la commercialisation des produits et services d’information, et sur leurs fournisseurs, mettra l’accent sur le rôle que le spécialiste de l’information doit jouer pour répondre aux attentes des clients. (Préalables : ISI5503, ISI5505 et ISI5563)

ISI6543 BUDGÉTISATION ET GESTION FINANCIÈRE (3cr.)
Tout en décrivant les principes et la pratique d’une gestion financière de pointe au sein d’un organisme d’information, ce cours examine les prévisions budgétaires, l’analyse coûts-avantages, la vérification des budgets de fonctionnement et d’immobilisation, la planification des investissements et des fonds de dotation, et les stratégies de gestion en période de compression ou de croissance. (Préalable : ISI5503)

ISI6544 GESTION DES RESSOURCES HUMAINES (3cr.)
Dans le cadre d’un survol des relations humaines au sein des organismes d’information, ce cours aborde diverses questions de nature administrative comme le recrutement, la description des tâches, l’appréciation et la classification, l’évaluation du rendement, les salaires et avantages sociaux, la motivation, les négociations collectives, la supervision du travail, le perfectionnement professionnel, la promotion du travail d’équipe, la discipline, la cessation d’emploi, le leadership et le changement organisationnel. (Préalable : ISI5504)

ISI6545 TRANSFERT DU SAVOIR ET DES APPRENTISSAGES (3cr.)
En se servant de diverses théories sur l’apprentissage, analyse critique des modèles et des stratégies promotionnelles applicables aux programmes de culture informationnelle et de formation à l’utilisation des services bibliographiques. (Préalable : ISI5503 et ISI5505)

ISI6546 GESTION DES INSTALLATIONS (3cr.)
Ce cours porte sur la gestion des infrastructures physiques et des ressources auxiliaires nécessaires au fonctionnement des organismes d’information. Divers aspects sont traités : la planification des projets de construction et de rénovation de bâtiment, l’étude de la forme par rapport à la fonction des installations, l’entretien continu et différé, les dépenses au chapitre de l’améliorations aux immobilisations, les questions de santé et de sécurité, l’accès pour les personnes handicapées, les exigences en matière de consultation publique et l’embauche d’architectes, d’ingénieurs et de consultants. (Préalable : ISI5503)

ISI6547 PARTENARIAT ET CONSORTIUMS D’INFORMATION (3cr.)
Ce cours traite du développement de partenariats, de consortiums et d’initiatives de collaboration visant à permettre la réalisation de projets publics, privés et conjoints qui élargissent l’accès à l’information. Il examine également les nouvelles technologies et les services spécialisés selon le point de vue de la gestion, mettant l’accent sur les objectifs, la gouvernance, les produits livrables, les avantages financiers et les questions d’ordre opérationnel. (Préalable : ISI5503)
Internet Technologies (Graduate Certificate)

Internet is fast becoming the vehicle for integrated multimedia (voice/video/graphies/data) communications. It may absorb within its standards and protocols other well-established technologies, such as telephony, facsimile, messaging, data and entertainment technologies. Its fastest growing service, the World Wide Web, has created a true information revolution and is daily pushing the limits of current technologies to cope with its growth.

Internet technologies have become a discipline in themselves. The Internet Protocol (IP) continues to dominate as a standard for ubiquitous global communications, and other Internet standards (for example, DiffServ, RSVP) are quickly emerging to offer quality of service on the Internet. There is a need to train professionals at the graduate level in this area, where expertise is required beyond basic undergraduate experience.

The objective of the graduate certificate in Internet Technologies is to educate high technology professionals with full undergraduate training for the growing Internet standards, methods, techniques and applications markets. It includes courses in both the main theories and applications of Internet engineering, as well as basic formication in the intricate world of Internet law and electronic commerce.

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: www.etudesup.uottawa.ca/generalregulations

Admission

The minimum admission requirements are a bachelor's degree with honours in electrical engineering, computer engineering, software engineering, computer science, or equivalent, with a minimum average of 75 per cent (B+). The admissions committee may, however, also recommend other candidates, who satisfy the minimum admission requirements of the Faculty of Graduate and Postdoctoral Studies and have a demonstrated knowledge and/or experience in the field. Candidates for whom a list of additional qualifying courses will be required may be considered in exceptional cases. In this case, they must obtain a minimum grade of B+ in all their additional courses.

On completion of the certificate, qualified students meeting admission requirements could apply to one of the master's programs, in particular the master of computer science or the MEng or MASc in electrical engineering, and, upon admission, complete the requirements for those programs with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually, at the time of admission, with relation to the student's chosen master's program.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master's

Students registered in the graduate certificate program can request to transfer to the Master of Applied Science degree (MASc) or to the Master of Engineering degree (MEng) or to the Master of Computer Science (MCS) in accordance with section A.7.1 of the "General regulations" of the FGPS.
Applications should be addressed to the Director, Graduate Certificate in Internet Technologies (INTERTECH), School of Information Technology and Engineering

Language Requirements

Some of the requirements of the Program must be fulfilled in English. A very good knowledge of the English language is therefore required. Students whose first language is neither English nor French are required to take the TOEFL examination or an equivalent (as determined by the Faculty of Graduate and Postdoctoral Studies) as a condition of admission. The minimum required score on the TOEFL examination is 237 points (computer version) or 580 points (pencil and paper version).

Program Requirements

Certificate Requirements

The Certificate requirements are as follows: 12 credits of core courses and 6 credits of electives. All academic regulations of the Faculty of Graduate and Postdoctoral Studies will apply to the Certificate. The passing grade for all courses is B.

A. Core courses (12 credits as follows):

Two compulsory courses:

- ELG5374 (EACJ 5607) COMPUTER COMMUNICATION NETWORKS (3cr.)
- DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)

Two courses among the following:

- ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)
- ELG5369 (EACJ5369) INTERNETWORKING TECHNOLOGIES (3cr.)
- ELG5373 (EACJ 5105) DATA ENCRYPTION (3cr.)
- or
- CIS5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)

B. Electives (6 credits chosen from the following):

- CS5110 (COMP 5707) PRINCIPLES OF FORMAL SOFTWARE DEVELOPMENT (3cr.)
- CS5111 (COMP 5501) SOFTWARE QUALITY ENGINEERING (3cr.)
- CS5112 (COMP 5207) SOFTWARE ENGINEERING (3cr.)
- CS5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
- CS5122 (COMP 5301) SOFTWARE USABILITY (3cr.)
- CS5134 (COMP 5004) FAULT TOLERANCE (3cr.)
- CS5140 (COMP 5900) SELECTED TOPICS IN COMPUTER SCIENCE (3cr.)
- CS5161 (COMP 5606) PRINCIPLES OF DISTRIBUTED SIMULATION (3cr.)
- CS5166 (COMP 5805) APPLICATIONS OF COMBINATORIAL OPTIMIZATION (3cr.)
- CS5169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
- CS5171 (COMP 5303) NETWORK ARCHITECTURES, SERVICES, PROTOCOLS AND STANDARDS (3cr.)
- CS5174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)
- CS5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (3cr.)
- CS5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)
- CS5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)

ELG5124 (EACJ 5204) VIRTUAL ENVIRONMENTS (3cr.)
- ELG5191 (EACJ 5203) DESIGN OF DISTRIBUTED SYSTEM SOFTWARE (3cr.)
- ELG5371 (EACJ 5500) DIGITAL COMMUNICATION BY SATELLITE (3cr.)
- ELG5372 (EACJ 5504) ERROR CONTROL CODING (3cr.)
- ELG5378 (EACJ 5509) IMAGE PROCESSING AND IMAGE COMMUNICATIONS (3cr.)
- ELG5381 (EACJ 5004) PHOTONICS NETWORKS (3cr.)
- ELG5382 (EACJ 5108) SWITCHING AND TRAFFIC THEORY FOR INTEGRATED BROADBAND NETWORKS (3cr.)
- ELG5383 (EACJ 5009) SURVIVABLE OPTICAL NETWORKS (3cr.)
- ELG7178A TOPICS IN COMMUNICATIONS II: NETWORK APPLICANCES, HOME NETWORKING AND PERVERSIVE COMPUTING
- ELG7186 (EACJ 5807) TOPICS IN COMPUTERS I: FORMAL METHODS FOR THE DEVELOPMENT OF REAL-TIME SYSTEM APPLICATIONS (3cr.)
- ELG7186C TOPICS IN COMPUTERS I: SOFTWARE ENGINEERING PROJECT MANAGEMENT
- ELG7187A TOPICS IN COMPUTERS II: MOBILE SOFTWARE AGENT TECHNOLOGIES FOR TELECOMMUNICATIONS
Courses

DCL7302 REGULATION OF INTERNET COMMUNICATIONS (3cr.)
Seminar analyzing the legal challenges posed by the Internet to the rights of free speech and privacy. Topics include online obscenity, hate speech, defamation, as well as national and international approaches to data privacy protection.

CSI5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4185 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

CSI5110 (COMP 5707) PRINCIPLES OF FORMAL SOFTWARE DEVELOPMENT (3cr.)
Methodologies in formal software specification, development, and verification. The use of theorem proving, automated deduction, and other related formal methods for software correctness. Applications in program verification, mobile code safety, and protocol verification.

CSI5111 (COMP 5501) SOFTWARE QUALITY ENGINEERING (3cr.)

CSI5112 (COMP 5207) SOFTWARE ENGINEERING (3cr.)
Topics of current interest in Software Engineering, such as software development systems, structured systems analysis and design, management of software, software tools, validation and verification, programming environments.

CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decomposition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.

CSI5122 (COMP 5301) SOFTWARE USABILITY (3cr.)
Design principles and metrics for usability. Qualitative and quantitative methods for the evaluation of software system usability: Heuristic evaluation, usability testing, usability inspections and walkthroughs, cognitive walkthroughs, formal usability experimentation. Ethical concerns when performing studies with test users. Economics of usability. Integration of usability engineering into the software engineering lifecycle.

CSI5134 (COMP 5004) FAULT TOLERANCE (3cr.)
Hardware and software techniques for fault tolerance. Topics include modeling and evaluation techniques, error detecting and correcting codes, module and system level fault detection mechanisms, design techniques for fault-tolerant and fail-safe systems, software fault tolerance through recovery blocks, N-version programming, algorithm-based fault tolerance, checkpointing and recovery techniques, and survey of practical fault-tolerant systems.

CSI5140 (COMP 5900) SELECTED TOPICS IN COMPUTER SCIENCE (3cr.)

CSI5161 (COMP 5606) PRINCIPLES OF DISTRIBUTED SIMULATION (3cr.)
Distributed simulation principles and practices. Synchronization protocols: Optimistic vs Conservative, Deadlock detection in conservative simulations, Time warp simulation. Distributed interactive simulation: Data distribution management, Interest management, High Level Architectures (HLA), Run Time Infrastructure (RTI), Distributed virtual world simulation. Distributed agent based simulation. Real time applications of distributed simulation. Distributed and collaborative virtual simulations.

CSI5166 (COMP 5805) APPLICATIONS OF COMBINATORIAL OPTIMIZATION (3cr.)
Topics in combinatorial optimization with emphasis on applications in Computer Science. Topics include network flows, various routing algorithms, polyhedral combinatorics, and the cutting plane method.

CSI5169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
Computational aspects and applications of design and analysis of mobile and wireless networking. Topics include Physical, Link Layer, Media Access Control, Wireless, Mobile LANs (Local Area Networks), Ad-Hoc, Sensor Networks, Power Consumption optimization, Routing, Searching, Service Discovery, Clustering, Multicasting, Localization, Mobile IP/TCP (Internet Protocol/Transmission Control Protocol), File Systems, Mobility Models, Wireless Applications. (Cannot be combined for credit with ELG 6168)

CSI5171 (COMP 5303) NETWORK ARCHITECTURES, SERVICES, PROTOCOLS AND STANDARDS (3cr.)
Contemporary network architectures and protocols, with special consideration of telephony and mobility standards. Wireline and wireless network evolution. Telephony features and the feature interaction problem. Intelligent network architecture. Cellular networks and personal communications systems. Seamless
network architectures. Mobile data communications. The Open Distributed Processing Reference model and derived architectures. Discussion of sample current architectures and issues, such as General System for Mobile Communication, IEA/TIA 41, Wireless Intelligent Networks, International Mobile Telephony 2000, migration towards the Internet. Prerequisites: No prerequisites except the general maturity and knowledge of data communications principles that should have been acquired by Computer Engineering and Computer Science graduates.

CSI5174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S) (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management, Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master’s programs in e-business technologies or the certificate in e-commerce.

CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)

CSI5389 (COMP 5401) ELECTRONIC COMMERCE TECHNOLOGIES (3cr.)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master’s programs in e-business technologies or the certificate in e-commerce.

CSI5510 (COMP 5707) PRINCIPES DE DÉVELOPPEMENT FORMEL DE LOGICIELS (3cr.)

CSI5511 (COMP 5501) GÉNIE DE LA QUALITÉ DES LOGICIELS (3cr.)

CSI5780 (COMP 5405) SYSTÈMES ET ARCHITECTURES DES LOGICIELS POUR LE COMMERCE ÉLECTRONIQUE (3cr.)

CSI5787 (COMP 5706) FOUILLE DES DONNÉES ET APPRENTISSAGE DES CONCEPTS (3cr.)

CSI5789 (COMP 5401) TECHNOLOGIES DU COMMERCE ÉLECTRONIQUE (3cr.)

ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

ELG5124 (EACJ 5204) VIRTUAL ENVIRONMENTS (3cr.)
Electrical Engineering, Computer

In accordance with University of Ottawa regulations, examinations and assignments may be written in either one of the two official languages (English or French).

**ELG5191 (EACJ 5203) DESIGN OF DISTRIBUTED SYSTEM SOFTWARE** (3cr.)
Distributed systems design and programming issues; distributed computing. Basics of object oriented technology for distributed computing. Distributed objects technologies. Object oriented models for distributed programming. Distributed computing architecture design. Component based distributed software design. Scalability, interoperability, portability and distributed services. Distributed applications design. Prerequisite: an undergraduate degree in Computer Engineering, or Computer Science, or practical experience in system software design.

**ELG5369 (EACJ5369) INTERNETWORKING TECHNOLOGIES** (3cr.)
IP Based Internet Technologies: Internet architecture and its protocols. Software/hardware requirements for quality of service (QoS). Integrated services. Scheduling; Fair queuing. Traffic and admission control algorithms. Differentiated services. Multiprotocol label switching (MPLS) and associated software/hardware design issues. Fast internet protocol (IP), asynchronous transfer mode (ATM), internet protocol (IP) over synchronous optical network (SONET), wavelength division multiplexing (WDM), satellite implementations. Precludes additional credit for ELG 7187B (EACJ 5808B) Prerequisite: CEG/ELG 4183.

**ELG5371 (EACJ 5500) DIGITAL COMMUNICATION BY SATELLITE** (3cr.)

**ELG5372 (EACJ 5504) ERROR CONTROL CODING** (3cr.)

**ELG5373 (EACJ 5105) DATA ENCRYPTION** (3cr.)

**ELG5374 (EACJ 5607) COMPUTER NETWORKS** (3cr.)
Network applications, structures and their design issues. Resource sharing/access methods. Network transmission and switching techniques. OSI model. Error control, flow control and various issues related to the physical, data link and network layers. Local area networks. Performance issues of delay-throughput in various protocols. Precludes additional credit for SYSC 5201. Prerequisite: an undergraduate course in probability and statistics such as MAT 2377.

**ELG5378 (EACJ 5509) IMAGE PROCESSING AND IMAGE COMMUNICATIONS** (3cr.)

**ELG5381 (EACJ 5004) PHOTONICS NETWORKS** (3cr.)

**ELG5382 (EACJ 5108) SWITCHING AND TRAFFIC THEORY FOR INTEGRATED BROADBAND NETWORKS** (3cr.)
Principles of switching theory. Asynchronous Transfer Mode switching architectures. Principle of teletraffic engineering. Queueing theory and performance evaluation techniques as applied to the study of computer network architectures. Current topics in computer network modelling analysis and traffic control for high-speed multimedia networks. Prerequisite: ELG 5374 (EACJ 5607) or ELG 6121 (SYSC 5201), or the equivalent. Co-requisite: ELG 5119 (EACJ 5109) or ELG 6153 (SYSC 5503) or ELG 6103 (SYSC 5003), or the equivalent.

**ELG5383 (EACJ 5009) SURVIVABLE OPTICAL NETWORKS** (3cr.)
Optical networks design with emphasis on network survivability. Wavelength division multiplexing (WDM), wavelength conversion, optical switch architectures, routing and wavelength assignment algorithms, IP over WDM, optical network protocols, optical network control architectures, protection and restoration, spare capacity allocation, survivable routing, design and performance evaluation. Prerequisite: ELG 5374 or its equivalent.

**ELG7178A TOPICS IN COMMUNICATIONS II: NETWORK APPLIANCES, HOME NETWORKING AND PERVERSIVE COMPUTING**

**ELG7186 (EACJ 5807) TOPICS IN COMPUTERS I: FORMAL METHODS FOR THE DEVELOPMENT OF REAL-TIME SYSTEM APPLICATIONS** (3cr.)

**ELG7186C TOPICS IN COMPUTERS I: SOFTWARE ENGINEERING PROJECT MANAGEMENT**
Mobile Device Applications (Graduate Certificate)

The Graduate Certificate in Mobile Device Applications is offered by the School of Information Technology and Engineering in conjunction with the Faculty of Graduate and Postdoctoral Studies (FGPS). It can be pursued either full-time or part-time. The program is offered mostly in English with courses in French when enrolments warrant it. According to University of Ottawa Regulations, students have the right to produce assignments, examinations, research papers and theses in either English or French.

Admission

The minimum admission requirement is an honours four-year Bachelor’s degree in one of the following: Electrical Engineering, Computer Engineering, Software Engineering, or Computer Science (Honours), or equivalent, with an average of at least a B (70%). The admissions committee may, however, also admit other candidates who satisfy the minimum admission requirements of the Faculty of Graduate and Postdoctoral Studies and have demonstrated relevant knowledge and/or experience. In some cases, candidates may be required to complete a maximum of three qualifying courses prior to admission, and achieve a minimum grade of B+ in each of the qualifying courses.

On completion of the graduate certificate, students meeting admission requirements may apply to the existing master’s degree in Computer Science. To do so, they must satisfy the conditions set by section A-7.1 of the Faculty of Graduate and Postgraduate Studies regulations regarding transfer from graduate certificate to master’s.

Program Requirements

Program Requirements

The graduate Certificate requirements consist of 6 credits of compulsory courses and 9 credits of optional courses. The optional courses are grouped into three areas: multimedia; networks and communication; and software and systems. Students must take a minimum of 3 credits from at least two different groups.

A. Compulsory Courses (6cr.)

CSI5130 APPLICATIONS DESIGN FOR MOBILE DEVICES (3cr.)
CSI5905 PROJET / PROJECT (3cr.)

B. Optional Courses (9cr.)

9 credits from the following list, with no more than 6 credits in any one group:

Group 1: Multimedia

CSI4133 COMPUTER METHODS IN PICTURE PROCESSING AND ANALYSIS (3cr.)
CSI5140 / ELG7187 (COMP 5900) SELECTED TOPICS IN COMPUTER SCIENCE (3cr.)
CSI5146 (COMP 5402) COMPUTER GRAPHICS (3cr.)
ELG5163 (EACJ 5105) MACHINE VISION (3cr.)
ELG7173 (EACJ 5601) TOPICS IN SIGNAL PROCESSING II (3cr.)

Group 2: Networks and Communication

CSI5105 / ELG7178 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
CSI5169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
ELG5121 / CSI7631 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

Group 3: Software and Systems

CSI5122 (COMP 5301) SOFTWARE USABILITY (3cr.)
CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (3cr.)

C. Minimum standards

The passing grade in all courses is B (70%). Failure in six credits or equivalent or in the same course twice leads to withdrawal from the certificate program.

D. Duration

The certificate requirements can be completed within one year. The maximum time permitted is three years from the time of initial registration.
Courses

CSI4133 COMPUTER METHODS IN PICTURE PROCESSING AND ANALYSIS (3cr.)

CSI5105 (COMP 5406) NETWORK SECURITY AND CRYPTOGRAPHY (3cr.)
Advanced methodologies selected from symmetric and public key cryptography, network security protocols and infrastructure, identification, secret-sharing, anonymity, intrusion detection, firewalls, defending network attacks and performance in communication networks. Prerequisites: familiarity with basic concepts in networks, network security, and applied cryptography. For example, relevant background courses may include the following (or equivalents): CEG 4185 or COMP 3203 and/or CSI 4138 or CEG 4394 or COMP 4108, and/or CSI 4108 or ELG 5373 or COMP 4109.

CSI5122 (COMP 5301) SOFTWARE USABILITY (3cr.)
Design principles and metrics for usability. Qualitative and quantitative methods for the evaluation of software system usability: Heuristic evaluation, usability testing, usability inspections and walkthroughs, cognitive walkthroughs, formal usability experimentation. Ethical concerns when performing studies with test users. Economics of usability. Integration of usability engineering into the software engineering lifecycle.

CSI5130 APPLICATIONS DESIGN FOR MOBILE DEVICES (3cr.)

CSI5140 / ELG7187 (COMP 5900) SELECTED TOPICS IN COMPUTER SCIENCE (3cr.)

CSI5146 (COMP 5402) COMPUTER GRAPHICS (3cr.)

CSI5169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
Computational aspects and applications of design and analysis of mobile and wireless networking. Topics include Physical, Link Layer, Media Access Control, Wireless, Mobile LANs (Local Area Networks), Ad-Hoc, Sensor Networks, Power Consumption optimization, Routing, Searching, Service Discovery, Clustering, Multicasting, Localization, Mobile IP/TCP (Internet Protocol/Transmission Control Protocol), File Systems, Mobility Models, Wireless Applications. (Cannot be combined for credit with ELG 6168)

CSI5380 (COMP 5405) SYSTEMS AND ARCHITECTURES FOR ELECTRONIC COMMERCE (A, S) (3cr.)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Prerequisites: CSI 4128 and CSI 3140, or equivalent, or acceptance into one of the master's programs in e-business technologies or the certificate in e-commerce.

CSI5905 PROJET / PROJECT (3cr.)
Développement d’une application pour appareils mobiles. L’étudiant identifie un projet, qui doit comprendre une importante part de logiciel s’exécutant sur l’appareil mobile et se prêter à une évaluation raisonnablement indépendante d’autres logiciels. Le projet est dirigé par un professeur approuvé par la direction du programme. Le projet est normalement complété en une session. Note S (satisfaisant) ou NS (non satisfaisant) par le directeur du projet et un autre professeur nommé par le directeur du programme. Préalable : approbation de la direction du programme. / Development of an application for mobile devices. Students identify a project that must include a significant portion of software running on device, and should be reasonably self contained. Graded S (satisfactory) or NS (not satisfactory) by the supervisor and another professor appointed by the program director. The project can normally be completed in one session. Prerequisite: approval of the program director.

ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

ELG5163 (EACJ 5105) MACHINE VISION (3cr.)
Modelling and Animation for Computer Games Technology (Graduate Certificate)

Internet and Virtual Reality (VR) technologies are quickly becoming essential tools in our daily activities.

The Internet is used worldwide as an unlimited source of knowledge and information, as a vehicle for profitable trade and as a forum for discussion. The economic significance of the Internet is tremendous. Billions of dollars in business transactions are conducted each year on websites such as E*TRADE, eBay and Dell. The Internet has become the vehicle for integrated collaborative multimedia (voice/video/graphics/data) communications. It is absorbing within its standards and protocols other well established technologies such as: telephony, facsimile, text messaging, data and entertainment technologies. Its fastest growing service, the World Wide Web, has created a true information revolution and is daily pushing the limits of current technologies to cope with its growth.

The objective of the Graduate Certificate in Modelling and Animation for Computer Games Technology is to educate high-technology professionals for the growing collaborative multimedia and VR technology standards, methods, techniques and applications markets. It includes courses in both the basic theories and applications of collaborative multimedia technology and large scale modeling, as well as courses in the intricate world of Computer Animations (with applications in soft-images, simulation, multimedia teaching, e-training, computer games and many others).

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: www.etudesup.uottawa.ca/generalregulations

Admission

The minimum admission requirements to the certificate are an honours bachelor's degree or equivalent in electrical engineering, computer engineering, software engineering, or computer science, with a minimum average of 75% (B+). The admissions committee may, however, also recommend other candidates, who satisfy the minimum admission requirements of the FGPS and have demonstrated knowledge and/or experience of the field. Candidates for whom a list of additional qualifying courses will be required may be considered on an exceptional basis. In this case, they must obtain a minimum grade of B+ in all their additional courses.

On completion of the certificate, qualified students meeting admission requirements for the master's programs in computer science or electrical engineering (MCS, MEng, MASc), could apply to one of those programs, and upon admission, complete their requirements with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually, at the time of admission, with relation to the student's chosen master's program. The regulation governing the articulation between graduate certificates and related master's programs can be found in the General Regulations of the FGPS (section A.7).

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master's

Students registered in the graduate certificate program can request to transfer to the Master of Applied Science degree (MASc) or to the Master of Engineering degree (MEng) in accordance with section A.7.1 of the "General regulations" of the FGPS.

Applications should be addressed to the Director, Graduate Certificate in Modelling and Animation for Computer Games Technology, School of Information Technology and Engineering.

Language Requirements

The program is offered in English. A very good knowledge of the English language is therefore required. Students whose first language is neither English nor French must provide proof of proficiency in English. A score of at least 237 points on the TOEFL or equivalent test approved by the FGPS is required as a condition of admission.

In accordance with University of Ottawa regulations, examinations and assignments may be written in either one of the two official languages (English or French).

Program Requirements
Certificate Requirements

The Certificate requirements are as follows: 3 credits of core courses and 12 credits of elective courses. The passing grade in all courses is 70% (B). Students who fail six credits or the same course twice, must withdraw from the program. The program can be completed either full-time or part-time. Full-time students should expect to take evening courses. All students must complete the requirements of the certificate within three years following initial registration.

A. Core Course (3 cr.)

ELG 5124

B. Electives (12 cr. to be chosen from the following courses)

CSI 5122
CSI 5140
CSI 5161
CSI 5180
ELG 5121
ELG 5191
ELG 5196
ELG 5378
ELG 7113
ELG 7186
ELG 7187

Courses

A. Cours obligatoires / Core Courses

ELG5124 (EACJ 5204) VIRTUAL ENVIRONMENTS (3cr.)

B. Cours au choix / Electives
(12 crédits choisis parmi les cours suivants / 12 credits to be chosen from the following courses)

CSI 5122 (COMP 5301) SOFTWARE USABILITY (3cr.)
Design principles and metrics for usability. Qualitative and quantitative methods for the evaluation of software system usability: Heuristic evaluation, usability testing, usability inspections and walkthroughs, cognitive walkthroughs, formal usability experimentation. Ethical concerns when performing studies with test users. Economics of usability. Integration of usability engineering into the software engineering lifecycle.

CSI 5140 SELECTED TOPICS IN COMPUTER SCIENCE: COMPUTER GRAPHICS (3 cr.)
Acquisition and display of appearance models of physical objects in computer graphics. Review of coordinate and viewing transform. Physics of light transport. Overview of digital camera technology, geometric and photometric camera calibration and color imaging. Rendering equation, global illumination overview, ray tracing and radiosity. Optical material properties, acquisition of Bidirectional Reflectance Distribution Functions. Image-based rendering, plenoptic function, light fields and lumigraph

CSI5161 (COMP 5606) PRINCIPLES OF DISTRIBUTED SIMULATION (3cr.)
Distributed simulation principles and practices. Synchronization protocols: Optimistic vs Conservative, Deadlock detection in conservative simulations, Time warp simulation. Distributed interactive simulation: Data distribution management, Interest management, High Level Architectures (HLA), Run Time Infrastructure (RTI). Distributed web-based simulation. Distributed agent based simulation. Real time applications of distributed simulation. Distributed and collaborative virtual simulations.

CSI 5180 TOPICS IN ARTIFICIAL INTELLIGENCE: NATURAL LANGUAGE PROCESSING, A STATISTICAL APPROACH (3 cr.)
Statistical approaches to natural language processing (NLP); n-gram models and markov models. Information retrieval, text characterization, clustering, and statistical machine translation.
ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

ELG5191 (EACJ 5203) DESIGN OF DISTRIBUTED SYSTEM SOFTWARE (3cr.)
Distributed systems design and programming issues; distributed computing. Basics of object oriented technology for distributed computing. Distributed objects technologies. Object oriented models for distributed programming. Distributed computing architecture design. Component based distributed software design. Scalability, interoperability, portability and distributed services. Distributed applications design. Prerequisites: an undergraduate degree in Computer Engineering, or Computer Science, or practical experience in system software design.

ELG5196 (EACJ 5709) AUTOMATA AND NEURAL NETWORKS (3cr.)

ELG5378 (EACJ 5509) IMAGE PROCESSING AND IMAGE COMMUNICATIONS (3cr.)

ELG 7113 TOPICS IN SYSTEMS AND CONTROL: INTELLIGENT SYSTEMS DESIGN (3 cr.)


ELG 7186 TOPICS IN COMPUTERS I: SOFTWARE ENGINEERING PROJECT MANAGEMENT (3 cr.)
Management of software engineering projects. Software development processes, software system engineering management and organization methods: work breakdown structure and task determination; effort, duration and cost estimation; scheduling and project planning. Project monitoring and control; analysis of options; management of risks, change, and expectations.


ELG 7187 TOPICS IN COMPUTER II: COMPUTER ANIMATION (3 cr.)
Techniques underlying computer animation, such as computer graphics, computer vision, physics, robotics, biomechanics, and applied mathematics. Computer animation techniques in computer-generated films, computer games, virtual reality and human computer interactions. Relevant algorithms and techniques.

Topics to include principles of animation; human modeling, motion capture, inverse kinematics, motion editing/retargeting, flexible bodies, facial animation, clothes animation, high-level behaviours and various applications.

Orchestral Studies (Graduate Certificate)

The graduate certificate in Orchestral Studies is designed for specialised, intensive work in performance by talented instrumentalists who have already achieved a significant level of proficiency on the instrument of their choice, and whose career goal is to become orchestral musicians. Graduates of this program will be recognized as being fully-ready to hold a position in a world-class orchestra. The certificate program combines a tutorial/apprenticeship approach with graduate theoretical courses and a practical course dealing specifically with the challenges of a professional career as a musician. The certificate can normally be completed in one academic year (September to April) and consists of the courses listed below. The orchestral practicum will normally consist of students’ performing in the OSO (Ottawa Symphony Orchestra) and other ensembles as assigned by the director of the program. The certificate may be pursued before, after or rather than the MMus. All students will be required to complete it within a maximum of three years. Graduates of the certificate who subsequently wish to pursue a master's in Music may apply for admission and complete the master's degree with credit granted for relevant certificate courses.

Admission
Candidates are required to have one of the following: a BMus; a four-year honours baccalaureate in music; an equivalent degree, certificate, or diploma. A 75 per cent (B+) average is required for the undergraduate degree or diploma. In addition, applicants must pass an audition. Students must understand, speak and write either English or French fluently. In addition, they must have a passive knowledge of Canada’s other official language, French or English. According to university regulations, students can write their papers and exams in the official language of their choice (either English or French).

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master’s**

Students registered in the graduate certificate program can request to transfer to the master of music (MMus) or the master ès arts in music (MA(Mus)) in accordance with section A.7.1 of the “General regulations” of the FGPS.

### Certificate Requirements

The requirements of the Certificate in Orchestral Studies are as follows: 9 credits of core courses and 6 credits of electives. The passing grade in all courses is C+ and students who fail two courses (six credits) must withdraw.

**A. Core courses (9 credits)**
- MUS6909 INTERPRÉTATION ORCHESTRALE PROFESSIONNELLE / PROFESSIONAL ORCHESTRAL PERFORMANCE (3cr.)
- MUS6905 LEÇONS ORCHESTRALES PARTICULIÈRES / APPLIED ORCHESTRAL LESSONS (3cr.)
- MUS5902 STAGE EXTERNE / EXTERNAL PRACTICUM (3cr.)

**B. Elective courses (6 credits to be chosen from the following)**
- MUS6904 MUSIQUE ET AFFAIRES / THE BUSINESS OF MUSIC (3cr.)
- MUS6907 RÉPERTOIRE DE MUSIQUE DE CHAMBRE / CHAMBER MUSIC REPertoire (3cr.)
- MUS6990 SEMINARE SUR LES TECHNIQUES D'INTERPRÉTATION / SEMINAR IN PERFORMANCE PRACTICE (3cr.)
- MUS6991 INTERPRÉTATION COMPARÉE / COMPARATIVE INTERPRETATION (3cr.)
- MUS6993 THÈMES EN INTERPRÉTATION / TOPICS IN PERFORMANCE (3cr.)
- MUS6996 ÉTUDE INDIVIDUELLE EN INTERPRÉTATION / INDEPENDENT STUDIES IN PERFORMANCE (3cr.)

### Courses

**MUS5902 STAGE EXTERNE / EXTERNAL PRACTICUM** (3cr.)

Stage dirigé permettant aux étudiantes et aux étudiants de mettre en pratique leurs connaissances et leur expertise, normalement dans un cadre extérieur à l'université. Rédaction d'un rapport évalué par leurs professeurs superviseurs. Noté : S/NS. Préalables : Permission du professeur superviseur de l'étudiant et du directeur des études supérieures; disponibilité d'un stage jugé convenable par le Département de musique. / A supervised practicum designed to allow students to put their knowledge and developing expertise to work in a setting normally outside the university. Students will be required to submit a written report that will be evaluated by the student's supervisors. Graded: S/NS. Prerequisites: Permission of the student's supervisor and director of Graduate studies; availability of a placement deemed suitable by the Department of Music.

**MUS6904 MUSIQUE ET AFFAIRES / THE BUSINESS OF MUSIC** (3cr.)

Étude d'institutions et d'entreprises contemporaines professionnelles attachées à la gestion d'une carrière de musicien professionnel. / The study of present-day institutions and industries connected to the performance of music and aspects of professional preparation, organization, and presentation.

**MUS6905 LEÇONS ORCHESTRALES PARTICULIÈRES / APPLIED ORCHESTRAL LESSONS** (3cr.)

Leçons particulières à l'instrument réparties sur deux sessions. Noté : S/NS. / Private lessons on the student's instrument offered over two sessions. Graded: S/NS.

**MUS6909 INTERPRÉTATION ORCHESTRALE PROFESSIONNELLE / PROFESSIONAL ORCHESTRAL PERFORMANCE** (3cr.)

Étude et interprétation devant jury d'extraits orchestraux selon l'instrument. Étude stylistique et pratique du répertoire et des traditions d'interprétation. Perfectionnement des techniques d'interprétation. Préparation physique et mentale pour l'interprétation orchestrale et les auditions. / Study and juried
Organizational Communication (Graduate Certificate)

The graduate certificate in organizational communication program focuses on the mechanisms of internal and external communication in private and public organizations. Teaching and research issues can relate to topics such as group and interpersonal interactions, media relations and new communication and information technologies. Organizations studied may function at the local, regional, national or international levels.

The graduate certificate program is intended to meet the needs of qualified students who plan to apply the concepts learned in a practical context. The knowledge acquired in the program will facilitate their effective functioning in organizations and give them additional tools to advance in their careers.

The certificate operates within the framework of the master’s in communication program and both are governed by the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

Admission

Candidates must have an honours bachelor’s degree with a specialization or major in communication (or the equivalent) with a minimum average of 70% (B), calculated in accordance with FGPS guidelines. Candidates with an honours bachelor’s degree in another discipline with a 70% (B) average will also be considered. Such candidates may be asked to take additional courses.

The program is offered in English and in French. Students must understand, speak and write either English or French fluently. Proof of proficiency may be required.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master’s

Students registered in the graduate certificate program can request to transfer to the master’s in communication or to a related master’s program in accordance with regulation A. 7.1 of the General Regulations of the FGPS.

Application Deadline

To find the application deadline, please check the A Program-Specific Requirements under Application Procedures and Information at the following address: www.grad.uottawa.ca/apply.
Program Requirements

Certificate Requirements

The graduate certificate program requires 15 credits, of which 9 are compulsory and 6 are electives. The passing grade in all courses is C+. It is possible to retake a failed course. Students who fail six credits or the same course twice, must withdraw from the program.

Compulsory courses (9 credits):
CMN5105 CONTEMPORARY COMMUNICATION ISSUES (3cr.)
CMN5135 COMMUNICATION MANAGEMENT (3cr.)
CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)

Electives (6 credits) to be chosen from the following:
CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)
CMN5125 PUBLIC COMMUNICATION CAMPAIGNS: EVALUATION (3cr.)
CMN5130 DIVERSITY IN THE WORKPLACE : COMMUNICATION CHALLENGES (3cr.)
CMN5145 ALTERNATIVE COMMUNICATION PRACTICES IN CONFLICT RESOLUTION IN ORGANIZATIONS (3cr.)
CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
CMN5155 ADVANCED RESEARCH IN TRADITIONAL AND EMERGING MEDIA (3cr.)
CMN5160 POLITICAL USES OF MEDIA (3cr.)
CMN5170 INTERNATIONAL COMMUNICATION (3cr.)
CMN5195 SPECIAL TOPICS (3cr.)
CMN5900 ÉTUDES DIRIGÉES EN COMMUNICATION / DIRECTED STUDIES IN COMMUNICATION (3cr.)

No more than three credits of 4000-level courses may be included:
CMN4128 ORGANIZATIONAL COMMUNICATION CONSULTING (3cr.)
CMN4129 FACILITATION OF CHANGE IN ORGANIZATIONS (3cr.)
CMN4131 NEGOTIATION AND MEDIATION (3cr.)
CMN4148 COMMUNICATION AND GOVERNMENTAL ORGANIZATIONS (3cr.)
CMN4168 COMMUNICATION AND INTERNATIONAL DEVELOPMENT (3cr.)

Courses

Pour connaître les cours offerts à chaque session, veuillez consulter l'horaire / Please consult the schedule to know the courses offered at each session.

CMN5100 RESEARCH METHODS (3cr.)
Research design and methods relevant to the Master's thesis or research paper project.

CMN5500 MÉTHODES DE RECHERCHE (3cr.)
Différentes étapes de l'élaboration du projet de thèse ou du mémoire de maîtrise.

CMN5105 CONTEMPORARY COMMUNICATION ISSUES (3cr.)
State of the art of the discipline. Exploration of major domains of communication research, along with contemporary issues being addressed by scholars in these fields of specialization.

CMN5505 ENJEUX CONTEMPORAINS EN COMMUNICATION (3cr.)
Étude des avancées les plus récentes de la discipline. Exploration des principaux domaines de recherche en communication et des enjeux contemporains étudiés par les spécialistes œuvrant dans différents champs de la discipline.

CMN5110 SOCIAL HISTORY OF COMMUNICATION TECHNOLOGIES (3cr.)
Exploration of the social, political, economic, cultural and ethical ramifications of communication technologies as they have evolved over time. Relationship between innovation in new communication technologies and social and cultural change.

CMN5510 HISTOIRE SOCIALE DES TECHNOLOGIES DE COMMUNICATION (3cr.)
Exploration de l’évolution historique des ramifications sociales, politiques, économiques, culturelles et éthiques du développement des technologies de communication. Étude des liens entre les innovations en matière de technologie de communication et les changements sociaux et culturels.

**CMN5115 COMMUNICATION ETHICS (3cr.)**
Emphasis on the significance of ethical principles and responsibilities of public communicators, as well as sanctions faced when communicators fail to uphold these principles. Critique of self-regulation of the media. Analysis of argumentation. Study of legal precedents with respect to defamation.

**CMN5515 ÉTHIQUE DE LA COMMUNICATION (3cr.)**
L’accent sera mis sur la signification des principes éthiques et de la responsabilité des communicateurs publiques ainsi que sur les sanctions auxquelles s’exposent les communicateurs qui ne respectent pas ces principes. Critique de l’autorégulation des médias. Analyse de l’argumentation. Étude de la jurisprudence en matière de diffamation.

**CMN5120 PUBLIC COMMUNICATION CAMPAIGNS: THEORIES AND APPLICATIONS (3cr.)**
Theories and applications relevant to campaigns that promote issues and causes in the public interest. Strategies and techniques. Cases studies in the areas of health, environment, education and other public domains.

**CMN5200 CAMPAGNES DE COMMUNICATION PUBLIQUE : THÉORIQUES ET APPLICATIONS (3cr.)**
Theories et pratiques relatives aux campagnes de communication faisant la promotion d’enjeux ou de causes d’intérêt publique. Stratégies et techniques. Études de cas dans les secteurs de la santé, de l’environnement et d’autres domaines.

**CMN5300 DIVERSITY IN THE WORKPLACE : COMMUNICATION CHALLENGES (3cr.)**
Theories and pragmatics of intercultural communication as applicable to various forms of communication (verbal and nonverbal) between and among individuals of different ethnicities, races, cultures, age groups, sexual orientations, genders, classes, abilities, language, religion, and value orientations. Focused on workplace interactions.

**CMN5530 DIVERSITÉ AU TRAVAIL : DÉFIS COMMUNICATIONNELS (3cr.)**
Theories et pratiques de communication interculturelle en milieu de travail. Étude des différentes formes de communication (verbale et non verbale) impliquant des individus de culture, d’âge, d’orientation sexuelle, de genre, de langue, de religion et de compétences différents. Les cas présentés dans le cours se concentreront sur les interactions en milieu de travail.

**CMN5310 ORGANIZATIONAL COMMUNICATION THEORIES (3cr.)**
Different approaches (e.g., interactionist, narrative, critical) to organizational communication research, with a focus on benchmark studies and key researchers. Role of theories in understanding communication challenges faced by contemporary organizations. Issues related to communication networks, organizational learning, management of diversity, computerization of organizations, and management of risks, among others.

**CMN5531 THÉORIES DE LA COMMUNICATION ORGANISATIONNELLE (3cr.)**
Revue de diverses approches en communication organisationnelle (interactionniste, narrative, critique). L’accent sera mis sur les études et les principaux chercheurs qui représentent des points de référence dans le domaine. Le rôle des théories dans la compréhension des défis auxquels font face les organisations modernes. Enjeux reliés aux réseaux de communication, à l’apprentissage organisationnel, à la gestion de la diversité, à l’informatisation des organisations, à la gestion du risque, et autres.

**CMN5312 THEORIES AND EFFECTS OF THE MEDIA (3cr.)**
Critique of traditional (e.g., cultivation, social learning, and dependency), interpretive (e.g., narrative and genre), and critical/cultural (e.g., political economy) theories of the mass media. Contemporary research directions in the field of mass and emerging communications. Study of the effects on audience behavior.

**CMN5532 THÉORIES ET EFFETS DES MÉDIAS (3cr.)**
Analyse critique des théories classiques des médias de masse (cultivation, apprentissage social et conditionnement), interprématives (narrative et identité sexuelle), critique et culturelle (économie politique). Nouvelles perspectives de la recherche dans le domaine des médias de masse traditionnels et émergents. Étude des effets sur le comportement des récepteurs.

**CMN5133 HEALTH COMMUNICATION THEORIES (3cr.)**
Concepts, research, and theories regarding health communication issues at the micro level (e.g., interactions between patient and healthcare provider), mezzo level (e.g., role of information in healthcare organizations) and macro level (e.g., role of media in shaping public perceptions of health and illness). Qualitative, quantitative, and mixed-method research, with a stress on interdisciplinary approaches to health communication and public health research.

**CMN5533 THÉORIES DE LA COMMUNICATION ET DE LA SANTÉ (3cr.)**
Théories, concepts et recherches reliés au domaine de la communication et de la santé au niveau micro (interactions entre le patient, le médecin et les dispensateurs de soins), au niveau intermédiaire (rôle de l’information dans les organisations de soins de santé) et au niveau macro (le rôle des médias dans la construction des représentations sociales de la santé et de la maladie). Analyse quantitative, qualitative et mixte avec accent sur les approches interdisciplinaires et les recherches en santé publique.

**CMN5135 COMMUNICATION MANAGEMENT (3cr.)**
Role of communication in organizational development, team development, and corporate/institutional positioning. Internal and external communication in public and private organizations. Case studies of Canadian and international organizations.
CMN5355 GESTION DES COMMUNICATIONS (3cr.)
Rôle de la communication dans le développement organisationnel, dans le développement des équipes et dans la projection de l'image de l'organisation.
Communication interne et externe dans les organisations publiques et privées. Études de cas d'organisations canadiennes et internationales.

CMN5356 VIRTUAL WORK TEAMS (3cr.)
Theoretical and practical issues raised by the integration of mediated and distance communication into the work place, including those specific to the functioning of virtual teams (e.g., E-leadership, cohesion, communication, and trust).

CMN5356 ÉQUIPES VIRTUELLES: ENJEUX COMMUNICATIONNELS (3cr.)
Différentes problématiques théoriques et pratiques soulevées par l'intégration de modes de communication médiatisée et à distance au sein des collectifs de travail, incluant des problématiques spécifiques liées notamment au fonctionnement d’équipes virtuelles (e.g., E-leadership, cohésion, communication et confiance dans les équipes virtuelles).

CMN5140 COMMUNICATION, GLOBALIZATION AND CHANGE (3cr.)
Impact of information and communication technologies and political, cultural, and global dynamics on organizations. Theoretical and critical reflections on the strategic management of change in organizations, the transformation of organizational cultures, and intervention practices. Case studies of hybrid cultures.

CMN5410 COMMUNICATION, MONDIALISATION ET CHANGEMENT (3cr.)
Influence des technologies d’information et de communication, de la dynamique politique, culturelle et globale sur les organisations. Réflexions théoriques et critiques portant sur les stratégies de gestion du changement dans les organisations, sur la transformation des cultures organisationnelles et les interventions pratiques. Études de cas de cultures hybrides.

CMN5141 GOVERNMENT COMMUNICATION (3cr.)
Issues and concerns of particular relevance to the public service communication community. Preparation of a consultation report that focuses on a specific communication challenge faced by professional communicators.

CMN5141 COMMUNICATION GOUVERNEMENTALE (3cr.)
Enjeux et préoccupations spécifiques à la communauté des communicateurs d'agences publiques. Préparation d'un rapport de consultation qui met l'accent sur un défi particulier qu'ont à relever les communicateurs professionnels.

CMN5142 RISK AND CRISIS COMMUNICATION (3cr.)
The role of communication in general—and mass media and the Internet in particular—in high risk situations such as conflict, war, disaster, emergency, and acts of terrorism (including biological threats) in a variety of cultural contexts. Characteristics of modern risk societies, risk identification and management, the relationship between risk and crisis communication, and crisis management strategies. Case studies.

CMN5142 COMMUNICATION DE CRISE ET DU RISQUE (3cr.)
Le rôle de la communication en général—et mass media et l'Internet en particulier, dans des situations de crise comme la guerre, les désastres naturels, les urgences et les actes terroristes (incluant les menaces biologiques) dans une variété de contextes culturels. Caractéristiques des sociétés modernes à haut risque, identification et gestion des risques et des crises, relations entre les risques et la communication de crise, étude des stratégies de gestion de crise. Études de cas.

CMN5150 KNOWLEDGE MANAGEMENT (3cr.)
Research directions in organizational learning, collective intelligence and information architecture, situated in the technical context of the general digitization of communication and the socio-cultural context of knowledge societies and human development policies. Interdisciplinary perspectives. Case studies from the workplace, education, health, and cultural industries.

CMN5150 GESTION DES CONNAISSANCES (3cr.)
Principales orientations de la recherche sur l'apprentissage organisationnel, l'intelligence collective et l'architecture de l'information, situées à la fois dans le contexte technique de la numérisation généralisée de la communication et dans le contexte socioculturel de la société de la connaissance et des politiques de développement humain. Une perspective interdisciplinaire sera privilégiée. Des études de cas en milieu de travail, en éducation, en santé et dans les industries culturelles.

CMN5155 ADVANCED RESEARCH IN TRADITIONAL AND EMERGING MEDIA (3cr.)
Empirical and critical studies of traditional and emerging media in various social contexts: organizational, domestic, educational, etc. Emerging research trends (qualitative and quantitative).

CMN5555 RECHERCHES AVANCÉES SUR LES MÉDIAS TRADITIONNELS ET CEUX EN ÉMERGENCE (3cr.)
Études empiriques et critiques des médias traditionnels et en émergence dans différents contextes : monde du travail, vie quotidienne, éducation, etc. Nouveaux courants de recherche (qualitative et quantitative).

CMN5160 POLITICAL USES OF MEDIA (3cr.)
Critical review of key aspects of contemporary theory, research, and practice in political communication. Uses of traditional and emerging media by governments, politicians, and civil society (NGOs, activist groups and citizens) to communicate with their publics, influence public and policy agendas, effect social and political change, monitor public opinion, manage their reputation, and/or build networks of resistance. Impact of changing communication technologies.
on government media relations. Case studies.

CMN5560 USAGES POLITIQUES DES MÉDIAS (3cr.)
Revue critique des principaux aspects de la théorie contemporaine, de la recherche et des pratiques de communication politique. Usage des médias traditionnels et émergents par les gouvernements, les politiciens et la société civile (agences non gouvernementales, groupes de militants et de citoyens) pour communiquer avec leurs public respectif, pour influencer le public et pour promouvoir leur cause et provoquer le changement social et politique, évaluer l’opinion publique, gérer leur réputation et/ou développer des réseaux de résistance. Influence des technologies de communication sur les relations entre le gouvernement et les médias.

CMN5161 CONSTRUCTION OF SOCIAL REALITY BY THE MEDIA (3cr.)
Study of the media strategies that aim to create the verisimilitude of everyday life. Analysis of the contemporary production of authenticity (or its simulation) in media genres such as televised reality shows, mock news shows, cringe comedy, and polémical documentaries.

CMN5561 REPRÉSENTATION ET SIMULATION DE LA RÉALITÉ PAR LES MÉDIAS (3cr.)
Étude des stratégies médiatiques de construction des effets de réel. Analyse de la production contemporaine de l'authentique (ou de sa simulation) dans les genres médiatiques comme la télé réalité, les parodies de bulletin d'information et les documentaires polémiques.

CMN5165 NEW DIRECTIONS IN JOURNALISM (3cr.)
Theoretical and empirical studies of recent trends and changes in journalistic practices. Impact of social, economic and technological factors on journalism (e.g., commoditization of information, concentration of ownership, and digital media convergence). New socio-critical practices. Audience research.

CMN5565 NOUVELLES ORIENTATIONS EN JOURNALISME (3cr.)

CMN5170 INTERNATIONAL COMMUNICATION (3cr.)
Contemporary approaches to international communication. The role of traditional and emerging media, international institutions, governmental agencies, and NGOs. Analysis of problems related to participatory communication and alternative models.

CMN5570 COMMUNICATION INTERNATIONALE (3cr.)
Approches contemporaines de la communication internationale. Le rôle des médias traditionnels et des nouveaux médias, des institutions internationales, agences gouvernementales, ONGs. Analyse de questions spécifiques telles que la communication participative et les modèles alternatifs.

CMN5190 MEDIA, IDENTITY AND DIVERSITY (3cr.)
Study of identity issues as seen through the prism of the media and relating to ethnicities, races, cultures, age groups, sexual orientations, genders, classes, abilities, language, religion, and value orientations. Study of the representations and challenges posed by “otherness” and diversity in an era of globalization and accelerated circulation of information.

CMN5590 MÉDIAS, IDENTITÉ ET DIVERSITÉ (3cr.)

CMN5195 SPECIAL TOPICS (3cr.)

CMN5595 THÉMES SPÉCIAUX (3cr.)

CMN5900 ÉTUDES DIRIGÉES EN COMMUNICATION / DIRECTED STUDIES IN COMMUNICATION (3cr.)
Étude d'une problématique particulière ou approfondissement de ses connaissances dans un domaine des communications. Le sujet de recherche est déterminé et développé en consultation avec le professeur responsable. Le projet doit être différent de ce qui a pu être soumis dans d'autres cours. Limite d'un cours d'études dirigées par étudiant. Préalable : Permission du Comité des études supérieures. / Opportunity to study an area of particular interest or to pursue an interest in greater depth. Research topic to be selected and developed in consultation with the supervising professor. Should not repeat work submitted in other courses. Maximum of one directed studies course per student. Prerequisite: Permission of the Graduate Studies Committee.

CMN6990 PROPOSITION DE RECHERCHE / RESEARCH PROPOSAL
Rédaction d’une proposition de thèse ou de mémoire conformément aux lignes directrices du département de communication. La proposition doit comprendre une recension critique, préparée en consultation avec le directeur ou la directrice de thèse ou de mémoire, des principaux travaux consacrés au sujet. Il faut défendre la proposition devant un comité consultatif constitué de la directrice ou du directeur et d’un autre professeur (pour le mémoire) ou de deux autres professeurs (pour la thèse). Si la proposition n’est pas acceptée la première fois, l’étudiant pourra la soumettre et la présenter une deuxième fois à la session suivante. Si la proposition n’est pas approuvée lors de la deuxième soumission, une note de « non satisfaisant » sera attribuée pour la proposition et le retrait du programme s'imposera. Le cours est noté S/NS. Préalable : CMN5500 / Preparation of an MA thesis or research paper proposal, based on guidelines established by the department of communication. The proposal should include a thorough and critical review of literature on the research topic, prepared in consultation with the supervisor of the thesis or research paper. The proposal must be defended before an advisory committee consisting of the supervisor and one other professor (research paper) or two other professors (thesis). Students whose proposal is not accepted on the first attempt may submit and present it a
second time in the following session. Failure to obtain approval on the second attempt leads to a grade of "not satisfactory" for the proposal and to compulsory withdrawal from the program. The course is graded S/NS. Prerequisite: CMN5100.

CMN6998 MÉMOIRE / RESEARCH PAPER
Préalable : CMN 6990 / Prerequisite: CMN 6990

CMN6999 THÈSE DE MAÎTRISE / MASTER’S THESIS
Préalable : CMN 6990 / Prerequisite CMN 6990

Piano Pedagogy Research (Graduate Certificate)

A large percentage of music majors become piano teachers either in private studios or in specialised music schools and a significant number of those teachers are interested in continuing their training, either immediately after their undergraduate program or a few years after becoming integrated into the work force. This Graduate Certificate in Piano Pedagogy Research has been created to meet the needs of those students.

Interest in research into the theory and practice of piano pedagogy is in a growth period. This program will provide an in-depth study of the research done in piano pedagogy or related disciplines as it contributes to our understanding of the processes involved in learning to play the piano. This graduate certificate will enable piano teachers to incorporate scientific knowledge into their own practice of piano teaching and will contribute to developing highly qualified professionals with a strong interest in research in the field.

The Graduate Certificate in Piano Pedagogy Research is offered both on a part-time basis and a full-time basis. Full-time students will normally complete the Certificate within two sessions (September to April). All students will be required to complete it within three years.

On completion of the certificate, qualified students meeting admission requirements may apply to the MMus or the MA in Music and, on admission, complete the requirements for those programs with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually with relation to the student's chosen master's program.

Admission

Candidates are required to have one of the following: a BMus; a four-year honours BA in music; an equivalent degree, certificate, or diploma. They must have achieved a 75 per cent (B+) average in their undergraduate degree or equivalent diploma. Students must understand, speak and write either English or French fluently. In addition, they must have a passive knowledge of Canada’s other official language, French or English. According to university regulations, students can write their parchers and exam in the official language of their choice (either English or French).

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master’s

Students registered in the graduate certificate program can request to transfer to the Master of Music (MMus) or the Master of Arts in Music (MA (Mus)) in accordance with section A.7.1 of the "General regulations” of the FGPS.

Program Requirements

Certificate requirements

The Graduate Certificate in Piano Pedagogy Research requires successful completion of five courses (15 credits), of which 12 are electives, and an oral examination. The passing grade in all courses is C+ and students who fail two courses (six credits) must withdraw.

A. Core courses (3 cr.)
At least one of the following two courses : (MUS 6931 or MUS 6932)
MUS6931 THÈMES EN PÉDAGOGIE DE LA MUSIQUE / TOPICS IN MUSICAL PEDAGOGY (3cr.)
MUS6932 THÈMES EN PÉDAGOGIE DU PIANO / TOPICS IN PIANO PEDAGOGY (3cr.)
and
MUS6935 EXAMEN ORAL / ORAL EXAMINATION

B. Elective courses (12 cr.)

Students are strongly encouraged to take MUS 5902 (External Practicum) as one of their electives. A maximum of six credits of EDU courses can be included
MUS5902 STAGE EXTERNE / EXTERNAL PRACTICUM (3cr.)
Stage dirigé permettant aux étudiants et aux étudiantes de mettre en pratique leurs connaissances et leur expertise, normalement dans un cadre extérieur à l'université. Rédaction d'un rapport évalué par leurs professeurs superviseurs. Noté : S/NS. Préalables : Permission du professeur superviseur de l'étudiant et du directeur des études supérieures; disponibilité d'un stage jugé convenable par le Département de musique. / A supervised practicum designed to allow students to put their knowledge and developing expertise to work in a setting normally outside the university. Students will be required to submit a written report that will be evaluated by the student's supervisors. Graded: S/NS. Prerequisites: Permission of the student's supervisor and director of Graduate studies; availability of a placement deemed suitable by the Department of Music.

MUS5910 SÉMINAIRE DE RECHERCHE / RESEARCH SEMINAR
Forum de discussion sur la méthodologie, les problèmes et le cadre théorique de la recherche, dans le contexte des recherches poursuivies par les étudiants et les étudiantes inscrits. / Discussion of research methodology, problems and theoretical frameworks in relation to participating students' research.

MUS6931 THÈMES EN PÉDAGOGIE DE LA MUSIQUE / TOPICS IN MUSICAL PEDAGOGY (3cr.)
Les thèmes étudiés comprennent les facteurs cognitifs liés aux habiletés en lecture musicale; le contrôle de la dimension expressive dans l'interprétation; l'importance de la pratique dans la maitrise des mouvements techniques; les habiletés développées par une approche fondée sur l'apprentissage à l'oreille comparativement à une approche basée sur l'apprentissage de la lecture; les mémoires auditives, visuelles et tactiles impliquées dans la mémorisation de la musique. / Themes being studied will include the cognitive factors related to the skills involved in reading music; the control of expressive aspects of playing; the role of practising in mastering the technical movements; the skills related to an ear training approach versus a note-reading approach; the aural, visual and tactile memory skills involved in memorising music.

MUS6932 THÈMES EN PÉDAGOGIE DU PIANO / TOPICS IN PIANO PEDAGOGY (3cr.)
Les thèmes étudiés comprennent les réflexes conditionnés d'un sujet aux stimuli musicaux complexes impliqués dans l'apprentissage du jeu pianistique; une analyse approfondie des recherches sur l'efficacité et la pertinence des méthodes de piano déjà reconnues; l'étude des habiletés motrices impliquées dans le développement de la technique; les questions de santé impliquées dans les blessures liées au jeu du piano. / Themes being studied will include a subject's conditioned responses to complex musical stimuli in the context of learning to play the piano; in-depth understanding of the research evaluating the effectiveness and relevance of already established piano methods; study of the motor skills involved in developing piano technique; health issues involved in the injuries related to piano playing.

MUS6935 EXAMEN ORAL / ORAL EXAMINATION
L'examen oral a lieu à la fin du programme et se tient devant un jury formé de deux membres du corps professoral. Noté S/NS. / The oral examination takes place at the end of the program and is held in the presence of a jury consisting of two faculty members. Graded S/NS.

MUS6990 SÉMINAIRE SUR LES TECHNIQUES D'INTERPRÉTATION / SEMINAR IN PERFORMANCE PRACTICE (3cr.)
Thèmes choisis en interprétation et performance pratique. / Selected topics in performance and performance practice.

MUS6991 INTERPRÉTATION COMPARÉE / COMPARATIVE INTERPRETATION (3cr.)
Étude des difficultés propres au répertoire instrumental par le biais d'un examen critique d'interprétations comparées d'une même oeuvre. Noté S/NS. / Study of instrumental repertoire through examination of various performances of the same works in order to confront specific problems in interpretation. Graded S/NS.
Population Health Risk Assessment and Management (Graduate Certificate)

Population health risk assessment is the comprehensive assessment of health risks in the general population based on environmental, genetic, economic, social and behavioural determinants of health. This leads to evidence-based population health risk policy analysis, and ultimately, cost effective population health risk management decisions.

The Graduate Certificate in Population Health Risk Assessment and Management is specially designed for those individuals employed and/or interested in population health analysis and risk assessment. The certificate aims to provide the professional skills and knowledge needed to pursue careers in both the public and the private sectors. The certificate is offered both full- and part-time.

On completion of the Certificate, qualified students meeting admission requirements could apply to one of the following programs: the Master of Science (MSc) in Epidemiology, the Master of Health Administration (MHA) or the Doctorate in Population Health (PhD). Upon admission, students will have to complete the requirements of their program with credits granted for relevant certificate courses.

Once you have completed the Graduate Certificate in Population Health Risk Assessment and Management, you may request admission to the MSc in Epidemiology. Admission to the MSc is competitive and the number of candidates admitted is limited. If you are admitted, some credits from the Graduate Certificate may be retained in the MSc. This evaluation is made on a case-by-case basis by the MSc Epidemiology Program Committee.

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: www.etudesup.uottawa.ca/generalregulations

Admission
Admission is competitive. Candidates must normally hold a bachelor’s degree with honours in science, health sciences and/or social sciences with an average of 75% (B+) or above. Candidates holding credentials that may not exactly match these standards but who meet the Faculty of Graduate and Postdoctoral Studies (FGPS) minimum admission requirements may be admitted based on having demonstrated knowledge and skills obtained through relevant training and/or experience. Proficiency in English is required. Ideally, students applying to the Certificate would have successfully completed EPI 5240 and EPI 5242 prior to their admission. Students who have not completed courses in biostatistics and epidemiology will be required to attend a one-week each intensive courses at the end of August. These courses are offered by the University of Ottawa.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master’s**

Students registered in the graduate certificate program can request to transfer to the Master of Science degree in Epidemiology in accordance with section A.7.1 of the “General regulations” of the FGPS.

**Language Requirements**

The core courses are offered in English. In accordance with University of Ottawa regulations, however, all students have the option of writing exams and assignments in either English or French.

**Program Requirements**

**Certificate Requirements**

The graduate certificate requirements consist of 15 credits, with nine credits of core courses and six credits of electives. The passing grade in all courses is C+.

Students who fail six credits or the same course twice must withdraw from the program. The certificate requirements must be completed within a maximum of three years.

A. Core courses (nine credits):

- PHR5181 POPULATION HEALTH RISK ASSESSMENT I (3cr.)
- PHR6182 POPULATION HEALTH RISK ASSESSMENT II (3cr.)
- PHR6101 RISK MANAGEMENT IN GOVERNMENT (3cr.)

B. Optional courses (six credits) to be chosen from the following:

- EPI5188 HEALTH TECHNOLOGY ASSESSMENT (3cr.)
- EPI5189 HEALTH ECONOMIC EVALUATION (3cr.)
- EPI5213 CHRONIC DISEASE EPIDEMIOLOGY (3cr.)
- EPI5241 EPIDEMIOLOGY II - ADVANCED EPIDEMIOLOGY (3cr.)
- EPI5251 MEASUREMENT IN HEALTH (3cr.)
- EPI6181 SOCIAL ASPECTS OF EPIDEMIOLOGY (3cr.)
- EPI6188 SYSTEMATIC REVIEWS AND META-ANALYSIS (3cr.)
- EPI6276 QUANTITATIVE METHODS IN EPIDEMIOLOGY (3cr.)
- EPI6278 ADVANCED CLINICAL TRIALS (3cr.)
- EPI6283 PHARMACOEPIDEMIOLOGY (3cr.)
- EPI6581 INTRODUCTION À L’ÉPIDÉMILOGIE SOCIALE (3cr.)
- EPI7181 EPIDEMIOLOGY FOR HEALTH POLICY (3cr.)
- HAH6201 POPULATION HEALTH AND EPIDEMIOLOGY (1.5cr.)
- HAH6210 OPERATIONAL AND ECONOMIC EVALUATION OF HEALTH CARE (1.5cr.)
- HAH6212 HEALTH CARE ETHICS (1.5cr.)
- HAH6251 HEALTH CARE ECONOMICS AND RESOURCE ALLOCATION (1.5cr.)
- HAH6262 HEALTH CARE LAW (1.5cr.)
- HAH6270 HEALTH INFORMATICS: MANAGEMENT PERSPECTIVE (1.5cr.)
- PHR6900 ÉTUDES DIRIGÉES EN ÉVALUATION DU RISQUE EN SANTÉ DES POPULATIONS / DIRECTED STUDIES IN POPULATION HEALTH RISK ASSESSMENT (3cr.)
- PHR6910 STAGE EN ÉVALUATION ET GESTION DU RISQUE EN SANTÉ DES POPULATIONS / PRACTICUM IN POPULATION HEALTH RISK ASSESSMENT AND MANAGEMENT (3cr.)
- PSY6905 PSYCHOLOGIE COMMUNAUTAIRE / COMMUNITY PSYCHOLOGY (3cr.)
- PSY6923 RECHERCHE SUR LE STRESS PSYCHOSOCIAL / PSYCHOSOCIAL STRESS RESEARCH (3cr.)
Courses

Tronc commun / Core Courses

PHR5181 POPULATION HEALTH RISK ASSESSMENT I (3cr.)
National and international policy frameworks for health risk assessment and management, including determinants of population health; epidemiological, clinical, and toxicological methods for identifying health hazards; population health surveillance; methods of population health risk assessment; regulatory, economic, advisory, and technological approaches to population health risk management; community action and social marketing; selection of risk management strategies; risk perception and risk communication. Lectures and case studies. Preparation of term paper on a current issue in population health risk assessment. Exclusion: EPI 5181.

PHR6182 POPULATION HEALTH RISK ASSESSMENT II (3cr.)
Scientific methods for population health risk assessment; characterization of population health risks, and attendant uncertainties; risk modeling; combining risk information from different sources; risk acceptance; principles of risk management decision making; evidence-based risk management policy development; audit and evaluation of risk interventions; priority setting; case studies on current population health risk assessment issues. Term paper on a current methodological issue in population health risk assessment required. Prerequisite: PHR 5181. Exclusion EPI 6182.

PHR6101 RISK MANAGEMENT IN GOVERNMENT (3cr.)
Study of risk management frameworks, guidelines and principles for decision makers; review of ethical grounding and risk evaluation techniques and follow-up. Written report to be submitted by the student on a current risk management project. Prerequisite: Permission of instructor.

Cours au choix / Optional Courses

EPI5188 HEALTH TECHNOLOGY ASSESSMENT (3cr.)
Definition and scope of health technology assessment; needs assessment; practice variations; use of administrative databases; evaluation of diagnostic tests; development and use of practice guidelines and clinical prediction rules; health technology assessment in the developing world. Lectures, seminars and case studies. Prerequisite: Permission of the program director.

EPI5189 HEALTH ECONOMIC EVALUATION (3cr.)
Brief overview of economics and health economics; examination of analyses used in epidemiologic and clinical research: cost-effectiveness analysis, cost-minimization analysis, cost-utility analysis (including determination of utilities), cost-benefit analysis, cost of illness studies and use of economic methods in priority-setting. Lectures and seminars. Written report required, presenting an economic evaluation or a detailed review of the economic literature in a particular area. Prerequisite: Permission of the program director.

EPI5213 CHRONIC DISEASE EPIDEMIOLOGY (3cr.)
Review of the descriptive epidemiology (distribution, trends, risk factors) of the major chronic diseases, with emphasis on circulatory diseases, cancer, injuries, and mental health problems. Approaches to primary and secondary prevention. Lectures, presentations by invited experts, and student presentations. Prerequisite: Permission of the program director.

EPI5241 EPIDEMIOLOGY II - ADVANCED EPIDEMIOLOGY (3cr.)
This second level epidemiology course covers major principles of design, analysis, and interpretation of epidemiologic research. Material presented in a quantitative manner. Prerequisites: EPI 5240 (Epidemiology I) and EPI 6276 (Quantitative Methods in Epidemiology); EPI 6276 may be taken concurrently with the permission of the program director.

EPI5251 MEASUREMENT IN HEALTH (3cr.)
An overview of measurement theory as applied to health measurement; a review of existing measurements of health status in clinical and research applications, plus practical experience of how to develop and test new measurement methods. Prerequisite: Permission of the program director.

EPI6181 SOCIAL ASPECTS OF EPIDEMIOLOGY (3cr.)
This course will analyze the way in which behavioural, social and emotional forces influence patterns of disease. The links between these processes and physiological changes; inferences on how best to intervene to modify "lifestyle" risk factors; recent prevention and health promotion trials will be reviewed. May also be offered in French: EPI 6581. Prerequisite: Permission of the program director.

EPI6188 SYSTEMATIC REVIEWS AND META-ANALYSIS (3cr.)
Approaches to the systematic review of evidence in the health sciences. Searching for the evidence, selection of studies, quality and validity of included studies, heterogeneity, statistical analysis and other quantitative and qualitative methods. Students to be required to do a meta-analysis on a topic of their own interest. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

**EPI6276 QUANTITATIVE METHODS IN EPIDEMIOLOGY** (3cr.)
Application of advanced topics in statistical methods for epidemiologic data analysis: logistic regression and discriminant analysis, Poisson regression, contingency table analysis (including log-linear modelling), time series, survival analysis, Cox regression with and without time-dependent covariates, principle components and factor analysis. Prerequisites: EPI 5240 and EPI 5242 and permission of the program director.

**EPI6278 ADVANCED CLINICAL TRIALS** (3cr.)
Lectures and laboratories on the detailed principles, design, methodology and statistical techniques associated with clinical trials. Emphasis on emerging topics and procedures. Prerequisites: EPI 5242 and EPI 6178 and permission of the program director.

**EPI6283 PHARMACOEPIDEMIOLOGY** (3cr.)
Issues in and methodology of pharmacoepidemiology. Discussion on the biases and confounders possible at every stage of a pharmacoepidemiological study, in drug utilization review, drug effectiveness, risk/benefit assessment and other topics. This course will normally be given every second year. Prerequisites: EPI 5240 or equivalent and permission of the program director.

**EPI6851 INTRODUCTION À L'ÉPIDÉMIOLLOGIE SOCIALE** (3cr.)
Une analyse de l'influence des forces sociales et du comportement humain sur le développement de la maladie. L'interaction entre le comportement et les systèmes physiologique et endocrinien, y compris le processus psychosomatique. Les indications pour l'intervention préventive par la modification du mode de vie. Également offert en anglais : EPI 6181. Préalable: Permission du responsable du programme.

**EPI7181 EPIDEMIOLOGY FOR HEALTH POLICY** (3cr.)
Exploration of key issues relating to health policy within and outside Canada. Topics covered: rationale for public provision and funding of health care in Canada; historical and current perspectives regarding structure and process of Canadian health care system; specific micro and macro policy issues relating to health and health care provision (Canadian and international). Seminar based. Student presentations and written reports required.

**MHA6212 GOVERNANCE AND ETHICAL MANAGEMENT IN HEALTH CARE ORGANIZATIONS** (1.5cr.)
Governance models for health care organizations. Definition, resolution and handling of ethical problems of administrators, professionals and researchers in health organizations. Reconciliation of conflicting interests of the stakeholders according to ethical principles.

**MHA6301 POPULATION HEALTH AND EPIDEMIOLOGY** (3cr.)
Provides a survey of epidemiology; viewed through a "population health" lens. Course will provide a survey of: measures of health status (including measures of mortality and morbidity); and measures of association. The basic epidemiological designs (observational, case-control, cohort, time series, and randomized control studies) will be reviewed. The factors affecting the precision and validity of these studies (e.g., statistical power, confounding, effect modification, and causality criterion) will be reviewed. Emphasis will be placed on equipping students with an ability to critically evaluate clinical, epidemiological, and health administration evidence in support of decisions. Guidance will also be provided to help select appropriate outcome indicators and critically evaluate interventions/programs. Students will get hands on experience computing effect measures (e.g., odds ratios) from study results, as well as with assessing the precision and validity of results. Prerequisite: MBA 5300

**MHA6351 HEALTH ECONOMICS** (3cr.)
The course provides a macro-economic perspective on the demand and supply of healthcare, highlighting the market failures that are archetypical within the health domain. It contrasts Welfarist and Extra-Welfarist perspectives on resource allocation (contrasting technical versus allocative efficiency). The course will also review cost-benefit, cost-effectiveness, and cost-utility approaches of evaluating health interventions; and in so doing the course will provide students an opportunity for hands-on computation (workshops). The course will also consider the issue of equity and methods for incorporating equity into health economic evaluations.

**MHA6370 INTRODUCTION TO HEALTH INFORMATICS** (3cr.)
Overview of current developments, issues and challenges in the emerging field of health informatics. Historical development as well as basic foundations of health informatics including theoretical, methodological and ethical/legal underpinnings will be studied. Critical examination of information management principles and methods in Canadian health care organizations both public and private. Emerging applications in health informatics as well as approaches to understanding and evaluating these applications. Identification of the issues which CIO’s face in their attempts to provide the right information to the right people, at the right time.

**PHR6900 ÉTUDES DIRIGÉES EN ÉVALUATION DU RISQUE EN SANTÉ DES POPULATIONS / DIRECTED STUDIES IN POPULATION HEALTH RISK ASSESSMENT** (3cr.)
Recherche et redaction d’un travail sur un sujet lie à l’évaluation du risque en santé des populations, tel que le risque ayant trait à l’environnement, aux facteurs sociaux, à la génétique et au système de soins de santé, le tout sous la direction d’un professeur membre de la faculté. Le sujet doit être approuvé par le directeur de programme. Note : S/N. Préalable : Permission du directeur de programme. Exclusion : PHR 6910. / Opportunity to conduct research and write a paper on a current topic in population health risk assessment, including risk issues related to the environment, social factors, genetics or the health system, under the direction of a faculty member. Topic must be approved by the Program Director. Graded S/N. Prerequisite: Permission of the Program Director. Exclusion: PHR 6910.

**PHR6910 STAGE EN ÉVALUATION ET GESTION DU RISQUE EN SANTÉ DES POPULATIONS / PRACTICUM IN POPULATION
Primary Health Care Nurse Practitioner (Diploma)

General information

The School of Nursing offers a diploma in Primary Health Care Nurse Practitioner. The goal of the program is to educate registered nurses for an advanced practice role as a primary health care nurse practitioner (NP). The graduates of this program are prepared to assume leadership roles in improving the quality of nursing care as nurse practitioners in various primary health care settings. The program provides rigorous academic preparation based on theory, research, and practice to address health-related phenomena experienced by individuals, families, groups and communities.

The faculty of the School of Nursing is committed to assisting students to achieve the following objectives:

1. Synthesize complex health information using advanced diagnostic reasoning and critical thinking skills.
2. Critically appraise current evidence to support best practices.
3. Provide comprehensive evidence based on primary health care to clients and families across the lifespan applying clinical, theoretical and research knowledge.
4. Evaluate existing community level primary health care programs and develop new programs to meet the primary health care needs of the community.
5. Evaluate and influence policies affecting the health of the community.
6. Practice autonomously within a collaborative, interprofessional model to promote client health.
7. Deliver primary health care utilizing the roles (researcher, educator, and leader, collaborator, and change agent) recognized as advanced nursing practice.

The Diploma is offered in English and French as a post master’s degree option on a full-time or part-time basis. According to university regulations, students have the right to use French or English in their dealings with the Central Administration and the General Services and with the administration of the faculty or school where they are registered. Except in language courses, students have the right to produce their work and answer examination questions in the official language of their choice (either English or French).

All courses are offered in English and French by distance modalities. NP courses have a number of on-site tutorials for the clinical courses, and every effort will be made to provide clinical placements in either language close to the geographic area where the student is located.
Admission

Candidates for the Primary Health Care Nurse Practitioner Diploma will be considered for admission under the general regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS).

The admission requirements are as follows:

1. Baccalaureate degree in nursing;
2. Master’s degree in nursing or related discipline (e.g. education, health administration, public health)*;
3. Overall average of at least 70% (B) calculated in accordance with FGPS guidelines;
4. Current certificate of competence from the College of Nurses of Ontario or equivalent from another province;
5. The equivalent of two years nursing practice (3,640 hours) as a registered nurse within the last five years.

* In exceptional circumstances, the file of a candidate without a Master's degree could be considered.

Application deadline

The application deadline for a fall admission is the first Monday of February. However, applications received after the deadline will be reviewed and admission offers could be made providing that space is still available in the program. Please note that because of course sequencing and others factors, a student can only be admitted for a fall entry to the program. Preference is given to Ontario applicants. Out-of-province nurses will be accepted in the program if there are available spaces.

Please note that all students admitted to the School of Nursing must comply with the immunization regulations of the Faculty of Health Sciences prior to registration. See webpage, Immunization regulations of the Faculty of Health Sciences: (immunization, CPR): [http://www.uottawa.ca/services/ehss/CPRM.html](http://www.uottawa.ca/services/ehss/CPRM.html)

Documents required

The following documents are required to be submitted to the Graduate Studies Office of the Faculty of Health Sciences, Roger Guindon Hall, Room 2016, 451 Smyth Road, Ottawa, K1H 8M5:

1. The official "Application for Admission On-line - Graduate Studies" form;
2. Official transcripts of all postsecondary studies;
3. Two letters of recommendation (at least one letter from a health professional with whom you have worked);
4. Verification of Employment Hours Form documenting 3,640 hours of nursing practice within the last 5 years; [http://www.health.uottawa.ca/sn/pro/documents/EmploymentHours-heuresemploy.pdf](http://www.health.uottawa.ca/sn/pro/documents/EmploymentHours-heuresemploy.pdf)
5. Personal Essay From responding to three questions (maximum 1,500 words.) [http://www.health.uottawa.ca/asp/form/phcnp_personal_essay.htm](http://www.health.uottawa.ca/asp/form/phcnp_personal_essay.htm)
6. A copy of a current certificate of registration from the College of Nurses of Ontario or from the province of clinical placement.

Program Requirements

Diploma Requirements

The diploma requires 30 credits as follows:

NSG5350 Pathophysiology for the nurse practitioner (3cr.)
NSG5360 Roles and responsibilities of the nurse practitioner (3cr.)
NSG5370 Advanced health assessment and diagnosis I (3cr.)
NSG5375 Advanced health assessment and diagnosis II (3cr.)
NSG5380 Therapeutics in primary health care I (3cr.)
NSG5385 Therapeutics in primary health care II (3cr.)
NSG5401 Integrative practicum (12cr.)

A typical program sequence would be the following:

Full-time

Fall, session 1

NSG5350 Pathophysiology for the nurse practitioner (3cr.)
NSG5360 Roles and responsibilities of the nurse practitioner (3cr.)
NSG5370 Advanced health assessment and diagnosis I (3cr.)
NSG5380 Therapeutics in primary health care I (3cr.)
### Courses

**NSG5350 PATHOPHYSIOLOGY FOR THE NURSE PRACTITIONER** (3cr.)
Examine theoretical and practice related concepts in pathophysiology as a basis for advanced nursing practice. Explore alterations in physiological function with an emphasis on age-related, acute, episodic, and chronic conditions found in primary health care practice. Seminar: 3 hours/week. Course for PHCNP students only.

**NSG5360 ROLES AND RESPONSIBILITIES OF THE NURSE PRACTITIONER** (3cr.)
Compare and contrast advanced practice nursing and related frameworks to develop, integrate, sustain, and evaluate the role of the nurse practitioner within primary health care. Critically analyze and develop strategies to implement advanced practice nursing competencies with a focus on the community. Seminar: 3 hours/week Course for PHCNP students only.

**NSG5370 ADVANCED HEALTH ASSESSMENT AND DIAGNOSIS I** (3cr.)
Analyze and critique concepts and frameworks essential to advanced health assessment and diagnosis using clinical reasoning skills. Apply clinical, theoretical and research knowledge in comprehensive and focused health assessment for the individual client’s diagnostic plan of care. Course for PHCNP students only. **Prerequisite or co-requisite:** NSG5350.

**NSG5375 ADVANCED HEALTH ASSESSMENT AND DIAGNOSIS II** (3cr.)
Integrate knowledge and apply conceptual frameworks integral to advanced health assessment and diagnosis in advanced nursing practice. Demonstrate initiative, responsibility, and accountability in complex decision making for individuals, groups, and/or families within the nurse practitioner scope of practice based on current research findings. Seminar: 3 hours per week. Clinical: 6 hours per week. Course for PHCNP students only. **Prerequisite:** NSG5370.

**NSG5380 THERAPEUTICS IN PRIMARY HEALTH CARE I** (3cr.)
Critically appraise and interpret concepts and frameworks integral to pharmacotherapy, advanced counseling, and complementary therapies for common conditions across the lifespan. Develop, initiate, manage, and evaluate therapeutic plans of care that incorporate client values and acceptability, goals of therapy, analysis of different approaches, pharmacotherapeutic principles. Course for PHCNP students only. **Prerequisite or co-requisite:** NSG5370.

**NSG5385 THERAPEUTICS IN PRIMARY HEALTH CARE II** (3cr.)
Integrate conceptual frameworks and evidence underlying the study of pharmacotherapy, advanced counseling, and complementary therapies for complex client situations. Demonstrate substantive initiative, responsibility, and accountability in complex decision making. Course for PHCNP students only.
**Program Evaluation (Graduate Certificate)**

The University of Ottawa Graduate Certificate in Program Evaluation is offered, in French and in English, as an interdisciplinary program through the collaboration of the Faculty of Education and the School of Psychology in the Faculty of Social Sciences. The program is housed in the Centre for Research on Educational and Community Services, which is jointly sponsored by the two faculties.

The objective of the graduate certificate is to offer advanced training in program evaluation to individuals in the public, private, and not-for-profit sectors. Program evaluation involves the use of social science methods to inform the development and improvement of programs, organizations, and public policies. The curriculum is designed to provide students with the necessary competencies to enable them to conduct independent program evaluations of high quality.

The certificate is offered in English and in French.

In accordance with University of Ottawa regulations, examinations and assignments may be written in either one of the two official languages.
The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: www.etudesup.uottawa.ca/generalregulations

For more information on the certificate, please contact either:

Faculty of Education
Academic Secretariat
145, Jean-Jacques Lussier Street
Ottawa ON K1N 6N5
Canada
Telephone: 613-562-5804
Fax: 613-562-5963
E-mail: educprog@uottawa.ca

Faculty of Social Sciences
Mireille Côté, Administrator, Graduate Studies
School of Psychology
Lamoureux Hall, room 352
145, Jean-Jacques Lussier Street
Ottawa ON K1N 6N5
Canada
Telephone: 613-532-5800 ext. 4197
E-mail: pycgrad@uottawa.ca

Centre for Research on Educational and Community Services
34, Stewart Street
Ottawa ON K1N 6N5
Canada
Telephone: 613-562-5800 ext. 1856
Fax: 613-562-5188
E-mail: crsc@uOttawa.ca

Admission

Admission Requirements

1. Honours Bachelor’s degree in Education, Social Sciences, Health Sciences or Psychology (or equivalent);
2. Minimum 70% (B) average calculated in accordance with FGPS guidelines;
3. Proficiency in either English or French;
4. Completion of an undergraduate course in research methods including statistics with a minimum grade of 70% (B).*

*Candidates who have not already completed such a course will be required to do so on a special-student basis prior to admission.

On completion of the graduate certificate, qualified students meeting admission requirements could apply to one of the related master’s programs, in particular the MA in Education or the MEd and, upon admission, complete the requirements for those programs with credit granted for relevant courses already completed in the certificate. The number of credits remaining would be assessed individually, at the time of admission, with relation to the student’s chosen master's program. The regulation governing the articulation between graduate certificates and related master’s programs can be found in the general Regulations of the FGPS (section A.7).

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master’s

Students registered in the graduate certificate program can request to transfer to the Master in education (MEd) in accordance with section A.7.1 of the “General regulations” of the FGPS.

Program Requirements
Certificate Requirements
The curriculum consists of courses in evaluation theory, evaluation methods and practice, contemporary issues in program evaluation, and a practicum (PSY 7102).

A. CORE COURSES (12 CREDITS)

1. EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE (3cr.)
   EDU5699 ÉVALUATION DE PROGRAMMES (3cr.)
   OR
   PSY7103 PROGRAM EVALUATION (3cr.)
   PSY7503 ÉVALUATION DE PROGRAMMES (3cr.)
   OR
   CRM6359 EVALUATION OF CRIMINAL JUSTICE PROGRAMS, POLICIES AND LEGISLATION (3cr.)
   CRM6759 ÉVALUATION DES PROGRAMMES, DES POLITIQUES ET DES LOIS EN MATIÈRE DE JUSTICE CRIMINELLE (3cr.)

2. PSY7102 FIELD RESEARCH IN SOCIAL AND COMMUNITY INTERVENTIONS (3cr.)
   PSY7502 RECHERCHE APPLIQUÉE AUX INTERVENTIONS SOCIALES ET COMMUNAUTAIRES (3cr.)

3.- EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES (3cr.)
   EDU6699 ÉVALUATION DE PROGRAMMES : THÉORIE ET PROBLÈMES ACTUELS (3cr.)

4.- EDU5504 SÉMINAIRE D’INTÉGRATION EN ÉVALUATION DE PROGRAMMES (3cr.)
   OR
   PSY5104 INTEGRATION SEMINAR IN PROGRAM EVALUATION (3cr.)

B. Electives (3 credits to be chosen from the following)

CRM6342 COMMUNITY INTERVENTION IN CRIMINOLOGY (3cr.)
CRM6742 INTERVENTION COMMUNAUTAIRE (3cr.)
EDU5391 INTERACTION OF RESEARCH AND PRACTICE (3cr.)
EDU5399 DEVELOPMENT OF ASSESSMENT INSTRUMENTS (3cr.)
EDU5461 MANAGING CHANGE IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU5662 PLANIFICATION ET GESTION DE PROGRAMMES D’ÉTUDES
EDU5799 ÉLABORATION D’INSTRUMENTS D’ÉVALUATION DES APPRENTISSAGES (3cr.)
EDU6191 QUANTITATIVE RESEARCH (3cr.)
EDU6591 RECHERCHE QUANTITATIVE (3cr.)
EDU6433 PROGRAM IMPLEMENTATION IN EDUCATIONAL ORGANIZATIONS (3cr.)
EDU7190 QUALITATIVE RESEARCH I (3cr.)
EDU7590 RECHERCHE QUALITATIVE I (3cr.)
PSY5120 ADVANCED STATISTICS IN PSYCHOLOGY: UNIVARIATE DATA ANALYSIS (3cr.)
PSY5520 STATISTIQUE AVANCÉE EN PSYCHOLOGIE : ANALYSE DE DONNÉES UNIVARIÉES (3cr.)
PSY5121 ADVANCED STATISTICS IN PSYCHOLOGY: MULTIVARIATE DATA ANALYSIS (3cr.)
PSY5521 STATISTIQUE AVANCÉE EN PSYCHOLOGIE : ANALYSE DE DONNÉES MULTIVARIÉES (3cr.)
PSY6116 COMMUNITY PSYCHOLOGY (3cr.)
PSY6516 PSYCHOLOGIE COMMUNAUTAIRE (3cr.)
Courses

Tronc commun / Core courses

**CRM6359 EVALUATION OF CRIMINAL JUSTICE PROGRAMS, POLICIES AND LEGISLATION** (3cr.)
Evaluation principles, approaches, models and methods; analysis of programs, policies and their theoretical underpinnings; selection of evaluation questions, preparation of a proposal and development of evaluation research tools.

**CRM6759 ÉVALUATION DES PROGRAMMES, DES POLITIQUES ET DES LOIS EN MATIÈRE DE JUSTICE CRIMINELLE** (3cr.)
Principes, approches, modèles et méthodes d'évaluation; analyse des interventions et de leurs fondements théoriques, choix des questions évaluatives, préparation d'un projet et élaboration des outils de recherche évaluative.

**EDU5299 PROGRAM EVALUATION: METHODS AND PRACTICE** (3cr.)
Exploration of principles of effective program evaluation methods; planning; instrument development; data collection, processing and analysis; reporting and follow-up; survey of diverse models of evaluation.

**EDU5504 SÉMINAIRE D'INTÉGRATION EN ÉVALUATION DE PROGRAMMES** (3cr.)
Intégration des théories, de la recherche et de la pratique en rapport avec l'évaluation de programmes. Production d'un rapport de recherche sur un thème lié à la théorie et/ou la pratique en évaluation de programmes. Préalables : a) EDU 5299 ou EDU 5699 ou PSY 7503 ou PSY 7103 ou CRM 6759 ou CRM 6359; b) EDU 6299 ou EDU 6699; c) PSY 7102 ou PSY 7502. Il est préférable que l'étudiant ait complété, en plus, un cours facultatif approuvé par la direction du certificat. Exclusion : PSY 5104.

**EDU5699 ÉVALUATION DE PROGRAMMES** (3cr.)

**EDU6299 PROGRAM EVALUATION: THEORY AND CONTEMPORARY ISSUES** (3cr.)
Critical evaluation of theoretical orientations to program evaluation and in-depth examination of selected contemporary issues confronting evaluators. Prerequisite: EDU 5299 or PSY 7103 or PSY 7503 or CRM 6359 or CRM 6759 (Certificate in Program Evaluation).

**EDU6699 ÉVALUATION DE PROGRAMMES : THÉORIE ET PROBLÈMES ACTUELS** (3cr.)
Analyse critique des aspects théoriques et techniques des différentes approches en évaluation de programmes. Préalable : EDU 5699 ou PSY 7103 ou PSY 7503 ou CRM 6359 ou CRM 6759 (Certificat en Évaluation de programmes).

**PSY5104 INTEGRATION SEMINAR IN PROGRAM EVALUATION** (3cr.)
Integration of program evaluation practice, research and theory leading to a written report related to advances in program evaluation practice and theory. Prerequisites: a) EDU 5299 or EDU 5699 or PSY 7103 or PSY 7503 or CRM 6359 or CRM 6759; b) EDU 6299 or EDU 6699; c) PSY 7102 or PSY 7502. It is preferable that the student have completed, in addition, one elective course approved by the director of the certificate. Exclusion: EDU 5504.

**PSY7102 FIELD RESEARCH IN SOCIAL AND COMMUNITY INTERVENTIONS** (3cr.)
Practical experience in carrying out applied research and program evaluation in a community agency or organization. Prerequisite: PSY 7103

**PSY7103 PROGRAM EVALUATION** (3cr.)

**PSY7503 ÉVALUATION DE PROGRAMMES** (3cr.)
Le concept de programme dans le contexte des services de santé. L'évaluation dans le contexte du développement des programmes dans les services de santé. Le contexte organisationnel de l'évaluation. L'identification de besoins et planification de programmes dans le contexte communautaire. L'évaluation des résultats de programmes. L'évaluation de la qualité des services.

**PSY7502 RECHERCHE APPLIQUÉE AUX INTERVENTIONS SOCIALES ET COMMUNAUTAIRES** (3cr.)
Expérience pratique de la recherche et de l'évaluation de programme dans le contexte d'un organisme communautaire. Préalable : PSY 7502.

Cours au choix / Electives

**CRM6342 COMMUNITY INTERVENTION IN CRIMINOLOGY** (3cr.)
Community methods of intervention; responsibility and limits. Use of community resources. Participation in correction and social action.
EDU5391 INTERACTION OF RESEARCH AND PRACTICE (3cr.)
Examination of the strengths, challenges, limitations and possibilities for enhancing research based practice and practitioner relevant research using quantitative and/or qualitative research.

EDU5399 DEVELOPMENT OF ASSESSMENT AND EVALUATION INSTRUMENTS (3cr.)
Skill and performance; assessment, strategies for developing assessment instruments; interpretation and communication of evaluation results

EDU5461 MANAGING CHANGE IN EDUCATIONAL ORGANIZATIONS (3cr.)
Critical examination of current literature on managing change in educational organizations; theories of change, restructuring, organizational reform and improvement.

EDU5662 PLANIFICATION ET GESTION DE PROGRAMMES D'ÉTUDES
Étude critique des principales étapes de mise en oeuvre des programmes d'études. Modalités décisionnelles relatives à la mise en œuvre des programmes d'études.

EDU5799 ÉLABORATION D'INSTRUMENTS D'ÉVALUATION (3cr.)
Évaluation des compétences polyvalentes. Étude des stratégies d'élaboration d'instruments de mesure. Interprétation et diffusion des résultats d'évaluation.

EDU6191 METHODS AND INTERPRETATION OF QUANTITATIVE RESEARCH II (3cr.)
Planning, analysis and interpretation of quantitative research within experimental and quasi-experimental frameworks; application of analysis of variance, analysis of covariance and techniques of linear regression (explanation, prediction) to educational contexts. Prerequisite: EDU 5191 or equivalent.

EDU6433 PROGRAM IMPLEMENTATION IN EDUCATIONAL ORGANIZATIONS (3cr.)
Exploration of principles of effective program implementation in educational settings.

EDU6591 MÉTHODES ET INTERPRÉTATION EN RECHERCHE DE TYPE QUANTITATIF II (3cr.)
Planification, analyse et interprétation de recherches de type quantitatif dans le cadre des plans expérimentaux et quasi-expérimentaux. Application des procédures d'analyse de la variance, d'analyse de la covariance et de la régression linéaire multiple à des problèmes typiques en éducation. Préalable : EDU 5591 ou l'équivalent.

EDU7190 QUALITATIVE RESEARCH I (3cr.)
Critical review of fundamental aspects of qualitative research in education: approaches, characteristics and strategies.

EDU7590 RECHERCHE QUALITATIVE I (3cr.)
Étude des aspects fondamentaux de la recherche qualitative en éducation : approches, caractéristiques et stratégies.

PSY5120 ADVANCED STATISTICS IN PSYCHOLOGY: UNIVARIATE DATA ANALYSIS (3cr.)
Topics covered include general linear approaches to analysis of variance and covariance, basic assumptions of parametric techniques, expected mean square and error term selection, multiple comparison and trend procedures, power of statistical tests. Attention to be paid to selected factorial designs including repeated measures, regression, and log-linear analyses.

PSY5121 ADVANCED STATISTICS IN PSYCHOLOGY: MULTIVARIATE DATA ANALYSIS (3cr.)
Principles of multivariate statistics in general, and of those of multiple regression, discriminant function analysis, multivariate analysis of variance and canonical correlation, in particular. Each statistical procedure to be accompanied by required computer application work involving major statistical packages.

PSY5520 STATISTIQUE AVANCÉE EN PSYCHOLOGIE : ANALYSE DE DONNÉES UNIVARIÉES (3cr.)
Sujets abordés : modèles linéaires généraux de l’analyse de la variance et de la covarianne, utilisation de techniques paramétriques, carré attendu et sélection des termes d’erreur, comparaisons multiples, analyse des tendances, pouvoir des tests statistiques. Autres sujets : plans expérimentaux factoriels dont les mesures répétées, la régression et l’analyse log linéaire.

PSY5521 STATISTIQUE AVANCÉE EN PSYCHOLOGIE : ANALYSE DE DONNÉES MULTIVARIÉES (3cr.)
Analyse de variables dépendantes multiples par la modélisation en équations structurelles. Régession multiple, analyse causale, analyse factorielle, corrélation canonique, analyse discriminante et MANOVA. Utilisation de logiciels.

PSY6116 COMMUNITY PSYCHOLOGY (3cr.)
Study of the socio-historical context of community psychology. Values, paradigms, and objectives of community psychology. Community mental health, primary prevention, and intervention strategies.

PSY6116 PSYCHOLOGIE COMMUNAUTAIRE (3cr.)
Étude du contexte socio-historique de la psychologie communautaire. Ses valeurs, ses paradigmes et ses objectifs. La santé mentale communautaire, la
Public Ethics (Graduate Certificate)

The Faculty of Philosophy at Saint Paul University, in collaboration with the Faculties of Theology and of Human Sciences, offers a Graduate Certificate in Public Ethics (Cert.Pub.Eth). The graduate certificate is granted jointly by the Senates of Saint Paul University and the University of Ottawa under the terms of the federation agreement between them.

The program is based on course and seminar work in public ethics and is especially attractive to mid-career professionals wishing to reflect and build on their professional experience and previous studies.

Program Objectives

To provide academic training in public ethics and foster the development of analytical skills enabling professionals (e.g., managers, political analysts, consultants, parliamentary assistants, jurists, health care professionals, administrators of agencies, information specialists) to articulate coherently the contents of an ethical debate and to clarify issues that may arise, with the aim of shaping discussions and policies at the regional, national and international levels.

Admission

Admission

To be admitted to the graduate certificate program, candidates must:

1. Have obtained an honours bachelor’s degree, or the equivalent, in philosophy, ethics, political science, governance studies, public policy, or in another discipline judged relevant, with a minimum average of 70% (B);
2. Submit two letters of reference, at least one of which must be from a professor;
3. Be proficient in at least one of Canada’s two official languages and have a good enough reading knowledge of the other language to be able to read texts in that language.

In exceptional cases, candidates who do not hold the equivalent of an honours bachelor’s degree as defined above may be admitted to the graduate certificate program, provided they can demonstrate, to the satisfaction of the Admissions Committee, that they possess adequate knowledge and professional experience (for example, experience as a policy analyst in the public sector). In some cases, such candidates may be required to complete qualifying courses in pertinent disciplines prior to admission.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master’s

Students registered in the graduate certificate program can request to transfer to a related master’s program in accordance with section A.7.1 of the "General regulations" of the FGPS.

Language of Instruction

The program is offered in French and in English. In accordance with Saint Paul University and the University of Ottawa regulations, examinations, assignments and the research paper or thesis may be written in either one of the two official languages (English or French).

Program Requirements

Certificate Requirements

The Graduate Certificate in Public Ethics program consists of 15 credits of course and seminar work. It is normally a one-year program, with the year divided into two sessions of full-time study. The program can also be taken on a part-time basis. All students, whether full- or part-time, must complete all certificate requirements within three years of having first registered in the program. Serious efforts are made to accommodate the schedules of part-time students.
A.7.1 of the "General regulations" of the FGPS.

Students registered in the graduate certificate program can request to transfer to the Master of Arts (MA) in public administration in accordance with section A.7.1 of the "General regulations" of the FGPS.

Electives (9 cr.)

Three courses (9 cr.) chosen from among the following:

CMN5115 COMMUNICATION ETHICS (3cr.)
ECS5304 ETHICAL DIMENSIONS OF CONFLICT (3cr.)
PAP6102 DEMOCRATIC GOVERNANCE (3cr.)
EPE6301 MILITARY AND PEACEKEEPING ETHICS (3cr.)
EPE6302 ENVIRONMENTAL ETHICS (3cr.)
EPE6303 ETHICS AND HUMAN RIGHTS (3cr.)
EPE6304 ETHICS AND INTERNATIONAL DEVELOPMENT (3cr.)
EPE6305 ETHICS AND HEALTH CARE (3cr.)
EPE6306 ETHICS, PRIVACY AND INFORMATION (3cr.)
PAP6402 SELECTED TOPICS IN ETHICS (3cr.)
PAB6901 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
SOC7550 RELATIONS INTERETHNIQUES : EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)

Courses

CMN5115 COMMUNICATION ETHICS (3cr.)
Emphasis on the significance of ethical principles and responsibilities of public communicators, as well as sanctions faced when communicators fail to uphold these principles. Critique of self-regulation of the media. Analysis of argumentation. Study of legal precedents with respect to defamation.

CMN5515 ÉTHIQUE DE LA COMMUNICATION (3cr.)
L’accent sera mis sur la signification des principes éthiques et de la responsabilité des communicateurs publique ainsi que sur les sanctions auxquelles s’exposent les communicateurs qui ne respectent pas ces principes. Critique de l’autorégulation des médias. Analyse de l’argumentation. Étude de la jurisprudence en matière de diffamation.

ECS5304 ETHICAL DIMENSIONS OF CONFLICT (3cr.)
Conceptual and procedural ethical issues concerning norms of justice and reconciliation. Relation of ethical issues to self-other dialectics, dynamics of discourse and power, gender and class, memory and agency.

PAP6102 DEMOCRATIC GOVERNANCE (3cr.)
This seminar provides an examination of how democratic governments structure their decision-making processes for effectiveness, representation and accountability. A particular focus of this seminar is a critical evaluation of the New Public Management reforms, and an in-depth review of different models of government intervention and policy-making from a comparative perspective.

PAP6502 GOUVERNANCE DÉMOCRATIQUE - RENDEMENT ET IMPUTABILITÉ (3cr.)
Examen des mesures prises par les gouvernements démocratiques pour s’assurer que les processus de prise de décision répondent aux critères d’efficacité, de représentativité, et d’imputabilité. Accent sur l’examen critique des réformes récentes des modes de gestion à la fonction publique et étude approfondie des différents modes d’intervention gouvernementale et d’élaboration de politiques d'un point de vue comparatif.

EPE6300 MAIN ETHICAL THEORIES (3cr.)

EPE6301 MILITARY AND PEACEKEEPING ETHICS (3cr.)
Examination of the thought on ethics by philosophers and military personnel. Readings from Cicero, Julius Caesar, Marcus Aurelius before turning to renaissance and modern thinkers. Contemporary ethics of war, the nature of the soldier and the peacekeeper. Theoretical discussions and a detailed look at current policies and thinking at the Department of National Defence.

EPE6302 ENVIRONMENTAL ETHICS (3cr.)
Ethical analysis of environmental policies. Nature of the relationship between humans and the environment.

EPE6303 ETHICS AND HUMAN RIGHTS (3cr.)
EPE6304 ETHICS AND INTERNATIONAL DEVELOPMENT (3cr.)
Ethical components of development and underdevelopment theories. Rights and obligations of wealthy countries towards poor countries. Ethical critique of policies governing international aid.

EPE6305 ETHICS AND HEALTH CARE (3cr.)

EPE6306 ETHICS, PRIVACY AND INFORMATION (3cr.)
Analysis of the impact of the development of New Information and Communications Technologies (NTIC) on privacy and the confidentiality of personal information.

EPE6310 SEMINAR IN PUBLIC ETHICS (3cr.)
Analysis and resolution of practical problems in public ethics. Methodologies and principles of research in public ethics, using a case-study approach.

EPE6320 SELECTED TOPICS IN ETHICS (3cr.)
Study of a specialized area in ethics.

EPE6700 LES PRINCIPALES THÉORIES ÉTHIQUES (3cr.)

EPE6701 ÉTHIQUE DE L’ART MILITAIRES ET DU MAINTIEN DE LA PAIX (3cr.)
Examen de réflexions éthiques de la part de philosophes et de militaires. Lecture d’auteurs anciens (Cicéron, Jules César, Marc Aurèle) et modernes. Éthique contemporaine de la guerre, la réalité du soldat et du gardien de la paix. Discussions théoriques et examen détaillé des politiques actuelles, ainsi que de la façon de penser du Département de Défense nationale.

EPE6702 ÉTHIQUE ENVIRONNEMENTALE (3cr.)

EPE6703 ÉTHIQUE ET DROITS HUMAINS (3cr.)
La Déclaration universelle des droits de la personne. Le fondement éthique des droits humains. Les perspectives historiques et les débats contemporains.

EPE6704 ÉTHIQUE ET DÉVELOPPEMENT INTERNATIONAL (3cr.)

EPE6705 ÉTHIQUE ET SOINS DE SANTÉ (3cr.)

EPE6706 ÉTHIQUE, VIE PRIVÉE ET INFORMATION (3cr.)
Impact du développement des nouvelles technologies de l’information et des communications (NTIC) sur la vie privée et la confidentialité. Protection des données personnelles.

EPE6710 SÉMINAIRE EN ÉTHIQUE PUBLIQUE (3cr.)
L’analyse et la résolution de problèmes pratiques en éthique publique. Méthodologies et principes de recherche en éthique publique, à partir d’étude de cas.

EPE6720 THÈMES CHOISIS EN ÉTHIQUE (3cr.)
Étude d’un domaine particulier de l’éthique.

EPE6901 LECTURES DIRIGÉES / DIRECTED READINGS (3cr.)
Étude avancée d’un sujet déjà analysé dans le cadre du programme, exploration d’un thème dans un domaine particulier de l’éthique. / Advanced study of a question already analysed within the framework of the program, exploration of a theme in a particular area of ethics.

EPE6998 MÉMOIRE / RESEARCH PAPER (3cr.)

EPE6999 THÈSE DE MAÎTRISE / MASTER’S THESIS (12cr.)

SOC7550 RELATIONS INTERETHNIQUES: EXAMEN CRITIQUE DES THÉORIES ET DES RECHERCHES (3cr.)
Principales théories sociologiques des relations interethniques; l'application de ces théories dans l'analyse de la structure sociale de quelques sociétés multietniques, notamment le Canada.

D'autres cours d'études supérieures jugés appropriés pour le programme et offerts dans le cadre des domaines de spécialisation disponibles dans d'autres facultés de l'Université Saint-Paul ou de l'Université d'Ottawa peuvent, avec permission, être inclus dans le programme.
Other graduate courses deemed appropriate to the program and offered within the areas of specialization available through the other faculties of Saint Paul University or the University of Ottawa may, with permission, be included in the program.

**Public Management and Governance (Graduate Certificate)**

The primary aim of the graduate certificate is to provide students with both a strong conceptual foundation for understanding and analyzing problems of governance and an effective tool-kit of skills and techniques required to operate in an increasingly complex managerial and organizational environment.

Governance is about effective coordination and decision-making in a world where knowledge and power are increasingly distributed. In this perspective, governance challenges are increasingly important to public, private and civic organizations – both within such organizations and across them.

This program was created for students who wish to increase their skills and knowledge in public management by adding an interdisciplinary dimension via courses from the Telfer School of Management and the School of Political Studies.

**Admission**

Candidates must meet the normal requirements for admission in a master’s level program at the University of Ottawa (namely, an honour’s baccalaureate degree, or its equivalent, with at least second class “B” standing from a recognized post-secondary institution). Advanced standing for up to 4.5 credits will be given to qualified students in recognition of comparable studies as determined by the Program Committee.

Candidates are required to submit a resume as well as a narrative statement. In the narrative statement, we recommend that they identify and explain the reasons why this program is of interest to them, and highlight elements of their current or past professional experience (paid or voluntary) that may have given them some insights or sparked interest in public management and/or governance. The candidates may also wish to identify what they hope to gain from the certificate in terms of learning and/or endeavours that they believe the certificate will better position them to undertake. The statement should be between 300 and 500 words in length.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master’s**

Students registered in the graduate certificate program can request to transfer to the Master of Arts (MA) in public administration in accordance with section A.7.1 of the “General regulations” of the FGPS.

**Language Requirements**

Proficiency in either English or French is required. Applicants whose first language is neither English nor French must provide proof of proficiency in one or the other. The list of acceptable proofs is indicated in the “Admission” section of the General Regulations of the FGPS.

**Program Requirements**

**Certificate Requirements**

The graduate certificate requirements consist of 15 credits, with 12 credits of core courses and three credits for a project, including a written report on an applied governance issue.

**A. Core courses (12 credits)**

ADM6209 GOVERNANCE (1.5cr.)
ADM6210 MODELS OF PUBLIC, PRIVATE AND CIVIC GOVERNANCE (1.5cr.)
ADM6211 CONSULTATION AND MULTI-STAKEHOLDER NEGOTIATION (1.5cr.)
ADM6212 GOVERNANCE AND THE DIGITAL IMPERATIVE (1.5cr.)
PAP6101 GLOBALIZATION AND CONTINENTAL INTEGRATION (3cr.)
PAP6102 DEMOCRATIC GOVERNANCE (3cr.)

**B. Project (3 credits)**

ADM6901 PROJET / PROJECT (3cr.)

or
Courses

PAP601 GLOBALIZATION AND CONTINENTAL INTEGRATION (3cr.)
Examination of the impacts of socio-economic, technological and cultural globalization on our systems of governance both internationally and domestically. Analysis of the role of the nation-state in a context of simultaneous decentralization and internationalization, with a particular focus on global institutions and North American integration.

PAP602 DEMOCRATIC GOVERNANCE (3cr.)
This seminar provides an examination of how democratic governments structure their decision-making processes for effectiveness, representation and accountability. A particular focus of this seminar is a critical evaluation of the New Public Management reforms, and an in-depth review of different models of government intervention and policy-making from a comparative perspective.

PAP650 MONDIALISATION ET INTÉGRATION CONTINENTALE (3cr.)
Examen de l'impact sur la gouvernance à l'échelle internationale et nationale de la mondialisation des secteurs socio-économique, technologique et culturel. Analyse du rôle joué par l'État-nation dans un contexte de décentralisation et d'internationalisation simultanées, en mettant particulièrement l'accent sur les institutions mondiales et l'intégration nord-américaine.

PAP652 GOUVERNANCE DÉMOCRATIQUE - RENDEMENT ET IMPUTABILITÉ (3cr.)
Examen des mesures prises par les gouvernements démocratiques pour s'assurer que les processus de prise de décision répondent aux critères d'efficacité, de représentativité, et d'imputabilité. Accent sur l'examen critique des réformes récentes des modes de gestion à la fonction publique et étude approfondie des différents modes d'intervention gouvernementale et d'élaboration de politiques d'un point de vue comparatif.

PAP691 PROJET / PROJECT (3cr.)
Étude approfondie d'un domaine de la gestion publique ou de la gouvernance. Étude de cas ou projet en collaboration avec une ou plusieurs agences du secteur public. Rapport écrit. Noté: S/NS par le professeur responsable / In-depth study of a particular area of public management on governance. Case study or project to be conducted in collaboration with one or more public sector organizations. Written report. Graded: S/NS by the professor in-charge.

ADM6209 GOVERNANCE (1.5cr.)
A general introduction to the concept of governance in the private, public and social sector. A critical examination of the evolution of governance systems based on competition and cooperation. A general discussion of the drift in the governance systems generated by competition, and coevolution among the three sectors. Conjectures about the future of governance systems.

ADM6210 MODELS OF PUBLIC, PRIVATE AND CIVIC GOVERNANCE (1.5cr.)
A thorough review of the different models and of the particular mechanisms of decision-making, of accountability and of governance in the public and the social sectors in comparison with those arrangements in the private sector. Prerequisite: ADM 6209 or MBA 5211.

ADM6609 GOUVERNANCE (1.5cr.)

ADM6610 MODÈLES DE GOUVERNANCE DANS LES SECTEURS PUBLIC, PRIVÉ ET CIVIQUE (1.5cr.)
Étude exhaustive et comparative des différents modèles et processus en ce qui concerne la prise de décision, l'imputabilité et la gouvernance dans le secteur public et civil et dans le secteur privé. Préalable : ADM 6609.

ADM6611 NÉGOCIATION ET CONSULTATION AVEC DE MULTIPLES INTERVENANTS (1.5cr.)
Étude des processus de consultation et de prise de décision avec de multiples intervenants et examen des principaux outils et techniques déployés par le gouvernement, l'industrie et les organisations civiles. La collaboration et la négociation seront les thèmes centraux de ce séminaire. Préalable : ADM 6609.

ADM6211 CONSULTATION AND MULTI-STAKEHOLDER NEGOTIATION (1.5cr.)
An examination of processes of multi-stakeholder consultation and decision-making is undertaken, along with a consideration of the major tools and techniques deployed by government, industry and civic organizations. Collaboration and negotiation are central themes of this seminar. Prerequisite: ADM 6209 or MBA 5211.

ADM6212 GOVERNANCE AND THE DIGITAL IMPERATIVE (1.5cr.)
E-Governance and its impacts on organizational management and service delivery in both industry and government are examined. Partnerships and relations between industry and government in a digital world, and the challenges of adapting to on-line activity on all sectors will be considered from the perspective of all major stakeholders. Prerequisite: ADM 6209 or MBA 5211.

ADM6612 GOUVERNANCE DANS UN MONDE DOMINÉ PAR LES COMMUNICATIONS NUMÉRISÉES (1.5cr.)
Étude de la gouvernance par voie électronique et de son impact sur la gestion organisationnelle et sur la prestation de services dans le cadre de l'industrie et du gouvernement. Les partenariats et les relations entre l'industrie et le gouvernement dans un monde numérique ainsi que les défis que pose l'adaptation aux interactions en-ligne dans tous les secteurs seront examinés du point de vue des principaux intervenants. Préalable : ADM 6609.

ADM6901 PROJET / PROJECT (3cr.)
Étude approfondie d'un domaine de la gestion publique ou de la gouvernance. Étude de cas ou projet en collaboration avec une ou plusieurs agences du secteur public. Rapport écrit. Noté : par le professeur responsable / In-depth study of a particular area of public management or governance. Case studies or project to be conducted in collaboration with one or more public sector organizations. Written report. Graded: S/NS by the professor in-charge.

### Systems Science (Graduate Certificate)

The Systems Science Program provides qualified students with the opportunity for master's-level study in a broad range of areas that emphasize transdisciplinary work in the context of general systems analysis. The emphasis in Systems Science is on the development of analytical and integration skills for use in the resolution of complex applied problems that require a broad-based perspective.

Many professors in Information Technology and Engineering, Mathematics and Statistics, Administration, Economics, and other disciplines are active in the Systems Science program as instructors, student advisers and thesis directors. Others are interested in ongoing Systems Science activities including the seminar series, and Systems Science applications days. Their areas of research, both theoretical and applied, span a wide variety of fields in operations research, deterministic and probabilistic modelling, optimization, computer science, information systems, control, and economic modelling.

#### General Information

The graduate program in Systems Science is specially designed for those who are interested in the analysis and modelling (mathematical and computer) of natural and man-made systems. It provides the professional with skills and knowledge required to understand, control, predict and optimize behaviour in a variety of fields from engineering and computer science to management and applied economics. An interdisciplinary program of the Faculty of Graduate and Postdoctoral Studies, it is supervised by a Committee composed of representatives from the Department of Economics, the School of Information Technology and Engineering, the Telfer School of Management, and the Department of Mathematics and Statistics.

You are invited to consult the site [www.systems-science.uottawa.ca](http://www.systems-science.uottawa.ca) for additional information about the Program.

The Program offers streams leading to three different credentials: a graduate certificate; a master's in Systems Science; an MSc. Each stream is described separately below. To accommodate part-time students, the core courses are usually offered in the late afternoon or evening.

The certificate operates within the framework of the General Regulations of the FGPS, which are available on the Website at the following link: [www.etudesup.uottawa.ca/generalregulations](http://www.etudesup.uottawa.ca/generalregulations)

### Admission

#### Admission Requirements

A four-year undergraduate degree in Computer Science, Economics, Engineering, Mathematics, Operations Research, Science or a related area with at least a “B” average is required for admission to the Program.

Undergraduate courses in probability, linear algebra, differential equations and computer programming are prerequisites for the core courses of the Program. Details regarding the level and content of prerequisite courses are included in the information package which is sent to all applicants. If a student lacks any of these courses, he will normally be required to complete them as a condition of admission. Entering students who lack the required undergraduate preparation may be permitted to enter a qualifying program.

Admission is offered either on a full-or part-time basis. Students admitted full-time to the master’s are required to register full-time for three sessions. Specific admission requirements are listed at the beginning of the description of each stream.

Students should specify on the application form whether they are applying for the graduate certificate, the MSc in systems science or the master’s in systems science.

Students are normally admitted initially to the graduate certificate and are admitted to the master's only upon successful completion of the core courses and a positive recommendation from the program committee.
Applicants to the MSc in systems science must submit a research outline not to exceed 350 words and clearly select the program with thesis on their application form.

Applicants to the master's in systems science are invited to include with their application a letter of intent stating their motivation for studying systems science and outlining their preferences for key areas of study in the program. They must clearly select the program without thesis on their application form.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

**Transfer from Graduate Certificate to Master's**

Students registered in the graduate certificate program can request to transfer to the master's in systems science (MSysSc) or to the master of science in systems science (MSc) in accordance with section A.7.1 of the "General regulations" of the FGPS.

**Language Requirements**

Some of the requirements of the program must be fulfilled in English. A very good knowledge of the English language is therefore required. Students whose first language is neither English nor French are required to take the TOEFL examination or an equivalent (as determined by the Faculty of Graduate and Postdoctoral Studies) as a condition of admission. The minimum required score on the TOEFL examination is 213 points (computer version) or 550 points (pencil and paper version).

**Financial Support**

Candidates are encouraged to seek financial assistance by applying directly for scholarships or student loans to provincial, federal or international agencies. MSc students may be provided with full or partial financial support from the research grants of their respective thesis supervisors. They are also eligible to apply for teaching assistantships, though the number available is limited.

**Program Requirements**

**Certificate Requirements**

**Graduate Certificate in Systems Science - (15 credits)**

All students must complete 15 credits as follows:

1. **Core courses**

   Four from among the following five courses:

   SYS5100 SYSTEMS ENGINEERING (3cr.)
   SYS5110 FOUNDATIONS OF MODELLING AND SIMULATION (3cr.)
   SYS5120 APPLIED PROBABILITY (3cr.)
   SYS5130 SYSTEMS OPTIMIZATION AND MANAGEMENT (3cr.)
   SYS5140 ECONOMIC SYSTEM DESIGN (3cr.)

   and

   SYS5160 SYSTEMS INTEGRATION (3cr.)

The Graduate Certificate may be completed by an adequately prepared full-time student in three sessions.

Students enrolled in the graduate certificate who have successfully completed the required 15 credits may apply for admission to one of the master's programs in systems science instead of accepting the graduate certificate. Applicants for the MSc must present an outline of their research approved by their potential thesis supervisor. If admitted to the master's, the residency requirements and the certificate courses will be counted towards the requirements of the master's.

Admission is competitive, based on academic and professional experience prior to and concurrent with performance in the certificate courses. Certificate students are invited to consult representatives of the program committee regarding their intention to seek acceptance into one of the master's programs.

**Courses**
SYS5100 SYSTEMS ENGINEERING (3cr.)
Controllability and observability, Euler-Lagrange equations, Pontryagin maximum principle, dynamic programming, linear quadratic regulator problem, matrix Ricatti differential equations and properties of their solution, design of optimal regulator based on steady state solution of the Ricatti differential equation, time optimal control, LaSalle bang-bang principle, applications to motor speed control, satellite attitude control, etc.

SYS5110 / CSI4124 FOUNDATIONS OF MODELLING AND SIMULATION (3cr.)

SYS5120 / MAT4371 APPLIED PROBABILITY (3cr.)
An introduction to stochastic processes, with emphasis on regenerative phenomena. Review of limit theorems and conditioning. The Poisson process. Renewal theory and limit theorems for regenerative processes; Discrete-time and continuous-time Markov processes with countable state space. Applications to queueing.

SYS5130 SYSTEMS OPTIMIZATION AND MANAGEMENT (3cr.)
Analysis of user requirements and model design. Data mining. Use of optimization software. Systems thinking and its application to economic systems and hierarchical systems. Applications to economic systems simulation, modeling, optimization and management.

SYS5140 / ECO6108 ECONOMIC SYSTEM DESIGN (3cr.)
Introduction to the epistemology of systems thinking and its application to economic systems. Basic concepts of complex systems thinking including hierarchical systems and economic systems simulation and behaviour. Soft systems thinking. Examples from other fields of application will be reviewed from an interdisciplinary perspective.

SYS5160 SYSTEMS INTEGRATION (3cr.)
Planning, design of complex systems from continuous to discrete time. Synthesis of systems methodology. State estimation. Parameters indentification. Discretization and stochastic effects. Dynamic, logic control. Modelling, discrete event, simulation examples. Prerequisites: Two of the following: SYS 5100, SYS 5110, SYS 5120, SYS 5130, SYS 5140.

Cours au choix / Elective Courses

La liste suivante des cours au choix est agencée pour suggérer des programmes d'études dans les domaines clés de la recherche appliquée en science des systèmes. La description de chaque cours est donnée dans la brochure consacrée à l'unité scolaire qui l'offre.

ADM = Administration
CSI = Informatique
ECO = Science économique
ELG = Génie électrique
EMP = Gestion en ingénierie
GEG = Géographie
MAT = Mathématiques
MCG = Génie mécanique
SYS = Science des systèmes

Les cours durent une session et ont une valeur de 3 crédits, à moins d'une indication contraire. Les cours mentionnés ci-dessous ne sont pas nécessairement offerts chaque année. Les étudiants sont invités à consulter leur conseiller scolaire quant à la sélection du domaine de recherche et des cours au choix, dont les cotes peuvent se rapporter à d'autres unités scolaires de l'Université, par exemple BIO = Département de biologie, SEG = École d'ingénierie et de technologie de l'information.

Note sur les cours préalables: il revient aux étudiants de s'assurer qu'ils satisfont aux préalables des cours au choix qu'ils désirent suivre. Après consultation avec le conseiller scolaire, ils devront, le cas échéant, obtenir la permission des professeurs enseignant ces cours.

The following lists of elective courses are provided as suggested programs of study in key areas of Applied Systems Science. Course descriptions may be found in the listing of the academic unit concerned.

ADM = Administration
CSI = Computer Science
ECO = Economics
ELG = Electrical Engineering
EMP = Engineering Management
GEG = Geography
MAT = Mathematics
Courses last one session and carry 3 credits, unless otherwise noted. The courses listed below are not necessarily offered each year. Students are asked to confer with their academic advisers concerning their area of choice and selection of elective courses, which may have codes related to other academic units of the University, e.g. BIO = Department of Biology, SEG = School of Information Technology and Engineering.

Note on prerequisite courses: It is the students' responsibility to verify that they have the prerequisites for the elective courses that they wish to take. After consultation with the academic adviser, they may be required to obtain permission from the professors teaching these courses.

Génie logiciel / Software Engineering

CSI4106 INTRODUCTION TO ARTIFICIAL INTELLIGENCE (3cr.)

CSI4506 INTRODUCTION À L'INTELLIGENCE ARTIFICIELLE (3cr.)

CSI5109 (COMP 5701) SPECIFICATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

CSI5110 (COMP 5707) PRINCIPLES OF FORMAL SOFTWARE DEVELOPMENT (3cr.)
Methodologies in formal software specification, development, and verification. The use of theorem proving, automated deduction, and other related formal methods for software correctness. Applications in program verification, mobile code safety, and protocol verification.

CSI5111 (COMP 5501) SOFTWARE QUALITY ENGINEERING (3cr.)

CSI5112 (COMP 5207) SOFTWARE ENGINEERING (3cr.)
Topics of current interest in Software Engineering, such as software development systems, structured systems analysis and design, management of software, software tools, validation and verification, programming environments.

CSI5118 (COMP 5302) AUTOMATED VERIFICATION AND VALIDATION OF SOFTWARE (3cr.)
Topics in formal test derivation methods, test management, high-level, CASE-based verification and validation, data-flow & control-flow measures and metrics for assessing quality of designs and code, regression analysis & testing. Prerequisite: a four-year undergraduate degree in computer science, computer engineering, or software engineering.

CSI5122 (COMP 5301) SOFTWARE USABILITY (3cr.)
Design principles and metrics for usability. Qualitative and quantitative methods for the evaluation of software system usability: Heuristic evaluation, usability testing, usability inspections and walkthroughs, cognitive walkthroughs, formal usability experimentation. Ethical concerns when performing studies with test users. Economics of usability. Integration of usability engineering into the software engineering lifecycle.

CSI5125 SIMULATION
Topics in modelling and simulation within the context of both discrete and continuous systems. Estimation of model parameters. Experiment design and statistical analysis of simulation results. Distributed simulation. Stiffness and discontinuity handling in continuous system simulation. Artificial Intelligence in modelling and simulation. Validation and quality assurance of simulation models.

CSI5180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE (3cr.)
A programming-oriented introduction to selected topics in Artificial Intelligence (A.I.). Topics for consideration include: A.I. programming techniques, pattern matching systems, natural language systems rule-based systems, constraint systems, learning systems, and cognitive systems. Assignments will be both (a) programming-oriented, requiring implementation and/or extensions of prototypes in Lisp and/or Prolog and (b) research-oriented, requiring readings of special topics in current A.I. journals.

CSI5304 (COMP 5602) KNOWLEDGE ENGINEERING (3cr.)
Review of basic concepts from artificial intelligence for knowledge engineering. Types of knowledge and knowledge representations. The importance of logic and natural language. Expert systems and other knowledge-based software. Knowledge acquisition tools and techniques. The relation to software engineering.
Exercises in knowledge acquisition, representation, and processing will be given.

CSI5307 EXPERT SYSTEMS
Survey of some landmark expert systems; types of architecture and knowledge representation; inferencing techniques; approximate reasoning; truth maintenance; explanation facilities; knowledge acquisition. A project to implement a small expert system will be assigned.

CSI5386 (COMP 5505) NATURAL LANGUAGE PROCESSING (3cr.)
Definitions, applications, challenges, lexicons, thesauri, corpora and other linguistic resources. Morphological analysis; tagging. Selected syntactic theories: phrase structure grammars, unification-based grammars. Parsing techniques: chrs, deterministic parsing, logic grammars. Selected semantic representations: logic, logical forms, conceptual graphs, Element of semantic and pragmatic analysis: reference, scope, focus, Elements of statistical language processing and text mining. Introduction to corpus linguistics. Term projects, one on syntax and one on semantics, will be done in Prolog and logic grammars. Prerequisite: CSI 4106 or permission of the program director.

CSI5510 (COMP 5707) PRINCIPES DE DÉVELOPPEMENT FORMEL DE LOGICIELS (3cr.)

CSI5580 (COMP 5100) SUJETS EN INTELLIGENCE ARTIFICIELLE (3cr.)

Systèmes de communications / Communication Systems

ADM6270 SYSTEMS FOR ELECTRONIC COMMERCE

ADM6271 BUSINESS TELECOMMUNICATIONS SYSTEMS (1.5cr.)
Concepts of voice, data, image and video communications and their integration into local and long distance networks. Business communication systems examples.

CSI5169 (COMP 5304) WIRELESS NETWORKS AND MOBILE COMPUTING (3cr.)
Computational aspects and applications of design and analysis of mobile and wireless networking. Topics include Physical, Link Layer, Media Access Control, Wireless, Mobile LANs (Local Area Networks), Ad-Hoc, Sensor Networks, Power Consumption optimization, Routing, Searching, Service Discovery, Clustering, Multicasting, Localization, Mobile IP/UDP (Internet Protocol/Transmission Control Protocol), File Systems, Mobility Models, Wireless Applications. (Cannot be combined for credit with ELG 6168)

CSI5171 (COMP 5303) NETWORK ARCHITECTURES, SERVICES, PROTOCOLS AND STANDARDS (3cr.)
Contemporary network architectures and protocols, with special consideration of telephony and mobility standards. Wireline and wireless network evolution. Telephony features and the feature interaction problem. Intelligent network architecture. Cellular networks and personal communications systems. Seamless network architectures. Mobile data communications. The Open Distributed Processing Reference model and derived architectures. Discussion of sample current architectures and issues, such as General System for Mobile Communication, IEC/TIA 41, Wireless Intelligent Networks, International Mobile Telephony 2000, migration towards the Internet. Prerequisites: No prerequisites except the general maturity and knowledge of data communications principles that should have been acquired by Computer Engineering and Computer Science graduates.

CSI5174 (COMP 5604) VALIDATION METHODS FOR DISTRIBUTED SYSTEMS (3cr.)

ELG5103 OPTICAL COMMUNICATIONS SYSTEMS (3cr.)
Optical communication system concepts and basic characteristics. Optical Transmitters. Optical detection. Optical noise sources and their mathematical models. Non-coherent (direct) detection: system model, direct detection of intensity modulation, application of photo-multiplication, optimal post-detection processing, and subcarrier systems. Coherent detection: heterodyne receivers, the field matching problem and receiver performance. Optical binary digital system, single-mode binary and heterodyne binary systems. Block coded digital optical communication systems: PPM, PAM, PSK, and FSK signalling. Integration of device technology and system architecture. Selected topics in optical communications and networking. Prerequisites: ELG 5119, and ELG 5375 or the equivalents.

ELG5119 (EACJ 5109) STOCHASTIC PROCESSES (3cr.)

ELG5122 (EACJ 5202) MODELLING, ANALYSIS AND PERFORMANCE EVALUATION IN COMPUTER COMMUNICATIONS (3cr.)
Network performance issues and their mathematical analysis techniques. Intermittently available server model, probing and tree search, delay cycle, switch/network topology and reliability. Analysis of controlled and random access methods, routing allocation/ control, topological design. Selected topics from
current literature on various network applications. Precludes additional credit for ELG 7186 (EACJ 5606). Prerequisites: ELG 5120 (EACJ 5200), ELG 5374 (EACJ 5607), or SYS 5201 (ELG 6121), or the equivalents.

ELG5125 (EACJ 5205) QUALITY OF SERVICE MANAGEMENT FOR MULTIMEDIA APPLICATIONS (3cr.)
Design principles: layering, protocols, interface; models for open distributed processing; real-time requirement; request-response and stream processing, real-time scheduling, design for performance and scalability; other quality of services issues; user perspective versus system performance parameters, cost/performance trade-off, negotiations; adaptive and mobile applications; examples of multimedia applications and protocols. Prerequisite: ELG 5374 (EACJ 5607) or SYS 5201 (ELG 6121) or equivalent.

ELG5180 (EACJ 5704) ADVANCED DIGITAL COMMUNICATIONS (3cr.)
Techniques and performance of digital signalling and equalization over linear bandlimited channels with additive Gaussian noise. Fading multipath channels: diversity concepts, modelling and error probability performance evaluation. Synchronization in digital communications. Spread spectrum in digital transmission over multipath fading channels. Precludes additional credit for SYS 5605. Prerequisite: SYS 5504 or ELG 5375 or the equivalent.

ELG5382 (EACJ 5108) SWITCHING AND TRAFFIC THEORY FOR INTEGRATED BROADBAND NETWORKS (3cr.)
Principles of switching theory. Asynchronous Transfer Mode switching architectures. Principle of teletraffic engineering. Queueing theory and performance evaluation techniques as applied to the study of computer network architectures. Current topics in computer network modelling analysis and traffic control for high-speed multimedia networks. Prerequisite: ELG 5374 (EACJ 5607) or ELG 6121 (SYS 5201), or the equivalent. Co-requisite: ELG 5119 (EACJ 5109) or ELG 6153 (SYS 5503) or ELG 6103 (SYS 5003), or the equivalent.

ELG5375 (EACJ 5506) PRINCIPLES OF DIGITAL COMMUNICATION (3cr.)
Elements of communication theory and information theory applied to digital communications systems. Characterization of noise and channel models. Analysis of digital data transmission techniques for additive Gaussian noise channels. Efficient modulation and coding for reliable transmission. Spread spectrum and line coding techniques. Prerequisite: ELG 5119 or SYS 5503, or the equivalent (may be taken concurrently).

ELG5376 (EACJ 5507) DIGITAL SIGNAL PROCESSING (3cr.)

ELG5776 (EACJ 5508) TRAITEMENT NUMÉRIQUE DES SIGNAUX (3cr.)

ELG5378 (EACJ 5509) IMAGE PROCESSING AND IMAGE COMMUNICATIONS (3cr.)

Systèmes d'information / Information Systems

ADM6272 PLANNING AND DEVELOPMENT OF INFORMATION SYSTEMS

CSI5114 (COMP 5504) AUTOMATED OFFICE SYSTEMS (3cr.)
Study of office automation and its extension into commerce and marketing. Tools for collaboration, information transformation, data gathering, storage and retrieval, office agents and CSCW, funds transfer, electronic mail systems and messaging, use of WWW. Ergonomic, legal and regulatory aspects, social and economic factors.

CSI5514 (COMP 5504) BUREAUTIQUE (3cr.)
Une étude de la bureautique. Les systèmes de bureautique, réseaux locaux, systèmes de traitement de texte, transferts de fonds, messageries et échanges de documents. La politique économique, sociale et légale des systèmes bureautiques.

CSI5115 (COMP 5503) DATABASE ANALYSIS AND DESIGN (3cr.)
The dimensional and multidimensional data models for data warehousing. Data dependencies and decompostition. Structure and use of data definition and manipulation languages. Database economics, engineering, deployment and evolution. Issues in integrity, security, the Internet and distributed databases. Relationships to decision support systems. Prerequisite: CSI 3317 or equivalent.

CSI5170 (COMP 5800) DISTRIBUTED DATA PROCESSING (3cr.)
Graph- and non-graph-related algorithms in a distributed environment, such as breath-first-search, selection in a ring, distributed file sorting, etc. Approaches to distributed database management design: distributed query and update processing, concurrency control, optimal allocation of resources and users, etc. Modelling techniques for distributed systems, such as Petri-nets, etc. Security in a distributed environment.
CSI5180 (COMP 5100) TOPICS IN ARTIFICIAL INTELLIGENCE (3cr.)
A programming-oriented introduction to selected topics in Artificial Intelligence (A.I.). Topics for consideration include: A.I. programming techniques, pattern matching systems, natural language systems rule-based systems, constraint systems, learning systems, and cognitive systems. Assignments will be both (a) programming-oriented, requiring implementation and/or extensions of prototypes in Lisp and/or Prolog and (b) research-oriented, requiring readings of special topics in current A.I. journals.

CSI5386 (COMP 5505) NATURAL LANGUAGE PROCESSING (3cr.)
Definitions, applications, challenges, lexicons, thesauri, corpora and other linguistic resources. Morphological analysis; tagging. Selected syntactic theories: phrase structure grammars, unification-based grammars. Parsing techniques: chart, deterministic parsing, logic grammars. Selected semantic representations: logic, logical forms, conceptual graphs, Element of semantic and pragmatic analysis: reference, scope, focus. Elements of statistical language processing and text mining. Introduction to corpus linguistics. Term projects, one on syntax and one on semantics, will be done in Prolog and logic grammars. Prerequisite: CSI 4106 or permission of the program director.

CSI5387 (COMP 5706) DATA MINING AND CONCEPT LEARNING (3cr.)

ELG5170 (EACJ 5501) INFORMATION THEORY (3cr.)
Measure of information: entropy, relative entropy, mutual information, asymptotic equipartition property, entropy rates for stochastic processes; Data compression: Huffman code, arithmetic coding; Channel capacity; random coding bound, reliability function, Blahut-Arimoto algorithm, Gaussian channels, colored Gaussian noise and “water-filling”; Rate distortion theory; Network information theory. Prerequisite: ELG 5119 (EACJ 5109) or SYSC 5503 (ELG 5119) or the equivalent.

Gestion de la production / Production Management

ADM6280 CURRENT PRACTICES IN OPERATIONS MANAGEMENT (1.5cr.)
ADM6281 SUPPLY CHAIN MANAGEMENT (1.5cr.)
Introduction to supply chain management; overview of its role in the organization as an operational, a strategic, and a competitive tool; role of information systems and technology in supply chain management; managing the flow of materials, and inventory management across the supply chain; developing and maintaining supply chain relationships; future challenges including sharing risks in inter-organizational relationships, managing the global supply chain and design for supply chain management. Prerequisite: MBA 5380 or equivalent for MBA students or EMP 5101 for EMP students.

ADM6282 INTRODUCTION TO QUALITY MANAGEMENT (1.5cr.)
EMP5159 / MCG5159 ADVANCED PRODUCTION PLANNING AND CONTROL (3cr.)

EMP5169 / MCG5169 ADVANCED TOPICS IN RELIABILITY ENGINEERING (3cr.)

EMP5179 / MCG5179 MANUFACTURING SYSTEMS ANALYSIS (3cr.)

Modélisation de la gestion de l'entreprise / Corporate Managerial Modelling

ADM6262 TECHNOLOGY IN THE NATIONAL AND INTERNATIONAL ENVIRONMENTS (1.5cr.)
ADM6263 TECHNOLOGY ADAPTATION AND INNOVATION IN A CORPORATE ENVIRONMENT (1.5cr.)
ADM6264 TECHNOLOGY R & D (1.5cr.)
ADM6265 HIGH-TECH ENTREPRENEURSHIP
ADM6284 MANAGING TECHNOLOGICAL RISK (1.5cr.)
MAT5307 (MATH 5804) TOPICS IN OPERATIONS RESEARCH (3cr.)

Systèmes économiques de l'environnement / Environmental Economic Systems

Les systèmes économiques de l'environnement étudient l'impact des décisions en matière de gestion sur l'écosystème. Ce programme est mené conjointement avec plusieurs départements de l'Université et l'Institut de recherche sur l'environnement et l'économie (IREE). Les étudiants de ce domaine sont encouragés à participer aux séminaires et ateliers de cet institut pour parfaire leurs connaissances.

Environmental Economic Systems examines the impact of management decision making on the ecosystem. This study program is carried out in conjunction with several University departments and the Institute for Research on the Environment and Economy (IREE). Students in this area are invited to attend the IREE's regular seminars, and to participate in workshops as part of their systems study in this area.

ECO6143 (ECON 5803) ECONOMICS OF NATURAL RESOURCES (3cr.)


ECO6543 ÉCONOMIE DES RESSOURCES NATURELLES (3cr.)


ECO6151 (ECON 5804) ECONOMICS OF THE ENVIRONMENT (3cr.)

The environment as natural capital; environmental valuation techniques; elements of environmental income accounting; sustainable development theories and practice; institutional questions and policy issues.

ECO6551 ÉCONOMIE DE L'ENVIRONNEMENT (3cr.)

L'environnement comme capital naturel; techniques d'évaluation environnementale; comptabilité environnementale; théorie et pratique de développement durable; questions institutionnelles et problèmes de politique publique.

GEG5102 Restructuring and Globalisation

Advanced analysis of the global systems and their consequences at the international, national, regional and intra-urban scales.

GEG5502 Restructuration et Mondialisation

Analyse approfondie des systèmes mondiaux et de leurs conséquences aux échelles internationale, nationale, régionale et intra-urbaine.

GEG6101 DATA ANALYSIS AND MODELLING (3cr.)

Techniques of analysis of empirical data: quantitative, semi-quantitative and qualitative. Multivariate and time-series data analysis.

GEG6103 Spatial Data Analysis (3cr.)

Visualisation and analysis of spatial data: point-pattern analysis, spatial interpolation and estimation, spatial autocorrelation. Analysis of spatial interaction and spatio-temporal dynamics.

GEG6501 Analyse de Données et Modélisation (3cr.)

Modes de traitement appropriés à différents types de données empiriques : quantitatives, semi-quantitatives et qualitatives. Examen des méthodes d'analyse multivariées et temporelles.

GEG6503 Analyse des Données Spatiales (3cr.)

Visualisation et analyse de données spatiales : analyse de configurations spatiales, interpolation et estimation spatiales, autocorrélation spatiale. Analyse des interactions dans l'espace et de la dynamique spatiotemporelle.

Cotes générales – Science des systèmes / General Codes – Systems Science

SYS5180 TOPICS IN SYSTEMS SCIENCE (3cr.)

SYS5580 THÈMES EN SCIENCE DES SYSTÈMES (3cr.)

SYS5190 DIRECTED READINGS IN SYSTEMS SCIENCE (3cr.)

SYS5590 LECTURES DIRIGÉES EN SCIENCE DES SYSTÈMES (3cr.)
Technology Project Management (Graduate Certificate)

The graduate certificate is awarded upon successful completion of 15 credits. It is offered mainly in English. Students who meet the admission requirements for the Master of Engineering Management program and who subsequently decide to pursue that degree, would have to complete an additional 15 credits. See section A.7.1 of the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS) for details.

The certificate operates within the framework of the General Regulations of the Faculty of Graduate and Postdoctoral Studies (FGPS), available on the FGPS Website.

Admission

To be considered for the program, applicants must have successfully completed a four-year bachelor’s degree in engineering or science with a least a 70 per cent (B) cumulative grade point average (CGPA), calculated in accordance with FGPS guidelines. Admission to the program is very competitive.

A maximum of three credits in equivalencies or advanced standing may be granted. To be eligible, the credits in question must not have counted towards the requirements of a previous diploma, certificate, or degree. Candidates who have already successfully completed some of the compulsory credits may be allowed to replace those credits with elective credits. For details, consult section B.2.7. of the General Regulations of the FGPS.

Transfer from Graduate Certificate to Master’s

Students registered in the graduate certificate program can request to transfer to the Master of Engineering Management (MEng) program in accordance with section A.7.1 of the "General regulations" of the FGPS.

Language Requirements

Applicants whose first language is not English are required to provide evidence of proficiency in English. The list of acceptable proofs can be found in the section "Admission" of the General Regulations of the FGPS.

Program Requirements

Certificate Requirements

Students must successfully complete 15 credits. The passing grade in all courses is C+. Failure in 6 credits leads to withdrawal from the program.

1. Courses

A. Six credits are compulsory:
ADM6260 PROJECT MANAGEMENT I (1.5cr.)
ADM6261 PROJECT MANAGEMENT II (1.5cr.)
EMP5118 TECHNOLOGY PROJECT MANAGEMENT PRACTICE (3cr.)

B. Six credits must be chosen from the following list:
MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
C. Three credits must be chosen from the following list:

- EMP5101 INDUSTRIAL ORGANIZATION (3cr.)
- EMP5102 SYSTEMS ENGINEERING AND INTEGRATION (3cr.)
- EMP5103 RELIABILITY, QUALITY AND SAFETY ENGINEERING (3cr.)
- EMP5109 TOPICS IN ENGINEERING MANAGEMENT (3cr.)
- EMP5999 PROJET EN GESTION DE LA TECHNOLOGIE / PROJECT IN MANAGEMENT OF TECHNOLOGY (3cr.)

Students are strongly encouraged to choose EMP 5999.

The program committee may approve replacement of up to three credits of subset B with alternative graduate courses in management or engineering.

2. Seminar Series

Students are strongly encouraged to attend a seminar series to be offered in a variety of topics including: Continuous Risk Management, IT Procurement, and Software Rollout.

Courses
ELG5121 (EACJ 5201) MULTIMEDIA COMMUNICATIONS (3cr.)

ELG5374 (EACJ 5607) COMPUTER COMMUNICATION NETWORKS (3cr.)
Network applications, structures and their design issues. Resource sharing/access methods. Network transmission and switching techniques. OSI model. Error control, flow control and various issues related to the physical, data link and network layers. Local area networks. Performance issues of delay-throughput in various protocols. Precludes additional credit for SYSC 5201. Prerequisites: an undergraduate course in probability and statistics such as MAT 2377.

EMP5109 TOPICS IN ENGINEERING MANAGEMENT (3cr.)
Current topics in industrial practices.

EMP5118 TECHNOLOGY PROJECT MANAGEMENT PRACTICE (3cr.)

EMP5999 PROJET EN GESTION DE LA TECHNOLOGIE / PROJECT IN MANAGEMENT OF TECHNOLOGY (3cr.)
Analyse d'un projet complété en gestion de la technologie : entrevues de départ, étude de la documentation accumulée, présentation d'un sommaire des leçons retenues, conférence sur les résultats de l'analyse. Le projet, à choisir par l'étudiant, doit être approuvé par un superviseur nommé par le directeur du programme. Le superviseur dirigera les travaux de l'étudiant et soumettra la note finale S (satisfaisant) ou NS (non satisfaisant). / Post-mortem analysis of a completed technology management project. Requirements to consist of exit interviews, a review of extant documentation, presenting a lesson-learned summary and giving a lecture on the findings. The project, to be chosen by the student, will have to be approved by a supervisor appointed by the program director. The supervisor will oversee the student's work and provide the final grade S (satisfactory) or NS (not satisfactory).

MBA5241 MANAGERIAL ACCOUNTING INFORMATION AND DECISIONS (1.5cr.)
This course focuses on the role of the accounting function internal to the organization. It takes a broad view of managerial accounting, introducing students to various costing systems, cost behaviour patterns and cost structures. It introduces students to the use of accounting for the evaluation of product, managerial and divisional performance. The orientation will help students to understand what accounting can do for decision makers and how accounting choices affect decisions. The course emphasizes the strategic importance of aligning accounting systems with firm technologies and goals. Current issues in management accounting and internal reporting are discussed.

MBA5250 INTRODUCTION TO CORPORATE FINANCE (1.5cr.)

MBA5270 INFORMATION AND COMMUNICATION TECHNOLOGIES FOR MANAGERS (1.5cr.)
Business processes, organization and ICTs. Information and communication technologies foundations. System development (focus on analysis and design). Databases systems. Enterprise resource planning, customer relationship management, decision support systems IT management, social issues, learning and knowledge management, IT and globalization.

MBA5320 STRATEGIC MARKETING MANAGEMENT (3cr.)
Overview of the Marketing process: key concepts, tools and procedures, in the context of a technology-intensive global economy. Definition of Marketing, the Marketing Concept and Marketing Management, and the significance of operating in a technology-intensive global economy. Analyzing market opportunities, setting performance goals, formulating marketing and implementation plans to meet those goals. Introduction to e-marketing management and some of the e-marketing tools available.

MBA5330 ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCES MANAGEMENT (3cr.)
The strategic advantage of understanding and integrating organizational behaviour (OB) frameworks in designing and implementing effective human resource (HR) activities (namely attraction, development, maintenance and retention of employees), in measuring performance and in achieving high-performance outcomes in various global organizational contexts. OB topics covered include motivation, rewards, leadership, group dynamics, organizational politics, job and organization design, and culture. Prerequisite: MBA 5235 for MBA students only.

MBA5641 COMPTABILITÉ ET STRATÉGIE (1.5cr.)
Le cours permet aux étudiants de comprendre le rôle de la comptabilité dans les processus de création de richesse au sein de l'entreprise. Il met l'accent sur la gestion des activités et des processus dans la détermination et l'implantation de la stratégie de l'entreprise.

MBA5650 INTRODUCTION À LA GESTION FINANCIÈRE (1.5cr.)
Rôle des marchés financiers. Introduction à la notion de rendement-risque. Calcul actuariel. Modèles d'évaluation des actions ordinaires et privilégiées, des obligations. Sources de financement des entreprises. Cours concomitant: MBA 5740

MBA5670 TECHNOLOGIES DE L’INFORMATION ET DES COMMUNICATIONS POUR GESTIONNAIRES (1.5cr.)
Processus d'affaires, organisation et technologies de l'information et des communications. Éléments fondamentaux des technologies de l'information et des

**MBA5720 GESTION STRATÉGIQUE DE MARKETING** (3cr.)

**MBA5730 COMPORTEMENTS ORGANISATIONNELS ET GESTION DES RESSOURCES HUMAINES** (3cr.)