2014-2015 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2013-2014 academic years, including the Summer Semester 2014, Fall Semester 2014 and the Winter Semester 2015.

For your convenience the Graduate Calendar is available in PDF format.

If you wish to link to the Graduate Calendar please refer to the Linking Guidelines.

The University is a full member of:

- The Association of Universities and Colleges of Canada

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Revision Information:

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Disclaimer
The Office of Graduate Studies has attempted to ensure the accuracy of this on-line Graduate Calendar. However, the publication of information in this document does not bind the university to the provision of courses, programs, schedules of studies, fees, or facilities as listed herein.

Limitations
The University of Guelph reserves the right to change without notice any information contained in this calendar, including any rule or regulation pertaining to the standards for admission to, the requirements for the continuation of study in, and the requirements for the granting of degrees or diplomas in any or all of its programs.

The university will not be liable for any interruption in, or cancellation of, any academic activities as set forth in this calendar and related information where such interruption is caused by fire, strike, lock-out, inability to procure materials or trades, restrictive laws or governmental regulations, actions taken by the faculty, staff or students of the university or by others, civil unrest or disobedience, Public Health Emergencies, or any other cause of any kind beyond the reasonable control of the university.

The University of Guelph reaffirms section 1 of the Ontario Human Rights Code, 1981, which prohibits discrimination on the grounds of race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, handicap, age, marital status or family status.

The university encourages applications from women, aboriginal peoples, visible minorities, persons with disabilities, and members of other under-represented groups.
Collection, Use and Disclosure of Personal Information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) http://www.e-laws.gov.on.ca/DLB Laws/Statutes/English/90f31_e.htm. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes. Certain personal information is disclosed to external agencies, including the Ontario Universities Application Centre, the Ministry of Training, Colleges and Universities, and Statistics Canada, for statistical and planning purposes, and is disclosed to other individuals or organizations in accordance with the Office of Registrarial Services Departmental Policy on the Release of Student Information. For details on the use and disclosure of this information call the Office of Registrarial Services at the University at (519) 824-4120 or see https://www.uoguelph.ca/registrar/.

Statistics Canada - Notification of Disclosure

For further information, please see Statistics Canada's web site at http://www.statcan.gc.ca and Section XIV Statistics Canada.

Address for University Communication

Depending on the nature and timing of the communication, the University may use one of these addresses to communicate with students. Students are, therefore, responsible for checking all of the following on a regular basis:

**Email Address**

The University issued email address is considered an official means of communication with the student and will be used for correspondence from the University. Students are responsible for monitoring their University-issued email account regularly.

**Home Address**

Students are responsible for maintaining a current mailing address with the University. Address changes can be made, in writing, through the Office of Graduate Studies.

Name Changes

The University of Guelph is committed to the integrity of its student records, therefore, each student is required to provide either on application for admission or on personal data forms required for registration, his/her complete, legal name. Any requests to change a name, by means of alteration, deletion, substitution or addition, must be accompanied by appropriate supporting documentation.

Student Confidentiality and Release of Student Information Policy Excerpt

The University undertakes to protect the privacy of each student and the confidentiality of his or her record. To this end the University shall refuse to disclose personal information to any person other than the individual to whom the information relates where disclosure would constitute an unjustified invasion of the personal privacy of that person or of any other individual. All members of the University community must respect the confidential nature of the student information which they acquire in the course of their work.

Complete policy at http://www.uoguelph.ca/policies.
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IX. Graduate Programs

This is where you’ll find academic information on our graduate programs, including program-specific admission and degree regulations, course offerings and a listing of the faculty.

Degree Programs listed by College

College of Arts
- Art History and Visual Culture
- Creative Writing
- English
- European Studies
- French
- History - Tri-University Program
- Latin American and Caribbean Studies
- Philosophy
- Literary Studies/Theatre Studies in English
- Studio Art
- Theatre Studies

College of Biological Science
- Human Health and Nutritional Sciences
- Integrative Biology
- Molecular and Cellular Biology

College of Management and Economics
- Business Administration
  * Food and Agribusiness Management
  * Hospitality and Tourism
- Economics
- Leadership
- Management
- Marketing and Consumer Studies
- Tourism and Hospitality

College of Physical and Engineering Science
- Chemistry
- Computer Science
- Engineering
- Mathematics and Statistics
- Physics

College of Social and Applied Human Sciences
- Criminology and Criminal Justice Policy
- Family Relations and Applied Nutrition
- Geography
- Political Science
- Psychology
- Public Issues Anthropology
- Sociology

Ontario Agricultural College
- Animal and Poultry Science
- Capacity Development and Extension
- Environmental Sciences
- Food, Agricultural and Resource Economics
- Food Science
- Landscape Architecture
- Plant Agriculture
- Rural Planning and Development
- Rural Studies

Ontario Veterinary College
- Biomedical Sciences
- Clinical Studies
- Pathobiology
- Population Medicine
- Public Health
- Veterinary Science

Interdepartmental Programs
Interdepartmental programs involve faculty members across departments.

Bioinformatics
Biophysics
Food Safety and Quality Assurance

Collaborative Programs
Collaborative programs are intended to provide an additional multidisciplinary experience for students. Students complete the requirements of their home program plus those of the collaborative program.
- International Development Studies
- Neuroscience
- Toxicology

Degree Programs listed by Division

Human and Animal Sciences
- Animal and Poultry Science
- Biomedical Sciences
- Biophysics
- Clinical Studies
- Environmental Sciences
- Family Relations and Applied Nutrition
- Food Science
- Food Safety and Quality Assurance
- Human Health and Nutritional Sciences
- Molecular and Cellular Biology
- Neuroscience
- Pathobiology
- Population Medicine
- Psychology
- Public Health

Humanities
- Art History and Visual Culture
- Creative Writing
- English
- European Studies
- French
- History - Tri-University Program
- Latin American and Caribbean Studies
- Philosophy
- Literary Studies/Theatre Studies in English
- Studio Art
- Theatre Studies

Physical and Engineering Sciences
- Biophysics
- Chemistry
- Computer Science
- Engineering
- Environmental Sciences
- Geography
- Mathematics and Statistics
- Physics

Plant Sciences
- Environmental Sciences
- Integrative Biology
- Molecular and Cellular Biology
- Plant Agriculture

Social Sciences
- Business Administration
- Capacity Development and Extension
- Criminology and Criminal Justice Policy
- Economics
- Family Relations and Applied Nutrition
- Geography
International Development Studies
Landscape Architecture
Marketing and Consumer Studies
Political Science
Psychology
Public Issues Anthropology
Sociology
Rural Planning and Development
Tourism and Hospitality
Animal and Poultry Science

The Department of Animal and Poultry Science offers programs of study leading to MSc and PhD degrees. Animals of significance in food production are the department's major interest and research emphasis on excellence in Animal bio-sciences with a focus. The program encompasses four fields:

- Animal Breeding and Genetics (quantitative or molecular)
- Animal Nutrition (monogastric or ruminant)
- Animal Physiology (environmental and reproductive)
- Animal Behaviour and Welfare

Administrative Staff

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Graduate Secretary
Wendy McGrattan (144 ANNU, Ext. 56215)
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Graduate Faculty

*Please see the Department's webpage at www.aps.uoguelph.ca for an updated listing of faculty.

Gregory Bedecarrats
Licence de Biochimie, MSc, Dipl. Rennes (France), PhD McGill - Associate Professor

Dominique P. Bureau
BSc (Agr), MSc Laval, PhD Guelph - Professor

John P. Cant
BSc (Agr) Nova Scotia, MS, PhD California - Professor

Cornelius F.M. de Lange
BSc, MSc Wageningen, PhD Alberta - Professor

Ming Z. Fan
BS Xinjiang, MS Harbin, PhD Alberta - Professor

James France
BSc Cardiff, MSc, PhD, DSc Hull (United Kingdom), CMath, Csci, FIMA - Professor

Senior Canada Research Chair

Niel A. Karrow
BSc Guelph, MSc, PhD Waterloo - Associate Professor

Julong Li
MSc Changchun Veterinary College (China), PhD Ottawa - Professor

Ira B. Mandell
BS, MS Ohio State, PhD Saskatchewan - Associate Professor

Georgia Mason
BA, PhD Cambridge - Professor, Canada Research Chair

Brian W. McBride
BSc, MSc Guelph, PhD Alberta - Professor

Richard D. Moccia
BSc, MSc Guelph - Professor

Vern R. Osborne
BSc, MSc, PhD Guelph - Associate Professor

J. Andrew B. Robinson
BSc (Agr), MSc Guelph, PhD Cornell - Associate Professor and Chair

Flavio S. Schenkel
BBA, BSc, and MSc Brazil, PhD Guelph - Professor

Trevor K. Smith
BSc British Columbia, MSc Manitoba, PhD Cornell - Professor

E. James Squires
BSc, MSc, PhD Memorial - Professor

Tina M. Widowski
BS, MS, PhD Illinois - Professor

Faculty at Kemptville Campus

Katrina Merkies
BSc, PhD Guelph - Associate Professor

Trevor DeVries
BSc, PhD British Columbia - Associate Professor

Faculty at Campus D’Alfred

Renee Bergeron
BSc, MSc Laval, PhD Illinois - Associate Professor

MSc Program

The MSc program involves advanced courses and the completion of a research project. These are means of developing the skills and intellectual curiosity that may further qualify the student for a leadership role within animal organizations and industries or serve as a prerequisite for doctoral studies. The MSc degree may be completed via two routes: by thesis or by coursework and major paper. The MSc by coursework and major paper is offered in four areas of specialization: 1) animal breeding and genetics, 2) animal nutrition, 3) animal behaviour and welfare and 4) animal physiology.

Admission Requirements

An honours baccalaureate, with a minimum average grade of ‘B’ during the last 2 years of full-time equivalent study. For Canadian degrees, we interpret this as the last 20 semester courses, however we do not split a semester and we will not consider any less than 16 courses.

Degree Requirements

MSc by Thesis

Candidates for the thesis-based MSc degree must successfully complete a prescribed series of courses, conduct a research project, prepare a thesis based on their results and defend this in a final examination. The number of course credits required in this option will be decided by the student's advisory committee in consultation with the student, and may exceed the minimum 1.5 credits required by the Faculty of Graduate Studies. Generally, 4 or 5 courses (1.5-2.0 credits) will be taken, including the mandatory Seminar course, ANSC*6600 (0.0 credit).

MSc by Coursework and Major Paper

Candidates for the MSc degree by coursework and major paper option must complete a minimum of 4.0 credits (9 courses). Of these courses, one will be the departmental Seminar course, ANSC*6600 (0.0 credit), and another will be Major Paper in Animal and Poultry Science, ANSC*6900 (1.0 credit). The major paper will be a detailed, critical review of an area of study related to the specialization chosen by the student and should include analyses and interpretations of relevant data. The content of the major paper will be presented to the department in the Seminar course.

At the beginning of the program, the student and student's advisory committee will design the coursework program according to the program guidelines and the aspirations and background of the student. Students will normally choose a minimum of 4 courses in the area of specialization, and a minimum of two courses outside the area of specialization. These latter courses can be offered by departments other than Animal and Poultry Science. A maximum of one approved senior-level undergraduate course can be included in the list of prescribed courses. Recommended graduate courses in the three areas of specialization are as follows:

Animal Breeding and Genetics

- ANSC*6900 [1.00] Major Paper in Animal and Poultry Science
- ANSC*6620 [0.50] Principles of Selection in Animal Breeding
- ANSC*6630 [0.50] Quantitative Genetics and Animal Models
- ANSC*6630 [0.50] QTL and Markers
- ANSC*6450 [0.50] Topics in Animal Biotechnology

Animal Nutrition and Metabolism

- ANSC*6900 [1.00] Major Paper in Animal and Poultry Science
- ANSC*6610 [0.50] Topics in Comparative Animal Nutrition
- ANSC*6620 [0.50] Poultry and Swine Nutrition
- ANSC*6630 [0.50] Modelling Metabolic Processes
- ANSC*6630 [0.50] Techniques in Animal Nutrition Research
- ANSC*6640 [0.50] Topics in Animal Biotechnology
- ANSC*6640 [0.50] Lactation Biology
- ANSC*6640 [0.50] Advanced Animal Nutrition and Metabolism I
- ANSC*6640 [0.50] Advanced Animal Nutrition and Metabolism II

Animal Behaviour and Welfare

- ANSC*6900 [1.00] Major Paper in Animal and Poultry Science
- ANSC*6440 [0.50] Advanced Critical Analysis in Applied Ethology
- ANSC*6700 [0.50] Animals in Society: Historical and Global Perspectives on Animal Welfare
- ANSC*6710 [0.50] Assessing Animal Welfare in Practice
- ANSC*6720 [0.50] Scientific Assessment of Affective States in Animals
- ANSC*6730 [0.50] Applied Environmental Physiology: Applications to Animal Care Standards
- ANSC*6740 [0.50] Special Topics in Applied Animal Welfare Science
- UNIV*6030 [0.50] Seminars and Analysis in Animal Behaviour and Welfare

PhD Program

The PhD program is research oriented and provides instruction and experiences that develop the student's ability to independently formulate hypotheses and design and execute experiments or conduct observational studies to reach definitive conclusions.
Admission Requirements

Students entering a PhD program should show potential for independent, productive, and original research. A PhD program can be entered by three routes: following completion of an MSc program; following transfer prior to completion of an MSc program; and directly from a bachelor degree.

In general, a minimum average grade of 'B' for a completed MSc program plus strong letters of reference are required. Students wishing to be considered for transfer to a PhD program prior to completion of the MSc program must request the transfer before the end of the fourth semester and have an excellent academic record as well as a strong aptitude for research.

Direct admission to the PhD program may be permitted for applicants who hold a bachelor's degree and have an excellent academic history and strong indications of research potential.

Degree Requirements

Satisfactory completion of a PhD program requires a comprehensive knowledge of the area of emphasis and the ability to conduct original research in this area, plus a sound general background in two related areas of study. This competence is demonstrated in a qualifying examination and through the design and execution of a substantial and original research project. Based on this research, a thesis is prepared and defended in a final examination.

The number of courses required for a PhD program will be decided by the student's advisory committee in consultation with the student. The minimum requirement is the Seminar course, ANSC*6600.

Collaborative Programs

Neuroscience MA/MSc/PhD

The Department of Animal and Poultry Science partipates in the MA/MSc/PhD program in neuroscience. Please consult the Neuroscience listing for a detailed description of the MA/MSc/PhD collaborative program.

Toxicology MSc/PhD

The Department of Animal and Poultry Science participates in the MSc/PhD program in toxicology. The research and teaching expertise of these faculty include aspects of toxicology; they may serve as advisors for MSc and PhD students in Toxicology. Students choosing this option must meet the requirements of the Toxicology Collaborative Program, as well as those of their home department. Please consult the Toxicology listing for a detailed description of the MSc/PhD collaborative program.

Courses

Although the courses offered are listed by field, several are relevant to more than one field. Some courses are only offered when there is a certain minimum enrolment.

Animal Breeding and Genetics

ANSC*6210 Principles of Selection in Animal Breeding W [0.50]
Definition of selection goals, prediction of genetic progress and breeding values, and the comparison of selection programs.
Department(s): Department of Animal and Poultry Science

ANSC*6240 Topics in Animal Genetics and Genomics F [0.50]
Current literature and classical papers pertaining to quantitative genetics, animal breeding and animal genomics are reviewed in detail through presentation, discussion and critical analysis.
Department(s): Department of Animal and Poultry Science

ANSC*6370 Quantitative Genetics and Animal Models F [0.50]
The course covers quantitative genetics theory associated with animal models; linear models applied to genetic evaluation of animals; estimation of genetic parameters for animal models; and computing algorithms for large datasets.
Department(s): Department of Animal and Poultry Science

ANSC*6390 QTL and Markers W [0.50]
Advanced training in QTL mapping and selection assisted by genetic markers.
Department(s): Department of Animal and Poultry Science

ANSC*6450 Topics in Animal Biotechnology W [0.50]
The impact of recombinant DNA techniques on present and future research in animal science and on the livestock industry is critically appraised.
Department(s): Department of Animal and Poultry Science

Animal Nutrition

ANSC*6010 Topics in Comparative Animal Nutrition F [0.50]
Current topics in the feeding and nutrition of agricultural, companion and captive animal species. Emphasis is placed on the influence of nutrients on metabolic integration at tissue, organ and whole-animal levels. A nutritional case study will be conducted to allow students to solve practical feeding problems by applying basic nutritional principles. The course is offered every other year on even years.
Department(s): Department of Animal and Poultry Science

ANSC*6020 Poultry and Swine Nutrition W [0.50]
A discussion of current topics in the feeding and nutrition of domestic fowl and swine based on the critical appraisal of selected journal readings.
Department(s): Department of Animal and Poultry Science

ANSC*6030 Modelling Metabolic Processes F [0.50]
Building and testing of mathematical models of metabolic processes using continuous simulation software to assist in weekly assignments. Choice of model based on students' research interests (e.g. protein synthesis, nutrient uptake, rumen fermentation). Term project to reproduce model from scientific knowledge.
Department(s): Department of Animal and Poultry Science

ANSC*6360 Techniques in Animal Nutrition Research W [0.50]
Theory and/or practices of techniques to evaluate feedstuffs and determine nutrient utilization in poultry, swine and ruminants is covered through lectures, short laboratories and a major project.
Department(s): Department of Animal and Poultry Science

ANSC*6470 Advanced Animal Nutrition and Metabolism I F [0.50]
A systematic review of key aspects of energy, protein, amino acid and carbohydrate utilization and metabolism in farm animals.
Department(s): Department of Animal and Poultry Science

ANSC*6480 Advanced Animal Nutrition and Metabolism II W [0.50]
A systematic review of key aspects of lipid, vitamin and mineral utilization and metabolism in farm animals.
Department(s): Department of Animal and Poultry Science

Animal Physiology

ANSC*6400 Mammalian Reproduction W [0.50]
Discussions and applications of methodology for collection and examination of gametes and embryos and for measurements of hormones in biological fluids.
Offering(s): Offered in odd-numbered years.
Department(s): Department of Animal and Poultry Science

ANSC*6440 Advanced Critical Analysis in Applied Ethology F [0.50]
Students explore the process of scientific inquiry and experimental design within the context of applied ethology research. Discussions include the peer review process, critical analyses and applications of methods for applied animal behaviour research.
Department(s): Department of Animal and Poultry Science

ANSC*6460 Lactation Biology F [0.50]
An in-depth systems analysis of lactation, comparing the cow, pig, rat, human and seal. Mammary development from conception through to lactogenesis, lactation and involution will be covered. Hypotheses of regulation of the biochemical pathways of milk synthesis will be tested in relation to experimental observations.
Department(s): Department of Animal and Poultry Science

ANSC*6460 Lactation Biology F [0.50]
Animal growth and metabolism are considered at the cellular level in a manner that extends beyond the basic disciplines of biometrics and biochemistry with attention focused on the main carcass components — muscle, fat and bone.
Department(s): Department of Animal and Poultry Science

ANSC*6460 Lactation Biology F [0.50]
Animal growth and metabolism are considered at the cellular level in a manner that extends beyond the basic disciplines of biometrics and biochemistry with attention focused on the main carcass components — muscle, fat and bone.
Department(s): Department of Animal and Poultry Science

Animal Behaviour and Welfare

ANSC*6700 Animals in Society: Historical and Global Perspectives on Animal Welfare F [0.50]
A seminar course covering society’s duties to animals. Students will learn about the major ethical theories that deal with society’s duties towards animals, the main scientific approaches to animal welfare, and the relationship of science to ethics. A brief history of human-animal relationships will be covered and cultural differences described. Students will use this to analyze some current issues.
Department(s): Department of Animal and Poultry Science

ANSC*6710 Assessing Animal Welfare in Practice WS [0.50]
A lecture/seminar course covering the principles of applied animal welfare assessment. Students will learn what influences an animal welfare assessment and will understand the components necessary to create an effective and targeted animal welfare program for industry or regulatory application.
Offering(s): Winter offering on-campus, Summer offering Distance Education.
Prerequisite(s): ANSC*6700
Department(s): Department of Animal and Poultry Science

Animal Behaviour and Welfare

ANSC*6700 Animals in Society: Historical and Global Perspectives on Animal Welfare F [0.50]
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Offering(s): Winter offering on-campus, Summer offering Distance Education.
Prerequisite(s): ANSC*6700
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Department(s): Department of Animal and Poultry Science

ANSC*6710 Assessing Animal Welfare in Practice WS [0.50]
A lecture/seminar course covering the principles of applied animal welfare assessment. Students will learn what influences an animal welfare assessment and will understand the components necessary to create an effective and targeted animal welfare program for industry or regulatory application.
Offering(s): Winter offering on-campus, Summer offering Distance Education.
Prerequisite(s): ANSC*6700
Department(s): Department of Animal and Poultry Science
ANSC*6730 Applied Environmental Physiology: Applications to Animal Care Standards W [0.50]
A lecture/seminar course covering the principles of applied environmental physiology including temperature regulation, space requirements, animal responses to light and other aspects of the physical environment. Students pursue a topic in depth to develop or update recommended codes of practice and resource-based standards.
Department(s): Department of Animal and Poultry Science

ANSC*6720 Scientific Assessment of Affective States in Animals W [0.50]
Graduate students will explore the biology and validity of behavioural and physiological techniques used in animal welfare assessment of such phenomenon as: sympathetic activation, HPA functioning, stereotypic behaviour and preference responses. A combination of lecture, instructor-led discussion and student-led discussion will explore these areas of animal welfare assessment.
Department(s): Department of Animal and Poultry Science

ANSC*6740 Special Topics in Applied Animal Welfare Science S [0.50]
A lecture/seminar course covering in depth topics in applied animal welfare science. The course will review the scientific research into the welfare of a specific animal species or a specific animal welfare problem common across species, focusing on the main threats to welfare, relevant indicators of welfare, and possible solutions to improve welfare.
Department(s): Department of Animal and Poultry Science

UNIV*6030 Seminars and Analysis in Animal Behaviour and Welfare [0.50]

General

ANSC*6050 Biometry for Animal Sciences F [0.50]
For students involved in animal research. The course will provide outlines of appropriate presentation and analysis of experimental data with emphasis on different analytical techniques.
Department(s): Department of Animal and Poultry Science

ANSC*6100 Special Project F,W,S [0.50]
Supervised program of study in some aspect of animal and poultry science that can involve an experimental project and/or detailed analysis of the literature.
Department(s): Department of Animal and Poultry Science

ANSC*6600 Seminar F,W [0.00]
This course is required for successful completion of MSc and PhD programs. The major findings of the thesis or major paper are presented to the department.
Department(s): Department of Animal and Poultry Science

ANSC*6900 Major Paper in Animal and Poultry Science F,W,S [1.00]
A detailed, critical review of an area of study related to the specialization of students in the MSc by course work and major paper option that includes analysis and interpretation of relevant data.
Department(s): Department of Animal and Poultry Science
Art History and Visual Culture

The MA program is intended to provide students with core knowledge about Art History and Visual Culture within an interdisciplinary research context beneficial for transition to higher levels of Art History-related education and research and/or for careers in a variety of Art History-related fields, for instance in art publishing, museums and galleries, or government agencies.

The MA in Art History and Visual Culture is the first MA in this country which will provide a much-needed critical perspective fundamentally engaged with the history, politics, ideology, theory, and discourse not only of art, but, more significantly, the critical practices which inform how art's history is taught, marketed, and disseminated. What makes the program unique, dynamic, and exciting is its self-reflexivity, that is, its investigation of the discipline itself. By critically exploring a wider purview of objects, the program will be structured so as to provide maximum flexibility, introducing students to interdisciplinary inquiry and holistically engaging with objects in their multidimensionality. In other words, students will learn to discuss and critically write about objects in their material, critical, theoretical, and contextual totalities. Students will also explore the concept of identity, the power of visual rhetoric, and the shifting power dynamics inherent in art and its disciplines both in historical and contemporary contexts.

Administrative Staff

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Sally Hickson
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Dominic J. Marner
BA Regina, MA Victoria, PhD East Anglia (UK) - Associate Professor

Christina Smyliatopolous
BA Victoria, MA University of York, PhD McGill - Assistant Professor

MA Program

The MA in Art History and Visual Culture examines the production and consumption of images, objects, and spaces from varied cultures. It challenges many ideas about cognition and perception, and includes the study of the ocular. Because the visual is crucial to our understandings of cultural difference, Art History and Visual Culture Studies is vitally concerned with the manner in which the interdependent elements of race, ethnicity, gender, sexuality, and class construct identity. It demands that we think across cultures and national boundaries, and within a global context. Intercultural visual analysis necessarily questions conceptions of “high” and “low” culture and requires that we substantially change the ways in which we practice the discipline of Art History.

Towards this end, the objectives of the MA program are:

1. To enable students to gain a command of visual literacy through global and critical understandings of art and its cultures and histories;
2. To combine art historical methodology and visual and material culture perspectives in the study of objects—both past and present;
3. To explore critically the assumptions underpinning writing about art history and visual culture.

Admission Requirements

Admission to the MA program in Art History and Visual Culture may be granted on the recommendation of the School of Fine Art and Music to:

• the holder of a BA degree (honours equivalent), or an honours BA (or its equivalent in art history) with a minimum of a 75% average; or
• in exceptional cases, the holder of a degree in another field who has completed a minimum of six one-semester courses in art history; or
• a student who has satisfied the requirements for transfer from the provisional-student category.

It is highly recommended that applicants complete at least eight semesters of courses in art history, cultural studies, or related areas prior to applying. Serious interest in, and substantial familiarity with, historical and contemporary issues in Art History and Visual Culture is expected.

Degree Requirements

The program is a five semester MA in Art History and Visual Culture for students with a four-year undergraduate honours degree in the arts or social sciences. The MA program has a 2.0 credit course requirement, as well as a thesis for the completion of the program. The thesis consists of an extensive piece of research and an oral examination (defence).

Each degree candidate is required to complete the course work, colloquium oral presentation, and a thesis, which consists of an extended piece of research, and an oral examination. The three components represent a significant body of research and production, and demonstrate a thoroughly engaged investigation into the historical and conceptual considerations of the thesis topic. The thesis topic is subject to the approval of the MA Examination Committee, which includes an examiner from the profession. The thesis is a project of publishable quality. In essay form, it discusses the criticism, historical, and theoretical aspects of the student's subject of research. Students are expected to present and defend their work orally in a manner appropriate to a professional art historian's public presentation.

A total of 2.0 credits are required for the completion of this program. In addition to individually oriented Critical Methods I and II courses, students are required to complete two MA seminars. A maximum of one course outside Art History may be substituted for courses in Art History and Visual Culture graduate offerings. The courses selected must be acceptable to the school and the Board of Graduate Studies for graduate credit. There are 4 'substantive' courses that comprise the candidate's prescribed studies, and in which the student must obtain an overall average grade of at least 'B-' standing.

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department(s)</th>
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</thead>
<tbody>
<tr>
<td>AVC*6100</td>
<td>Proseminar: Critical Methods I F [0.50]</td>
<td>School of Fine Art and Music</td>
</tr>
<tr>
<td>AVC*6200</td>
<td>Proseminar: Critical Methods II W [0.50]</td>
<td>School of Fine Art and Music</td>
</tr>
<tr>
<td>AVC*6300</td>
<td>Special Topics in Art History and Visual Culture F [0.50]</td>
<td>School of Fine Art and Music</td>
</tr>
<tr>
<td>AVC*6400</td>
<td>Practicum: Art Institutions W [0.50]</td>
<td>School of Fine Art and Music</td>
</tr>
<tr>
<td>AVC*6500</td>
<td>Directed Reading U [0.50]</td>
<td>School of Fine Art and Music</td>
</tr>
</tbody>
</table>
Bioinformatics

Bioinformatics is the development and application of computational and statistical techniques for solving problems involving complex biological data. This emerging field is growing rapidly alongside technological developments for large-scale data generation in the life sciences, such as in genomics, proteomics, functional pathway analysis, health sciences, and biodiversity. Demand is accelerating for new approaches for data storage, retrieval, analysis, and applications. A new generation of professionals is required to meet this demand, having bioinformatics skills and the capacity to create new approaches.

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Daniel Ashlock
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Roy G. Danzmann
Professor, Integrative Biology

Michael J. Emes
Professor, Molecular and Cellular Biology and Dean of the College of Biological Science

Zeny Feng
Assistant Professor, Mathematics and Statistics

T. Ryan Gregory
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Cortland K. Griswold
Assistant Professor, Integrative Biology

Mehrdad Hajibabaei
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George Harauz
Professor and Canada Research Chair, Molecular and Cellular Biology

Andreas Heyland
Assistant Professor, Integrative Biology

Ronald Johnson
Associate Professor, Biomedical Sciences

Niel A. Karrow
Associate Professor, Animal and Poultry Science

Stefan C. Kremer
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Brandon N. Lillie
Assistant Professor, Pathobiology

Lewis Lukens
Associate Professor, Plant Agriculture

David W.L. Ma
Associate Professor, Human Health and Nutritional Sciences

Janet I. MacIyee
Professor, Pathobiology

Rod Merrill
Professor, Molecular and Cellular Biology

Stephen Miller
Associate Professor, Animal and Poultry Science

David M. Mutch
Assistant Professor, Human Health and Nutritional Sciences

Annette Nassuth
Associate Professor, Molecular and Cellular Biology

K. Peter Pauls
Professor, Plant Agriculture

J. Andrew B. Robinson
Associate Professor and Chair, Animal and Poultry Science

Steven Rothstein
Professor and University Research Chair, Molecular and Cellular Biology

Flavio Schenkel
Associate Professor, Animal and Poultry Science

M. Alexander Smith
Assistant Professor, Integrative Biology

George van der Merwe
Associate Professor, Molecular and Cellular Biology

MBNF Program

Admission Requirements

Students will be admitted to the Master of Bioinformatics program from a range of undergraduate programs in the life sciences. Students from undergraduate programs in the physical or computational sciences will be considered for admission if they are considered to have sufficient biological background. Students must begin the Master of Bioinformatics program in a fall semester. To be considered for admission, applicants should meet the minimum requirements of a four-year degree from a recognized post-secondary institution with a minimum 75% average over the last two years of full-time equivalent study.

Space in the program is limited and prospective students are encouraged to apply as early as possible. Application details are posted on the program website.

Degree Requirements

A total of 4.0 credits are required, which must include:

- BINF*6110 [0.50] Genomic Methods for Bioinformatics
- BINF*6210 [0.50] Software Tools for Biological Data Analysis and Organization
- BINF*6890 [0.50] Topics in Bioinformatics
- BINF*6970 [0.50] Statistical Bioinformatics
- BINF*6999 [1.00] Bioinformatics Master's Project

The advisory committee and/or the graduate program committee may require additional courses.

Advisory Committee

Students taking the Master of Bioinformatics will have an advisor and a co-advisor. Both the advisor and the co-advisor must be members of the Bioinformatics Graduate Faculty such that one has expertise in the life sciences and the other has expertise in statistics or computing.

Duration of the Program

Students normally take 3 courses per semester for two semesters (3.0 credits) and complete the Bioinformatics Master’s Project (1.0 credit) in a third semester. Therefore, the program typically takes 12 months of full-time study. There is, however, the option to continue the Bioinformatics Master’s Project into a second fall semester, in which case the program will take 16 months of full-time study.

MSc Program

Admission Requirements

Students may be admitted to the MSc in Bioinformatics program from a range of undergraduate programs in the life, physical, statistical, mathematical, and computational sciences. To be considered for admission, applicants should meet the minimum requirements of a four-year degree from a recognized post-secondary institution with a minimum 75% average over the last two years of full-time equivalent study.

Applicants should indicate their research interests and their preferred advisors. Prospective students are encouraged to speak with potential advisors before applying to the MSc program. Offers of admission will only be issued in cases where a member of the Bioinformatics Graduate Faculty has agreed to be the advisor.

Degree Requirements

A total of 2.0 credits are required, which must include:

- BINF*6110 [0.50] Genomic Methods for Bioinformatics
- BINF*6210 [0.50] Software Tools for Biological Data Analysis and Organization

The advisory committee and/or the graduate program committee may require additional courses. When the course work is satisfactorily completed, the submission and successful defence of an appropriate thesis on an approved topic completes the requirements for the MSc in Bioinformatics.
Advisory Committee

Students taking the MSc in Bioinformatics will have an advisory committee comprising at least two members of the Bioinformatics Graduate Faculty. The advisor must be a member of the Bioinformatics Graduate Faculty.

Duration of the Program

The program typically takes 16-24 months of full-time study.

PhD Program

This program is pending approval by Ontario Universities Council on Quality Assurance.

Admission Requirements

1. Applicants with a master's degree
   Applicants holding either a Master of Bioinformatics, an MSc in Bioinformatics, or a masters in a related discipline with a GPA above 80 over the last two years equivalent of full time study will be considered for admission.

2. Applicants without a master's degree (i.e., direct entry)
   Students taking the MSc in Bioinformatics will have an advisory committee comprising at least three members of the Bioinformatics Graduate Faculty. The advisor must be a member of the Bioinformatics Graduate Faculty. Usually, if there is a co-advisor, she or he will also be a member of the Bioinformatics Graduate Faculty; under special circumstances, the Director, after consultation with the Bioinformatics Program Committee, may approve a co-advisor who is not a member of the Bioinformatics Graduate Faculty.

Degree Requirements

A minimum of 1.0 credit is required, which must include:

BINF*6500 PhD Research Writing in Bioinformatics [1.00]

The program committee and the advisory committee may, and usually will, require additional courses. After the prescribed course work is satisfactorily completed, a qualifying examination is taken. Finally, the submission and successful defence of an appropriate thesis on an approved topic completes the requirements for the PhD in Bioinformatics.

Advisory Committee

Students taking the PhD in Bioinformatics will have an advisory committee comprising at least three members of the Bioinformatics Graduate Faculty. The advisor must be a member of the Bioinformatics Graduate Faculty. Usually, if there is a co-advisor, she or he will also be a member of the Bioinformatics Graduate Faculty; under special circumstances, the Director, after consultation with the Bioinformatics Program Committee, may approve a co-advisor who is not a member of the Bioinformatics Graduate Faculty.

Duration of the Program

The completion period of the program is 12 semesters of full-time study.

Courses

BINF*6500 PhD Research Writing in Bioinformatics F,W,S [1.00]

Background literature pertinent to the student’s initial research direction will be studied. Starting with a reading list provided by the advisor and the instructor, the student will build on this list and construct a major literature review over two semesters. As the student begins to generate initial ideas for their own research direction, their ideas are written and explained. The emphasis will be on a sub-field or sub-fields of bioinformatics and the depth of study will be appropriate to the doctoral level.

Restriction(s): Instructor consent required. PhD students in Bioinformatics program

Department(s): Dean's Office, College of Biological Science

Bioinformatics

BINF*6110 Genomic Methods for Bioinformatics W [0.50]

This course provides an introduction to current and emerging methods used to generate genomic data analyzed in bioinformatics. This may include techniques for DNA sequencing as well as transcriptome, proteome and metabolome analysis. The objective is to develop an appreciation for the challenges of producing data.

Department(s): Dean's Office, College of Biological Science

BINF*6210 Software Tools for Biological Data Analysis and Organization F [0.50]

This course will familiarize students with tools for the computational acquisition and analysis of molecular biological data. Key software for gene expression analyses, biological sequence analysis, and data acquisition and management will be presented. Laboratory exercises will guide students through application of relevant tools.

Department(s): Dean's Office, College of Biological Science

BINF*6410 Bioinformatics Programming F [0.50]

This course will introduce bioinformatics students to programming languages. Languages such as C and Perl will be introduced with a focus on bioinformatics applications. The topics covered will serve to aid students when existing software does not satisfy their needs.

Department(s): Dean's Office, College of Biological Science

BINF*6890 Topics in Bioinformatics F [0.50]

Selected topics in bioinformatics will be covered. The course might focus on biological or informatics topics, or upon a mixture of both.

Department(s): Dean's Office, College of Biological Science

BINF*6970 Statistical Bioinformatics W [0.50]

This course presents a selection of advanced approaches for the statistical analysis of data that arise in bioinformatics, especially genomic data. A central theme to this course is the modelling of complex, often high-dimensional, data structures.

Prerequisite(s): Introductory courses in statistics, mathematics and programming

Restriction(s): Instructor consent required.

Department(s): Dean's Office, College of Biological Science

BINF*6999 Bioinformatics Master's Project F,W,S [1.00]

A major research paper is completed and presented by students in the Master of Bioinformatics program.

Prerequisite(s): BINF*6110, BINF*6210

Restriction(s): Restricted to MBNF students only

Department(s): Dean's Office, College of Biological Science

Note

Some courses may not be offered every year. Students planning to take a course from the above list should consult with the Graduate Secretary for availability and scheduling.
Biomedical Sciences

The Department specializes in scientific disciplines which are basic to human and veterinary medicine. Within this context, the research activities of the faculty are focused under the general umbrella of biomedical science and biotechnology. The MBS, MSc and PhD programs provide emphasis in one of the department's three major fields: Reproductive Biology, Developmental, Cell and Tissue Morphology, and Biomedical Toxicology/Pharmacology. The department also participates in the Doctor of Veterinary Science (DVSc) program, co-ordinated by an interdepartmental committee chaired by the Associate Dean (graduate studies and research) of the Ontario Veterinary College.

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Bettina E. Kalisch
BSc, MSc, PhD Queen’s - Associate Professor

W. Allan King
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Thomas Koch
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James J. Petrik
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W. Glen Pyle
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Alastair J.S. Summerlee
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Jeffrey J. Thomason
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Matthew Vickaryous
BSc, MSc Calgary, PhD Dalhousie - Associate Professor

Alicia Viloria-Petit
BSc, MSc Venezuela, PhD Toronto - Assistant Professor

MBS program

Students may focus their Master of Biomedical Sciences in one of the three major fields: Reproductive Biology, Developmental, Cell and Tissue Morphology, and Biomedical Toxicology/Pharmacology. The research project may involve: molecular, cellular or developmental aspects of tissue or animal differentiation and growth, physiological, morphological or biomechanical investigations of normal function or disease processes in a variety of organs and tissues, or pharmacological mechanisms related to therapy and drug toxicity.

Admission Requirements

Applicants should have an Honours baccalaureate degree in the Biological Sciences or a Doctor of Veterinary Medicine degree (or the equivalent) with a minimum 'B+' standing in the final two years of study. Letters of reference from two individuals who can adequately evaluate the academic and research capabilities of the applicant must be provided with the application. In addition, a short statement of the applicant's research interests and career goals, is required to assist in the selection of faculty advisors. Students may be admitted into the Fall, Winter or Summer semester. Provisional acceptance may be granted to students who do not meet this 'B+' standard if there is additional evidence that the applicant is capable of successfully completing the graduate program (e.g., outstanding letters of recommendation, or evidence of prior relevant work or research experience). Transfer to regular status will normally be recommended when the student obtains a minimum grade of 'A-' in their first two graduate course and displays current research ability to his/her advisory committee. These courses will be credited to the degree program.

Degree Requirements

Students must obtain at least an overall weighted average of 'B-' in prescribed courses. The number of course credits prescribed will not be fewer than 4.0 credits with BIOM*6900 being a required course (the 1.0 credit for BIOM*6900 is included in the total required credits of 4.0). The courses selected will depend on the student's prior experience and the nature of the research project. All students are required to present one departmental seminar as a component of BIOM*6900. The program is completed when the written research report for BIOM*6900 is deemed appropriate by the Student’s Supervisory Committee.

MSc Program

Students may focus their MSc degree in one of the three major fields: Reproductive Biology, Developmental, Cell and Tissue Morphology, and Biomedical Toxicology/Pharmacology. The research project may involve: molecular, cellular or developmental aspects of tissue or animal differentiation and growth, physiological, morphological or biomechanical investigations of normal function or disease processes in a variety of organs and tissues, or pharmacological mechanisms related to therapy and drug toxicity.

Admission Requirements

Applicants should have an Honours baccalaureate degree in the Biological Sciences or a Doctor of Veterinary Medicine degree (or the equivalent) with a minimum 'B+' standing in the final two years of study. Letters of reference from two individuals who can adequately evaluate the academic and research capabilities of the applicant must be provided with the application. In addition, a short statement of the applicant's research interests and career goals, is required to assist in the selection of faculty advisors. Students may be admitted into the Fall, Winter or Summer semester. Provisional acceptance may be granted to students who do not meet this 'B+' standard if there is additional evidence that the applicant is capable of successfully completing the graduate program (e.g., outstanding letters of recommendation, or evidence of prior relevant work or research experience). Transfer to regular status will normally be recommended when the student obtains a minimum grade of 'A-' in their first two graduate course and displays current research ability to his/her advisory committee. These courses will be credited to the degree program.
Degree Requirements
Students must obtain at least an overall weighted average of 'B-' in prescribed courses. The number of graduate course credits prescribed will not be fewer than 1.5 credits. Prescribed and additional courses are selected by the student in consultation with the student's advisory committee. The courses selected will depend on the student's prior experience and the nature of the research project. The student must also prepare and defend an acceptable thesis and meet the Department's minimum scientific communication requirement. The minimum scientific communication requirement is one conference presentation (oral or poster) at a suitable Regional, National or International scientific conference. If this requirement has not been achieved, written justification must be provided to the Department of Biomedical Sciences Graduate Program Committee outlining the reasons why these requirements have not been achieved. The Chair of the Department of Biomedical Sciences Graduate Program Committee will provide a written response outlining the decision of the Graduate Program Committee to either grant or reject the request that the defence proceed even though the minimum scientific communication requirement has not been completed. All students are required to present two departmental seminars during their program. The thesis research proposal, developed by the student in consultation with the advisor, must receive approval from the supervisory committee no later than the end of the second semester of the program. The program is completed by the successful oral defence of a written thesis.

PhD Program
Students may undertake a PhD degree in aspects of Reproductive Biology, Developmental Cell and Tissue Morphology or Biomedical Toxicology/Pharmacology. Wherever appropriate, students are encouraged to incorporate the methodologies of more than one of these fields into their research project. The PhD program is research based and provides instructional opportunities and experiences that are intended to develop the student's ability to formulate hypotheses and design and execute experiments or to conduct observational studies.

Admission Requirements
Students entering the PhD program must show evidence of potential for independent, productive and original research. Admission to the PhD program generally requires completion of an MSc program with a research component, a minimum ‘B+’ average in the prescribed courses taken during the master's degree program, and strong recommendations from referees who have a sound knowledge of the student's strengths and weaknesses. In addition, a short statement of the applicant's research interests and career goals is required. In exceptional cases, where a candidate has demonstrated excellence in academic work and extraordinary ability to plan and initiate original research, transfer to the PhD program without completion of the MSc program may be recommended. This transfer must take place before the end of the fourth semester in accordance with university regulations. In all cases, students who do not hold an approved research-based MSc degree must register as MSc students regardless of their ultimate goals. Students may be admitted into the Fall, Winter or Summer semester. In those cases where the student is continuing her or his MSc research program into the PhD program, the student must clearly explain how the PhD research program represents a significant advance over that of the MSc.

Degree Requirements
The PhD program offers opportunities for students to become investigators in veterinary and human-health-related sciences. Students will be expected to demonstrate the originality and skill needed to contribute to the knowledge base in a manner that transcends the mere acquisition of data. All students are required to present departmental seminars (one per annum). Students must also successfully complete a qualifying examination. Details of the qualifying examination which includes written and oral components can be found on the Department’s website. Successful completion of the qualifying examination is a prerequisite for continuation in the PhD program. The advisory committee is required to evaluate the student's research productivity periodically and to report on the student's progress to the Department Graduate Program Committee each semester in which the student is registered.

The PhD program culminates in the preparation, presentation and defence of the thesis, which contains a substantial component of original research. Preparation and defence of an acceptable thesis based on research data and hypotheses generated during the duration of the study are the main criteria used to assess the satisfactory completion of the PhD program. In addition the student must meet the Department’s minimum scientific communication requirements. The minimum scientific communication requirements are two manuscripts which must at least have been submitted to a scientific journal prior to the student graduating with their PhD degree. One of these manuscripts must be based on the student’s PhD research project and the student must be the first or senior author on this manuscript. The second manuscript may be either an original research manuscript or a review manuscript. The student is not required to be the first author on this manuscript but the manuscript must be generated during the student’s tenure as a PhD candidate (i.e. the manuscript cannot be based on work performed while an undergraduate student or work presented in an MSc thesis). Students transferring from the MSc program to the PhD program can use any publications generated while enrolled in the graduate program of the Department of Biomedical Sciences. If these requirements have not been achieved, written justification must be provided to the Department of Biomedical Sciences Graduate Program Committee outlining the reasons why these requirements have not been achieved. The Chair of the Department of Biomedical Sciences Graduate Program Committee will provide a written response outlining the decision of the Graduate Program Committee to either grant or reject the request that the defence proceed even though the minimum scientific communication requirements have not been completed.

DVSc Program
The Department of Biomedical Sciences participates in the DVSc program offering specialization in clinical science. This program provides a balance between advanced training in the discipline, in-service training and a thesis-research project.

Interdepartmental Programs

Biophysics MSc/PhD
The Department of Biomedical Sciences participates in the MSc/PhD program in biophysics. Please consult the Biophysics listing for a detailed description of the MSc/PhD program.

Collaborative Programs

Neuroscience MSc/MBS/PhD
The Department of Biomedical Sciences participates in the MSc/PhD program in neuroscience. Please consult the Neuroscience listing for a detailed description of the MA/MSc/PhD collaborative program.

Toxicology MSc/PhD
The Department of Biomedical Sciences participates in the MSc/PhD program in toxicology. The research and teaching expertise of these faculty include aspects of toxicology; they may serve as advisors for MSc and PhD students. Please consult the Toxicology listing for a detailed description of the MSc/PhD collaborative program.

Courses

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<tr>
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<tr>
<td>BIOM*6060</td>
<td>Functional Neuroanatomy U [0.50]</td>
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<tr>
<td>BIOM*6070</td>
<td>Pregnancy, Birth and Perinatal Adaptations S [0.50]</td>
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<td>Department of Biomedical Sciences</td>
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<td>BIOM*6110</td>
<td>Advanced Microscopy for Biomedical Sciences U [0.50]</td>
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<tr>
<td>BIOM*6130</td>
<td>Vertebrate Developmental Biology U [0.50]</td>
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2014-2015 Graduate Calendar
March 9, 2015
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<td>BIOM*6190</td>
<td>Tissue Culture Techniques in Biomedical Sciences U</td>
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<tr>
<td>BIOM*6440</td>
<td>Biomedical Toxicology U</td>
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<td>Pharmacodynamics and Pharmacokinetics U</td>
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<td>BIOM*6490</td>
<td>Introduction to Drug Development W</td>
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<td>BIOM*6570</td>
<td>Biochemical Regulation of Physiological Processes U</td>
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<td>BIOM*6601</td>
<td>Special Topics in Reproductive Biology and Biotechnology U</td>
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<tr>
<td>BIOM*6602</td>
<td>Special Topics in Reproductive Biology and Biotechnology U</td>
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<td>Vascular Biology U</td>
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<td>BIOM*6702</td>
<td>Special Topics in Development, Cell and Tissue Morphology U</td>
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<td>BIOM*6712</td>
<td>Special Topics in Physiology &amp; Biochemistry U</td>
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<td>Special Topics in Pharmacology-Toxicology U</td>
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<tr>
<td>BIOM*6722</td>
<td>Special Topics in Biomedical Pharmacology-Toxicology U</td>
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<tr>
<td>BIOM*6800</td>
<td>Gene Expression in Health and Disease W</td>
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<tr>
<td>BIOM*6900</td>
<td>Research Project in Biomedical Sciences W,S,F</td>
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Biophysics

The organization and administration of the graduate program in biophysics are the responsibility of the Biophysics Interdepartmental Group (BIG). The group consists of those members of the graduate faculty whose research interests lie wholly or partly in biophysics. Biophysics spans all areas of the life sciences from molecular structure to human biology and uses the ideas and techniques of the physical sciences to solve biological problems. The specific sub-disciplines of BIG are molecular, cellular, structural, and computational biophysics.

Administrative Staff

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Leonid Brown
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David Chiu
Professor, Computing and Information Science

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James H. Davis
Professor, Physics

John Dawson
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John R. Dutcher
Professor, Physics

Hermann Eberl
Associate Professor, Mathematics and Statistics

Douglas Fudge
Assistant Professor, Integrative Biology

Susan Glasauer
Assistant Professor, Land Resource Science

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Assistant Professor, Integrative Biology

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Assistant Professor, Molecular and Cellular Biology

Marc Habash
Assistant Professor, Environmental Biology

George Harauz
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Mark Hurtig
Professor, Clinical Studies

Lorraine Jadeski
Professor, Human Health and Nutritional Sciences

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Assistant Professor, Molecular and Cellular Biology

Cezar Khursigara
Assistant Professor, Molecular and Cellular Biology

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Associate Professor, Physics

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Professor, Food Science

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Professor, Plant Agriculture

Peter Purslow
Professor, Food Science

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Assistant Professor, Biomedical Sciences

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John Srbely
Professor, Human Health and Nutritional Sciences

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Professor, Biomedical Sciences

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Professor, Molecular and Cellular Biology

Robert Wickham
Assistant Professor, Physics

Alan Willms
Assistant Professor, Mathematics and Statistics

Janet M. Wood
Professor, Molecular and Cellular Biology

Rickey Y. Yada
Professor, Food Science

Simon Yang
Professor, Engineering

John Zettel
Assistant Professor, Human Health and Nutritional Sciences

MSc Program

Admission Requirements

Students may be admitted to the MSc program in biophysics from a range of undergraduate programs, including physics, biology, biochemistry, microbiology, chemistry, mathematics, engineering, or computing science. To be considered for admission, applicants should meet the minimum requirements of a four-year honours degree with a 73% (B) average during the final two years of study. Applicants should briefly indicate their research interests and, if possible, their preferred advisors.

Degree Requirements

Students in the MSc program will be under the guidance of an interdepartmental advisory committee. A total of 1.5 credits are required, one of which is usually BIOP*6000. In addition, all students are required to complete the seminar course BIOP*6010. The advisory committee may require additional courses. An average of 70% (B-) or better must be obtained in the prescribed courses. Further information may be obtained from the chair of the group. When the course work is satisfactorily completed, the submission and successful defence of an appropriate thesis on an approved topic completes the requirements for the MSc in Biophysics.

PhD Program

Admission Requirements

Applicants for the PhD program should have a recognized master's degree in an appropriate field, with a 77% (B+) average in their postgraduate studies. Applicants should briefly indicate their area of research interest and preferred advisor(s). It is often beneficial for applicants to talk with potential advisors before submitting an application.

March 9, 2015
Direct admission to the PhD program may be permitted for applicants holding a bachelor's degree with high academic standing. Students enrolled in the master's degree program who achieve a superior academic record and show a particular aptitude for research may be permitted to transfer to the PhD program. The application to transfer should be made to the chair of the biophysics program between the end of the second semester and the end of the fourth semester of work towards the master's degree.

**Degree Requirements**

Students in the PhD program will be under the guidance of an interdepartmental advisory committee. For students who completed the MSc degree in a program other than Biophysics at the University of Guelph, a total of 1.0 graduate course credits are required, one of which is usually BIOP*6600. For students who transfer directly into the PhD program from the MSc program in Biophysics, or who complete the MSc program in Biophysics at the University of Guelph, no additional course credits are required. In the case of students who enter the PhD program from the BSc degree, 1.5 graduate course credits are required, one of which is BIOP*6600. In addition, all students are required to complete the non-credit seminar course, BIOP*6010. The advisory committee may require additional courses for any student. An average of 70% (B-) or better must be obtained in the prescribed courses. As early as feasible, but no later than the final semester of the minimum duration, a PhD student is required to complete a qualifying examination to assess her or his knowledge of the subject. This examination should normally be taken within the first five semesters of registration as a PhD student. When the qualifying examination and the course work are satisfactorily completed, the submission and successful defense of an acceptable thesis on an approved topic completes the requirements for the PhD in Biophysics.

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**Courses in Related Subjects:**

**Biomedical Sciences**

| BIOM*6110 [0.50] | Advanced Microscopy for Biomedical Sciences |
| BIOM*6160 [0.50] | Cellular Biology |
| BIOM*6190 [0.50] | Tissue Culture Techniques in Biomedical Sciences |

**Chemistry**

| CHEM*7360 [0.50] | Regulation in Biological Systems |
| CHEM*7370 [0.50] | Enzymes |
| CHEM*7380 [0.50] | Cell Membranes and Cell Surfaces |
| CHEM*7310 [0.50] | Selected Topics in Biochemistry |

**Computing and Information Science**

| CIS*6050 [0.50] | Neural Networks |
| CIS*6060 [0.50] | Bioinformatics |
| CIS*6080 [0.50] | Genetic Algorithms |
| CIS*6420 [0.50] | Soft Computing |

**Engineering**

| ENGG*6070 [0.50] | Medical Imaging |
| ENGG*6130 [0.50] | Physical Properties of Biomaterials |
| ENGG*6150 [0.50] | Bio-Instrumentation |
| ENGG*6560 [0.50] | Advanced Digital Signal Processing |

**Human Health and Nutritional Sciences**

| HHNS*6200 [1.00] | Research Methods in Biomechanics |
| HHNS*6440 [0.50] | Nutrition, Gene Expression and Cell Signalling |

**Mathematics and Statistics**

| MATH*6051 [0.50] | Mathematical Modelling |
| MATH*6071 [0.50] | Biostatistics |
| STAT*6761 [0.50] | Survival Analysis |
| STAT*6850 [0.50] | Advanced Biometry |
| STAT*6950 [0.50] | Statistical Methods for the Life Sciences |

**Molecular and Cellular Biology**

| MCB*6310 [0.50] | Advanced Topics in Development and Cellular Biology |
| MCB*6320 [0.50] | Advanced Topics in Microbiology |
| MCB*6360 [0.50] | Advanced Topics in Biochemistry and Molecular Biology |
| MCB*6370 [0.50] | Protein Structural Biology and Bioinformatics |
| MCB*6380 [0.50] | Structure and Function of Biological Membranes |

**Physics**

| PHYS*7010 [0.50] | Quantum Mechanics I * |
| PHYS*7020 [0.50] | Quantum Mechanics II |
| PHYS*7040 [0.50] | Statistical Physics I* |
| PHYS*7050 [0.50] | Statistical Physics II |

### Degree Requirements

**Degree Requirements**

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<tr>
<th>PHYS*7570 Special Topics in Biophysics U [0.25]</th>
<th>Offered on demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department(s): Department of Physics</td>
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</tbody>
</table>

**Courses in Related Subjects:**

**Biomedical Sciences**

| BIOM*6110 [0.50] | Advanced Microscopy for Biomedical Sciences |
| BIOM*6160 [0.50] | Cellular Biology |
| BIOM*6190 [0.50] | Tissue Culture Techniques in Biomedical Sciences |
Business Administration

Administrative Staff
If you have any enquiry pertaining to the MBA Program at the University of Guelph, please contact:

Assistant Dean, Executive Programs
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chevans@uoguelph.ca

Manager, Executive Programs
Patti Lago (800 MacKinnon Bldg., Ext. 56607)
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Joe Barth
Graduate Program Coordinator

Graduate Faculty
The MBA program is administered and managed by the College of Business and Economics (CBE), through the Executive Programs Office. The MBA currently has three fields: 1) Food and Agribusiness Management and 2) Hospitality and Tourism Management and 3) Sustainable Commerce which are offered in partnership with academic units: the Department of Food, Agricultural and Resource Economics (in the Ontario Agricultural College), the Department of Management (in CBE), the School of Hospitality, Food and Tourism Management (in CBE), the Department of Economics and Finance (in CBE) and the Department of Marketing and Consumer Studies (in CBE).

From the Department of Food, Agricultural and Resource Economics (OAC):
Andreas Boecker
MSc, PhD Kiel - Associate Professor

John A.L. Cranfield
BSc, MSc Guelph, PhD Purdue - Professor

Brady J. Deaton
BS Missouri, MS Virginia Tech, PhD Michigan State - Associate Professor

Glenn C. Fox
BSc(Agr), MSc Guelph, PhD Minnesota - Professor

Getu Hailu
BSc, MSc Alemaya, PhD Alberta - Associate Professor

Spencer Henson
BSc, PhD Reading - Professor

Rakhal C. Sarker
BSc, MSc Bangladesh, PhD Guelph - Associate Professor

Richard Vyn
BSc Dordt College, MSc Alberta, PhD Guelph - Assistant Professor

Alfons J. Weersink
BSc Guelph, MSc Montana State, PhD Cornell - Professor

From the Department of Management (CBE):
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Michele Bowring
BA Queen’s, MBA York, PhD Leicester - Assistant Professor

Francesco Braga
DOTT Milan, PhD Guelph - Associate Professor

Nita Chhinzer
BA York, MBA, PhD McMaster - Assistant Professor

Julia Christensen Hughes
BComm Guelph, MBA, PhD York - Professor and Dean, College of Business and Economics

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Rumina Dhalla
MBA, PhD York - Assistant Professor

Jamie A. Gruman
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Elizabeth Kurucz
BA McMaster, MIR Toronto, PhD York - Assistant Professor

Sean Lyons
BPA Windsor, MA, PhD Ottawa - Associate Professor

Sara Mann
BComm MBA McMaster, PhD Toronto - Associate Professor

Fred Pries
BMath Waterloo, MSc, PhD Waterloo, CA - Associate Professor

Davar Rezania
MSUtrecht, MBA Derby, PhD Ramon LLULL, CMA - Associate Professor and Chair

Sandra Scott
BSc Toronto, MBA, McMaster - Assistant Professor

John Walsh
BA Thames Polytechnic, MBA, PhD Western Ontario - Professor

Agnes Zdaniuk
BA Waterloo, MSc, PhD Waterloo - Assistant Professor

From the School of Hospitality, Food and Tourism Management (CBE):
Joe Barth
BSc Guelph, MBA Wilfrid Laurier, MPS, PhD Cornell - Associate Professor and Interim Director

Hwan-Suk (Chris) Choi
BA Chung-Ang (Seoul, Korea), MTA George Washington, PhD Texas A&M - Associate Professor

Statia Elliot
BComm St. Mary’s, MA McMaster, PhD Carleton - Assistant Professor

Joan Flaherty
BA, MA, MSc, Guelph - Assistant Professor

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BSc Victoria, MSc, Surrey, PhD Oxford Brookes, MBA Leicester - Associate Dean and Associate Professor

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Tanya MacLaurin
BSc, MSc Kansas State - Associate Professor

Erna van Duren
BA Waterloo, MSc, PhD Guelph - Professor

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From the Department of Economics and Finance (CBE)
Francis Tapon
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Ilias Tsiakas
BA, MA York, PhD Toronto - Associate Professor

From the Department of Marketing and Consumer Studies:
Sylvain Charlebois
BComm, MBA, DBA (Marketing) Sherbrooke - Professor and Associate Dean, Research and Graduate Studies, College of Business and Economics

Vinay Kanetkar
BArch, MArch, MSc, PhD UBC - Associate Professor

Jane Londerville
BSc, MBA Harvard - Associate Professor

Brent McKenzie
BA, Diploma in Business Administration, MBA, PhD Griffith University - Associate Professor

MBA Program
The MBA course of study is based on the application of contemporary management concepts and strategies to industries where the University of Guelph has distinctive capabilities. Upon admission, participants choose an industry focus for their program. Currently, the industry specializations available to students include Hospitality and Tourism Management, and Food and Agribusiness Management and Sustainable Commerce. Other industry concentrations are being discussed for future development.

The Guelph program involves a core group of courses that build and develop key managerial skills. Courses that allow students to apply concepts and skills to management situations in their chosen industry, and course work is followed by industry-related research culminating in a major project or thesis. Case studies are widely used. Program prerequisites include relevant experience in the participant's chosen industry.

Admission Requirements
A four-year undergraduate degree or its equivalent (from a recognized university) with an average of at least a B-(70-72%) in the last two years of study and:
1. At least three years of industry related experience including supervisory and managerial responsibility OR
2. A mandatory GMAT for applicants who do not have the relevant three years work experience.
Alternate admission may be offered to applicants with a three year General degree, diploma and/or an acceptable professional designation AND having completed at least five years of relevant work experience.

Degree Requirements
MBA Online
The University of Guelph Executive Master of Business Administration (Online) program operates on a full cost recovery basis delivering a highly successful distance learning program that is a combination of electronic coursework and three residential periods. Guelph’s MBA program offers specializations in Hospitality and Tourism Management, Food and Agribusiness Management and Sustainable Commerce and requires completion of twelve courses and a major research project or fourteen courses.

Online courses are offered as 8-week modules that require approximately 20 hours of study per week. With Internet service you can study anywhere, anytime with the flexibility that enables you to balance family, career and study priorities.

The three residential components are held at the University of Guelph, Ontario, Canada in the summer of each year.

Core Courses
Participants complete nine core courses, which provide a foundation for graduate management education. These courses build and develop key managerial skills applicable in the private and public sectors of the economy. The core program is specifically geared to today’s manager-leader, team player, decision maker and coach:

AGBU*6700 [0.50] Special Topics: Agribusiness Management
BUS*6180 [0.50] Financial and Managerial Accounting
BUS*6200 [0.50] Financial Management
HTM*6050 [0.50] Management Communications
HTM*6110 [0.50] Foundations of Management Leadership
HTM*6140 [0.50] Foundations of Human Resource Management
HTM*6150 [0.50] Research Methods for Managers
HTM*6800 [0.50] Operations Management

or
AGBU*6070 [0.50] Research Methods for Managers
HTM*6700 [0.50] Strategic Management & Business Game
or
AGBU*6400 [0.50] Strategic Management & Business Game

Specializations

Food and Agribusiness Management
The Food and Agribusiness Management specialization is designed to prepare graduates for advanced careers in the food, agribusiness and production agriculture sectors. Working with faculty from CBE participants complete three advanced courses related to the food and agribusiness sector:

AGBU*6100 [0.50] Food and Agribusiness Economics and Policy
AGBU*6120 [0.50] Food and Agribusiness Marketing
AGBU*6510 [0.50] Managing Price Risk

HTM*6800 [0.50] Operations Management

Hospitality and Tourism Management
The Hospitality and Tourism Management specialization is designed to prepare graduates for advanced careers in the accommodation, food service and tourism industries. Working with faculty from the School of Hospitality, Food and Tourism Management, participants complete three advanced courses related to the hospitality and tourism sector:

HTM*6510 [0.50] Hospitality and Tourism Revenue Management
HTM*6300 [0.50] Hospitality and Tourism Marketing
HTM*6550 [0.50] Managing Service Quality

In addition, the program allows participants to choose to complete the requirements for the MBA degree by two additional courses or by the completion of a major research project.

Sustainable Commerce
The Sustainable Commerce specialization is designed to prepare graduates for advanced careers in which sustainability is a key business objective. Working with faculty of CBE and the Department of Geography, participants complete three advanced courses related to sustainable commerce sector:

BUS*6300 [0.50] Business Practices for Sustainability
GEOG*6281 [0.50] Environmental Management and Governance
AGBU*6120 [0.50] Food and Agribusiness Marketing

or

HTM*6300 [0.50] Hospitality and Tourism Marketing
HTM*6590 [0.50] Organizational Theory and Design

In addition, the program allows participants to choose to complete the requirements for the MBA degree by two additional elective courses or by the completion of a major research project.

Major Research Project
The major research project is comprised of developing a research proposal, researching an applied management problem and requires data collection, analysis and the ability to link understanding of the problem with an appropriate body of literature.

Degree Requirements

MBA Online
The University of Guelph Executive Master of Business Administration (Online) program operates on a full cost recovery basis delivering a highly successful distance learning program that is a combination of electronic coursework and three residential periods. Guelph’s MBA program offers specializations in Hospitality and Tourism Management, Food and Agribusiness Management and Sustainable Commerce and requires completion of thirteen courses and a major research project or fifteen courses.

Online courses are offered as 8-week modules that require approximately 20 hours of study per week. With Internet service you can study anywhere, anytime with the flexibility that enables you to balance family, career and study priorities.

The three residential components are held at the University of Guelph, Ontario, Canada in the summer of each year.

Program Time Commitment and Duration
Participants normally complete the Online MBA within two years. Courses are completed in sequence and are typically two months in length. Students are expected to devote 20 to 25 study hours per week to participate in the program.

MBA On Campus

Note
Please note that this program is not accepting applicants at this time.

The MBA on-campus program is designed for people who wish to complete the MBA in one intensive year of study.

The MBA on campus program also requires completion of twelve courses and a major research project or the program may be completed entirely by coursework by completing fourteen courses.

The courses are completed on campus at the University of Guelph. Participants complete required coursework in three consecutive semesters beginning annually in May finishing with the capstone course the following May.

Computer Systems Requirements

On-Line MBA: Equipment Requirements
MBA Online participants are required to have Microsoft Office software and adequate peripherals to support the learning system, which must include DVD capability and a sound card. A basic level of computer literacy is strongly recommended for the MBA program. High speed internet access is required.

Online MBA participants are solely responsible to arrange for purchase/maintenance of recommended computer systems and software, and should have a contingency plan in the event of system failure. Participants may be required to upgrade minimum hardware/software based on rapidly changing industry standards and continuous development of state-of-the-art learning tools.

For information pertaining to the computer requirements contact our program administrative staff or visit our MBA web site: http://www.mba.uoguelph.ca/

On Campus MBA: Equipment Requirements
It is recommended that all On Campus MBA participants have access to a laptop computer equipped with Microsoft Office software.

Courses

Food and Agribusiness Management

AGBU*6070 Research Methods for Managers W [0.50]
The objective of the course is to provide students with a working knowledge of quantitative and qualitative techniques used in the analysis of management problems. The emphasis is on the application and interpretation of quantitative and qualitative methods rather than on theoretical background.

Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

AGBU*6100 Food and Agribusiness Economics and Policy U [0.50]
An analysis of economic and policy issues relevant for food and agribusiness managers in affluent economies, with emphasis on the economic and policy environment that exists within North America.

Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

AGBU*6120 Food and Agribusiness Marketing W [0.50]
A study of marketing decision-making in food and agribusiness firms, with emphasis on the formulation of strategic marketing plans.

Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs
AGBU*6300 Problems in Agribusiness - Summer Residency S [0.50]
A seven-day intensive session, delivered at the University of Guelph, that focuses on the development of a management plan for an agribusiness organization through the use of group case studies, seminars and speakers.
Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

AGBU*6400 Strategic Management & Business Game U [0.50]
An advanced course requiring the application of conceptual, analytical, problem identification, and problem solving skills to develop organizational strategy. Food, agribusiness and other cases are used to explore the development and implementation of strategy and to assess the dynamic relationship between strategy and competition.
Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

AGBU*6510 Managing Price Risk W [0.50]
The course deals with the use of futures, options and other instruments for marketing, risk management and investment purposes. Emphasis is placed on the development and implementation of trading strategies and on the policy and corporate governance framework necessary to support effective management.
Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

AGBU*6520 Marketing Research and Analysis F [0.50]
Students will learn the fundamentals of marketing research and analysis as they apply to decision-making. The key focus of the course will be on developing a marketing plan for a real product/service. Input into the marketing plan will come from actual marketing research information collected, analyzed and interpreted by participants. Students will develop and implement background-marketing research that can be used at the conclusion of the course to build the marketing plan. In addition to developing general research skills, special topics such as perceptual mapping for positioning, conjoint analysis for pricing and clustering for segmentation will be examined.
Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

AGBU*6530 Management Issues in Agriculture W [0.50]
This course discusses the application of general management concepts and practices to agricultural production. Topics include strategies farm managers can use to assess performance, set direction, build capabilities and implement change. All readings and cases are taken from the viewpoint of an owner-operator of a commercial farming operation.
Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

AGBU*6700 Special Topics: Agribusiness Management U [0.50]
A special topic course focusing on relevant business issues or problems allowing students to enhance and further develop expertise in specific areas of management. May be offered to students in any semester.
Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

AGBU*6800 Directed Research Project U [1.00]
A management research project leading to a referenced report focusing on selected topics of interest in agricultural business.
Restriction(s): CBE Executive Programs students only
Department(s): Executive MBA Programs

Hospitality and Tourism Management

HTM*6120 Special Topics in Hospitality Organizational Behaviour F,W,S [0.50]
Advanced course for those specializing in organizational behaviour. Deals with in-depth analysis of industry organizational behaviour, management of current and future problems, reorganizations, corporate cultures, multi-cultural organizations, and ethics.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6130 Special Topics in Hospitality Organizational Behaviour F,W,S [0.50]
Advanced course for those specializing in organizational behaviour. Deals with in-depth analysis of industry organizational behaviour, management of current and future problems, reorganizations, corporate cultures, multi-cultural organizations, and ethics.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6140 Foundations of Human Resource Management W [0.50]
This course examines the essential human resource management functions of planning, staffing, employee development, compensation, health and safety, labour relations, and legal compliance, in a variety of organizational settings.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6150 Research Methods for Managers F [0.50]
Students learn to formulate a research problem, undertake a literature review, and to select and use appropriate quantitative and qualitative techniques for the collection and analysis of relevant data. The course also promotes the use of the World Wide Web as an information resource.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6170 Hospitality and Tourism Economics and Policy U [0.50]
The course introduces participants to economic and government policy issues that impact the hospitality and tourism industry. The course provides a strategic framework for understanding the macroeconomic and policy environment that is shaped by multilateral institutions, government and the hospitality and tourism industry.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6220 Special Topics in Management Issues F,W,S [0.50]
An advanced course for those specializing in management, marketing or organizational behaviour. Deals with current and future topics, trends and problems in the industry, strategic planning, and the integration of management, marketing, and organizational behaviour.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6300 Hospitality and Tourism Marketing F [0.50]
Analysis and application of marketing foundations through integration of marketing variables with real-world situations and in-depth analysis of strategic marketing issues.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6320 Special Topics in Hospitality Marketing F,W,S [0.50]
An advanced course for those specializing in marketing. Deals with marketing theories, models, and specific subsets of marketing such as pricing, consumer and industrial-buyer behaviour, distribution, services, and service-delivery concepts.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6330 Special Topics in Hospitality Marketing F,W,S [0.50]
An advanced course for those specializing in marketing. Deals with marketing theories, models, and specific subsets of marketing such as pricing, consumer and industrial-buyer behaviour, distribution, services, and service-delivery concepts.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6600 Hospitality and Tourism Crisis Management [1.00]
An advanced course for those specializing in crisis management. Deals with crisis management theories, models, and specific subsets of crisis management such as planning, consumer and industrial-buyer behaviour, distribution, services, and service-delivery concepts.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6610 Foundations of Management Leadership F [0.50]
This course will enhance students' interpersonal skills, as well as their knowledge and understanding of the theory and research underlying effective team management and collaboration on an organization. Experiential approaches are used to enhance managerial skills.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6650 Management Communications F [0.50]
Examination of the theory, function and practice of managerial communications with particular emphasis on developing communication strategies and skills.
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management

HTM*6670 Foundations of Management Leadership F [0.50]
This course discusses revenue maximization strategies and tactics that improve the profitability of businesses that work in fixed capacity environments, face time-varied demand, their product is homogeneous and their cost structure reflects a high proportion of fixed and a low proportion of variable cost items.
Prerequisite(s): HTM*6300
Restriction(s): CBE Executive Programs students only
Department(s): School of Hospitality, Food and Tourism Management
**IX. Graduate Programs, Business Administration**

**BUS*6180 Financial and Managerial Accounting F [0.50]**
This course emphasizes the gathering and use of financial information to facilitate effective financial and management decisions. Cases are used to approach the subject from the perspective of the user of accounting information rather than that of the supplier.

*Department(s):* Department of Management

**BUS*6200 Financial Management W [0.50]**
This course takes the viewpoint of the senior financial officer of a commercial enterprise. The focus is on the management of cash, accounts receivable, inventories and capital assets, as well as on the sourcing of funds through short-term liabilities, long-term debt and owners' equity.

*Prerequisite(s):* BUS*6180
*Restriction(s):* Non MBA students only by permission of instructor.
*Department(s):* Department of Management

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**BUS*6300 Business Practices for Sustainability U [0.50]**
This course focuses on critical strategic and managerial issues related to sustainability and introduces students to concepts linking organizational strategies and sustainability principles. It explores how managers can integrate consideration of the environment and society into business strategies and business practices to improve competitive advantage and create environmental, social and economic value.

*Department(s):* Department of Management

**BUS*6800 Readings in Leadership I F,W,S [0.50]**
This course is available to individuals or groups of graduate students. Students will complete a set of readings and an associated paper as approved by designated faculty. Specific learning objectives consistent with the University's will be developed each time the course is offered.

*Department(s):* Department of Management

**BUS*6810 Readings in Leadership II F,W,S [0.50]**
This course is available to individuals or groups of graduate students. Students will complete a set of readings and an associated paper as approved by designated faculty. Specific learning objectives consistent with the University's will be developed each time the course is offered.

*Department(s):* Department of Management

**BUS*6820 Readings in Management F,W,S [0.50]**
This course is available to individuals or groups of graduate students. Students will complete a set of readings and an associated paper as approved by designated faculty. Specific learning objectives consistent with the University's will be developed each time the course is offered.

*Department(s):* Department of Management

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**Courses in Other Programs**

Various programs offer other courses that may be used to fulfill graduation requirements. These programs include agricultural economics, computing and information science, economics, philosophy, psychology, mathematics and statistics, sociology, rural planning and development. Students should discuss changes in the typical program with the graduate coordinator or their advisor prior to final course selection.

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**HTM*6550 Managing Service Quality S [0.50]**
A holistic and interdisciplinary approach is used to explore the principles of service management. The course will enhance participants' understanding of what actually constitutes quality, the nature of service, and strategies for improving it.

*Restriction(s):* CBE Executive Programs students only
*Department(s):* School of Hospitality, Food and Tourism Management

**HTM*6590 Organizational Theory and Design U [0.50]**
Core concepts in organizational theory and their interrelationships as well as concepts such as group decision making and intragroup and intergroup dynamics are explored.

*Restriction(s):* CBE Executive Programs students only
*Department(s):* School of Hospitality, Food and Tourism Management

**HTM*6600 International Tourism and Tourism Marketing F [0.50]**
Analyzes the social, political and economic impacts of tourism on the world scene, as well as the global integration of tourism in today's society.

*Restriction(s):* CBE Executive Programs students only
*Department(s):* School of Hospitality, Food and Tourism Management

**HTM*6620 Special Topics in Tourism F,W,S [0.50]**
Advanced course for those specializing in tourism. Deals with theories of tourism generators, multi-markets, tourism multipliers, current and future trends, regulatory environments, and distributions systems.

*Restriction(s):* CBE Executive Programs students only
*Department(s):* School of Hospitality, Food and Tourism Management

**HTM*6630 Special Topics in Tourism F,W,S [0.50]**
Advanced course for those specializing in tourism. Deals with theories of tourism generators, multi-markets, tourism multipliers, current and future trends, regulatory environments, and distributions systems.

*Restriction(s):* CBE Executive Programs students only
*Department(s):* School of Hospitality, Food and Tourism Management

**HTM*6700 Strategic Management & Business Game U [0.50]**
An integrative course which draws together the conceptual theories and models of the graduate program core. Utilizes conceptual, analytical, problem identification, and problem solving skills.

*Restriction(s):* CBE Executive Programs students only
*Department(s):* School of Hospitality, Food and Tourism Management

**HTM*6800 Operations Management U [0.50]**
This course applies operations research theory and practices to management problem solving and decision-making. The focus is on modelling service and product delivery systems and major emphasis is placed on managerial problems in hospitality, tourism, and food and agribusiness organizations.

*Restriction(s):* CBE Executive Programs students only
*Department(s):* School of Hospitality, Food and Tourism Management

**HTM*6900 Major Paper F,W,S [1.00]**
A detailed critical review of an area of study specific to the specialization of students in the MBA by course work and major paper option.

*Restriction(s):* CBE Executive Programs students only
*Department(s):* School of Hospitality, Food and Tourism Management
Capacity Development and Extension

The Capacity Development and Extension Program offers a thesis or major paper course of study leading to the MSc degree. Subject areas including adult learning and development, communication, leadership, decision-making, facilitation as well as capacity building at individual, organizational and systems levels support the field of Capacity Development and Extension.

Administrative Staff

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James P. Mahone
BSc U.S. Coast Guard Academy (Connecticut), PhD Michigan State - Professor

MSc Program

Capacity Development and Extension offers a professionally oriented program leading to the MSc degree in capacity development and extension. The program covers a broad range of topics including capacity development, interpersonal communication, communication technologies and international extension programs. A variety of learning formats are offered by the program including independent study, distance education, seminars, international courses and research colloquia.

Graduate students focus on Capacity Development and Extension. The Program offers core courses and restricted electives. Other courses of interest are available in other academic units including Rural Planning and Development, and the Departments of Food, Agricultural and Resource Economics, Geography, History and Sociology and Anthropology.

Admission Requirements

The program is open to qualified graduates from a wide variety of disciplines including agriculture, home economics, sociology, communication, education, health and medicine, history, and economics. A four-year honours degree is considered as the normal and basic admission requirement. Work experience in a rural area or non-urban community is considered especially useful in applying theory to practice and in identifying research needs and topics.

Students in Capacity Development and Extension have employment backgrounds in areas such as agricultural extension, rural and volunteer organizations, community development, non-formal education, family and consumer studies, social work, communication technology, health, international project management, and technology transfer.

Degree Requirements

A minimum of two full-time semesters of course work, or equivalent, must be completed. Thesis and Major Paper options are available.

All students enrolled in this program are required to complete a Thesis or a Major Research Paper, and a set of core courses that provide a foundation for capacity development and extension research and practice.

MSc by Course Work and Major Paper

Students must complete three (3) core courses, a minimum of four (4) restricted electives, one (1) open elective and the major paper.

The core course consist of:

- CDE*6070 [0.50] Foundations of Capacity Building and Extension
- CDE*6260 [0.50] Research Design
- EDRD*6000 [0.50] Qualitative Analysis in Rural Development
- OR
- RPD*6380 [0.50] Application of Quantitative Techniques in Rural Planning and Development

AND

- CDE*6900 [1.00] Major Research Paper

MSc by Thesis

Students must complete three (3) core courses, a minimum of two (2) restricted electives, one (1) open elective and a thesis.

The core courses consist of:

- CDE*6070 [0.50] Foundations of Capacity Building and Extension
- CDE*6260 [0.50] Research Design
- EDRD*6000 [0.50] Qualitative Analysis in Rural Development
- OR
- RPD*6380 [0.50] Application of Quantitative Techniques in Rural Planning and Development

Students select an advisor and a research committee who will assist them in course selection, research and thesis development.

Collaborative Programs

International Development Studies

Capacity Development and Extension participates in the collaborative International Development Studies (IDS) program. Students take a minimum of 2.5 course credits in the school and a minimum of 2.5 credits in international development studies program. The MSc degree for students in this program will have the collaborator designation in rural extension studies: international development studies. Please consult the International Development Studies listing for a detailed description of the collaborative program including the special additional requirements for each of the participating departments.

Courses

Core Courses

- CDE*6070 Foundations of Capacity Building and Extension U [0.50]

Contemporary issues and changes in rural communities and the implications for building community capacity. Students will be introduced to and examine dominant paradigms of community capacity building for meeting rural needs.

- Department(s): School of Environmental Design and Rural Development

- CDE*6260 Research Design U [0.50]

Provides students with abilities and knowledge to undertake, formulate and implement research in their chosen area of development. Students are expected to acquire the ability to identify research question and the appropriate designs to answer such questions.

- Department(s): School of Environmental Design and Rural Development

- CDE*6900 Major Research Paper U [1.00]

Students select a topic and write a paper that does not necessarily include original data but is an analysis and synthesis of materials dealing with the topic selected.

- Restriction(s): Instructor consent required.

- Department(s): School of Environmental Design and Rural Development

Restricted Elective Courses

- CDE*6290 Special Topics in Capacity Building and Extension U [0.50]

Selected study topics which may be pursued in accordance with the special needs of students in the program.

- Department(s): School of Environmental Design and Rural Development

- CDE*6311 Community Engagement and Public Participation U [0.50]

This course will explore the philosophy and principles of public participation. An emphasis will be placed on those practices and methods that can be used to engage communities and organizations within a participatory framework.

- Department(s): School of Environmental Design and Rural Development

- CDE*6320 Capacity Building for Sustainable Development U [0.50]

Learning processes enhancing human capital in civil society and the organizational and managerial capabilities that can empower communities to meet their economic, social, cultural and environmental needs. Examines development and underdevelopment and the role of non-formal education and administration in facilitation social change in peripheral regions from an interdisciplinary perspective.

- Department(s): School of Environmental Design and Rural Development

- CDE*6330 Facilitation and Conflict Management U [0.50]

Explore the theories of leadership, practice leadership skills and activities, and develop an understanding of the role facilitation and conflict management play in organizational success. Emphasizes personal individual development through practice, lecture and group discussion. Service learning through facilitation of community meetings will be part of the course.

- Restriction(s): Instructor consent required.

- Department(s): School of Environmental Design and Rural Development

- CDE*6410 Readings in Capacity Building and Extension U [0.50]

A program of supervised independent study related to the student's area of concentration.

- Restriction(s): Instructor consent required.

- Department(s): School of Environmental Design and Rural Development
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>CDE*6420</td>
<td>Communication for Social and Environmental Change U</td>
<td>0.50</td>
<td>Communication process for social change and development including participatory media. Students engage in community-based work involving multi-media projects. Course covers the history of development communication and current praxis in Canada and internationally.</td>
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<td><strong>Restriction(s):</strong> Instructor consent required.</td>
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<td><strong>Department(s):</strong> School of Environmental Design and Rural Development</td>
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<tr>
<td>CDE*6690</td>
<td>Community Environmental Leadership F</td>
<td>0.50</td>
<td>This course explores the relationships between the environment and socio-economic issues at the community level and the resulting conflict. Using the social change model, this course examines the linages between advocacy, decision-making and conflict and the development of strategies to mitigate community conflict.</td>
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<td><strong>Restriction(s):</strong> Instructor consent required.</td>
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Chemistry

The Guelph-Waterloo Centre for Graduate Work in Chemistry and Biochemistry combines the Department of Chemistry at the University of Waterloo and the Department of Chemistry at the University of Guelph into a comprehensive and all-inclusive school of graduate chemistry and biochemistry. The members of the centre conduct research in virtually all areas of modern chemistry and biochemistry.

Professional personnel in the centre comprise those faculty members of the two departments who have been appointed as PhD advisors and have a record of recent research achievement. The centre is administered by the director and its affairs are guided by the co-ordinating committee, which consists of the director, the two departmental chairs, the two departmental graduate coordinators, two elected centre members from each campus, and one elected representative of the graduate student body from each campus. The regulations applying to graduate study in the centre meet the requirements of the graduate councils and the Senates of the two universities.

The fields of research in which theses can be written normally fall within the categories of analytical, inorganic, nanoscience, organic, physical, theoretical (also chemical physics) and polymer chemistry, and biological chemistry or biochemistry. The category chosen will normally be referred to as the candidate’s major. However, if a suitable topic is chosen, a candidate may pursue research which involves more than one of the categories listed above. Certain course requirements must be fulfilled both for the MSc and for the PhD. These courses are chosen in consultation with the candidate’s advisory committee and the graduate officers of the centre.

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Dmitry V. Soldatov

Graduate Faculty from University of Waterloo

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J. Michael Chong
BSc, PhD British Columbia - Professor

Thorsten Dieckmann
Dipl., Dr. rer. nat. Braunschweig - Associate Professor

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BSc, PhD Toronto - Associate Professor

Jean Duhamel
BEng, MSc, PhD (ENSIC, Nancy, France) - Professor and Canada Research Chair

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Mario Gauthier
BSc, PhD McGill - Professor

Tadeusz Gorecki
MSc, PhD (Technical University of Gdansk) - Professor

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BSc, PhD Toronto - Associate Professor and Graduate Officer

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Graham K. Murphy
BSc (CVictoria), PhD (Alberta) - Assistant Professor

Linda F. Nazar
IX. Graduate Programs, Chemistry

PhD Program

An applicant is eligible for admission to the PhD program at the discretion of the director. In general, an applicant must possess the qualifications listed for the MSc program, together with a master of science degree comparable to those awarded by North American universities and suitable references from the institution at which the MSc degree was awarded. However, direct admission to the PhD program is available to applicants with an overall A standing in an Honours BSc degree.

A student who is registered in (GWC)2 as a master's candidate may be permitted under certain circumstances to transfer to a PhD degree without writing an MSc thesis. The following guidelines are used in deciding whether a student will be recommended to the appropriate university authorities to transfer directly to the PhD program.

• The request must be initiated by the student no later than the end of the third semester in the MSc program. Transfers will be made no later than the fourth semester.
• The applicant should have a superior academic record at both the undergraduate and graduate level, with a first class standing and above average performance in a minimum of two graduate courses and MSc Seminar, CHEM*7940.
• The applicant must have demonstrated an oral and written communication ability appropriate for a PhD-level student, and there must be clear evidence of research productivity and promise.
• The request for direct transfer should be accompanied by supporting documentation from the advisor, the advisory committee, and another faculty member familiar with the student's research record.

PhD Co-operative Option

A student is encouraged to apply to the PhD co-operative option if he/she has an honours bachelor of science degree, or the equivalent, with a minimum overall A standing.

Degree Requirements

PhD Program

Students in the PhD program must successfully complete three semester-long courses beyond those required for the master of science degree. One of these courses will be PhD Seminar, CHEM*7950. Students must also pass an oral qualifying examination in their major field, and submit and defend an acceptable thesis.

Students admitted directly to the PhD program from a BSc must successfully complete one semester-long course beyond those required for the master of science degree. In addition, students must also complete CHEM*7950 (PhD Seminar), pass an oral qualifying examination in their major field, and submit and defend an acceptable thesis.

PhD Co-operative Option

Students registered in the PhD program may proceed to that degree under the co-operative option. Under this option one of the two required one-term courses, in addition to CHEM*7950 and qualifying, must be completed within the first two academic semesters of study in the centre. After successful completion of these two semesters of course work, the candidate will spend three semesters (one year) working in an industrial or government laboratory. On completion of the work year, a student will be required to submit a work report which will be evaluated by the centre and the career services unit at the student's place of study in the centre. After successful completion of these two semesters of course work, the candidate will spend three semesters (one year) working in an industrial or government laboratory. On completion of the work year, a student will be required to submit a work report which will be evaluated by the centre and the career services unit at the student's home campus. Following successful completion of the work year, the student will return to the centre to continue work on a PhD research project and complete the regular PhD requirements.

Collaborative Programs

Toxicology MSc/PhD

The Department of Chemistry participates in the MSc/PhD program in toxicology. Please consult the Toxicology listing for a detailed description of the MSc/PhD collaborative program. Students choosing this option must meet the requirements of the toxicology collaborative program, as well as those of (GWC)2 for their particular degree program. Three toxicology courses must be completed including Advanced Topics in Toxicology, TOX*6200, and a research project must be conducted with a participating faculty member at the University of Guelph.

Courses

Except where specified, courses in the following list may be offered in any semester subject to student demand and the availability of an instructor.

All courses are given an eight character code with the sixth having the following significance: 1 (inorganic), 2 (analytical), 3 (biochemistry), 4 (theoretical), 5 (physical), 6 (organic), and 7 (polymer).

Inorganic

CHEM*7100 Selected Topics in Inorganic Chemistry U [0.50]
Discussion of specialized topics related to the research interests of members of the centre. Special topics could include, for example: bioinorganic chemistry; inorganic reaction mechanisms; synthetic methods in inorganic and organometallic chemistry; homogeneous and heterogeneous catalysis; chemistry of polynuclear compounds.

Department(s): Department of Chemistry
CHEM*7120 X-Ray Crystallography U [0.50]
Introduction: crystals, basic concepts; space groups: the reciprocal lattice; x-ray diffraction; the phase problem; structure factors; electron density; small molecule structure solution, structure refinement, structure results, journals and databases, paper writing.
Department(s): Department of Chemistry

CHEM*7130 Chemistry of Inorganic Solid State Materials U [0.50]
Introduction to solid state chemistry, common crystal structures, principles of solid state synthesis, theory and experimental methods for characterizing solids, including thermal analysis techniques, powder x-ray and neutron diffraction methods; special topics to include one or more of the optical, electronic, magnetic, or conductive properties of inorganic materials. Prerequisites: one semester-long undergraduate course (at least three-year level) in inorganic chemistry, preferably with content in structural and/or solid state.
Department(s): Department of Chemistry

CHEM*7150 Structure and Bonding in Inorganic Chemistry U [0.50]
Free electron, Heitler and extended Heitler methods for molecules and clusters. Perturbation theory. Applications of group theory in inorganic chemistry; Jahn-Teller effects in molecules and solids. Energy bands in one, two and three dimensions. Prerequisites: three semester-long undergraduate courses in inorganic chemistry and one semester-long undergraduate course in quantum mechanics or group theory.
Department(s): Department of Chemistry

CHEM*7170 Advanced Transition Metal Chemistry U [0.50]
Magnetic chemistry of transition metal compounds. Electronic spectra of complex ions including applications of molecular orbital and ligand field theories. Stabilization of unusual oxidation states and co-ordination numbers. Bonding, structure and reactivity of certain important classes of metal complexes, e.g., metal hydrides, metal-metal bonded species, biologically significant model systems such as macromolecules.
Department(s): Department of Chemistry

CHEM*7180 Advanced Organometallic Chemistry U [0.50]
Reactions, structure and bonding of organometallic compounds of transition and non-transition metals.
Department(s): Department of Chemistry

CHEM*7200 Selected Topics in Analytical Chemistry U [0.50]
Special topics could include, for example: trace analysis using modern instrumental and spectroscopic methods; advanced mass spectrometry (instrumentation and interpretation of spectra); analytical aspects of gas and liquid chromatography.
Department(s): Department of Chemistry

CHEM*7240 Chemical Instrumentation U [0.50]
Instrumental components and optimum application; rudiments of design; electrical, spectral, migrational and other methods.
Department(s): Department of Chemistry

CHEM*7260 Topics in Analytical Spectroscopy U [0.50]
Atomic emission and absorption spectroscopy; methods of excitation and detection; quantitative applications. Molecular electronic spectroscopy, UV, visible and Raman, instrumental characteristics; applications to quantitative determinations, spectatiation, measurements of equilibrium, etc. Sources and control of errors and interferences. Determination and description of colour.
Department(s): Department of Chemistry

CHEM*7270 Separations U [0.50]
Material to be covered is drawn from the following topics: diffusion; isolation of organic material from the matrix; chromatographic techniques - principles of chromatographic separation, gas (GLC, GSC), liquid (LLC, LSC, GPC, IEC), supercritical fluid (SFC) chromatographies; GC-MS, CG-FTR; electrophoresis, flow field fractionation.
Prerequisites: undergraduate level course in instrumental analysis.
Department(s): Department of Chemistry

CHEM*7280 Electroanalytical Chemistry U [0.50]
A study of electroanalytical techniques and their role in modern analytical chemistry. The underlying principles are developed. Techniques include chronamperometry, chronocoulometry, polarography, voltammetry, chronopotentiometry, coulometric titrations, flow techniques, electrochemical sensors and chemically modified electrodes.
Department(s): Department of Chemistry

CHEM*7290 Surface Analysis U [0.50]
Department(s): Department of Chemistry

Biochemistry

CHEM*7300 Proteins and Nucleic Acids U [0.50]
Determination of protein sequence and 3-dimensional structure, protein anatomy; prediction of protein structure; intermolecular interactions and protein-protein association; effects of mutation. Nucleic acid structure and anatomy; DNA and chromatin structure; RNA structure; snRNPs and ribozymes; protein-nucleic acid interactions.
Department(s): Department of Chemistry

CHEM*7310 Selected Topics in Biochemistry U [0.50]
Discussion of specialized topics related to the research interests of members of the centre; for example, recent offerings have included peptide and protein chemistry, biochemical toxicology, medical aspects of biochemistry, glycolipids and glycoproteins, redox enzymes, biological applications of magnetic resonance, etc.
Department(s): Department of Chemistry

CHEM*7360 Regulation in Biological Systems U [0.50]
Department(s): Department of Chemistry

CHEM*7370 Enzymes U [0.50]
Department(s): Department of Chemistry

CHEM*7380 Cell Membranes and Cell Surfaces U [0.50]
Membrane proteins and lipids - structure and function; dynamics; techniques for their study; model membrane systems. Membrane transport. The cytoskeleton. Membrane protein biogenesis, sorting and targeting. Signal transduction across membranes. The cell surface in immune responses.
Department(s): Department of Chemistry

Physical/Theoretical

CHEM*7400 Selected Topics in Theoretical Chemistry U [0.50]
Discussion of specialized topics related to the research interests of the members of the centre. Special topics could include for example: theory of intermolecular forces; density matrices; configuration interaction; correlation energies of open and closed shell systems; kinetic theory and gas transport properties; theory of the chemical bond.
Department(s): Department of Chemistry

CHEM*7450 Statistical Mechanics U [0.50]
Review of classical and quantum mechanics; principles of statistical mechanics; applications to systems of interacting molecules; imperfect gases, liquids, solids, surfaces and solutions.
Department(s): Department of Chemistry

CHEM*7460 Quantum Chemistry U [0.50]
Approximate solutions of the Schrodinger equation and calculations of atomic and molecular properties.
Department(s): Department of Chemistry

CHEM*7500 Selected Topics in Physical Chemistry U [0.50]
Discussion of specialized topics related to the research interests of the members of the centre. Special topics could include for example: principles of magnetic resonance in biological systems; collisions, spectroscopy and intermolecular forces, surface chemistry; catalysis; electrolyte theory; non-electrolyte solution theory; thermodynamics of biological systems; thermodynamics.
Department(s): Department of Chemistry

CHEM*7550 Kinetics - Dynamics U [0.50]
Department(s): Department of Chemistry

CHEM*7560 Spectroscopy U [0.50]
Aspects of electronic vibrational and rotational spectroscopy of atoms, molecules, and the solid state. Relevant aspects of quantum mechanics, Dirac notation, and angular momentum will be discussed. Group Theory will be presented and its implications for spectroscopy introduced. Prerequisites: one semester-long undergraduate course in quantum mechanics or the approval of the instructor.
Department(s): Department of Chemistry
**Organic**

**CHEM*7600 Selected Topics in Organic Chemistry U [0.50]**

Two or three topics from a range including: bio-organic chemistry; environmental organic chemistry; free radicals; heterocyclic molecules; molecular rearrangements; organometallic chemistry; photochemistry; natural products.

*Department(s):* Department of Chemistry

**CHEM*7640 Synthetic Organic Reactions U [0.50]**

Named organic reactions and other synthetically useful reactions are discussed. The mechanism, stereochemical implications and use in organic synthesis of these reactions will be presented. Examples from the organic literature will be used to illustrate these aspects.

*Department(s):* Department of Chemistry

**CHEM*7650 Strategies in Organic Synthesis U [0.50]**

The synthesis of organic compounds is discussed and emphasis is placed on the design of synthetic routes. Examples drawn from the literature are used to illustrate this synthetic planning.

*Prerequisite(s):* CHEM*7640

*Department(s):* Department of Chemistry

**CHEM*7660 Organic Spectroscopy U [0.50]**

Ultraviolet, infrared, resonance spectroscopy and mass spectrometry, with emphasis on applications to studies of organic molecules.

*Department(s):* Department of Chemistry

**CHEM*7690 Physical Organic Chemistry U [0.50]**

Linear free energy relationships; substituent effects and reactive intermediates.

*Department(s):* Department of Chemistry

**Polymer**

**CHEM*7700 Principles of Polymer Science U [0.50]**

Introduction to the physical chemistry of high polymers, principles of polymer synthesis, mechanisms and kinetics of polymerization reactions, copolymerization theory, polymerization in homogeneous and heterogeneous systems, chemical reactions of polymers. Theory and experimental methods for the molecular characterization of polymers.

*Department(s):* Department of Chemistry

**CHEM*7710 Physical Properties of Polymers U [0.50]**

The physical properties of polymers are considered in depth from a molecular viewpoint. Rubber elasticity, mechanical properties, rheology and solution behaviour are quantitatively treated.

*Prerequisite(s):* CHEM*7700 or equivalent

*Department(s):* Department of Chemistry

**CHEM*7720 Polymerization and Polymer Reactions U [0.50]**

The reactions leading to the production of polymers are considered with emphasis on emulsion and suspension polymerization and polymerization reaction engineering. Polymer degradation, stabilization and modification reactions are also considered in depth.

*Prerequisite(s):* CHEM*7700 or equivalent.

*Department(s):* Department of Chemistry

**CHEM*7730 Selected Topics in Polymer Chemistry U [0.50]**

Discussion of specialized topics of polymer chemistry related to the research interests of the faculty or prominent scientific visitors. Special topics could include, for example: polymer stabilization and degradation; mechanical properties; polymer principles in surface coatings; organic chemistry of synthetic high polymers; estimation of polymer properties; reactions of polymers; polymerization kinetics.

*Department(s):* Department of Chemistry

**Research**

**CHEM*7940 MSc Seminar U [0.50]**

A written literature review and research proposal on the research topic will be presented and defended in a 30-minute public seminar. This requirement is to be completed by all thesis-option MSc students within two semesters of entering the program.

*Department(s):* Department of Chemistry

**CHEM*7970 MSc Research Paper U [0.50]**

An experimental project normally based on the CHEM*7940 research proposal, supervised by the advisor, taking three to four months to complete. This project may be completed at any time during the student's program, but it must follow CHEM*7940. A written report is required, and a seminar based on the content of the report will be presented. The report must be completed as per the project/thesis guidelines of the University campus on which the student is registered. This course normally will follow the course CHEM*7940 MSc Seminar.

*Department(s):* Department of Chemistry

**CHEM*7980 MSc Thesis U [0.00]**

*Department(s):* Department of Chemistry

**CHEM*7990 PhD Thesis U [0.00]**

*Department(s):* Department of Chemistry
Clinical Studies
The Department of Clinical Studies offers graduate programs leading to MSc and DVSc degrees and the graduate diploma.

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Laura L. Smith-Maxie
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Henry Staempfli
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Elizabeth A. Stone
BA Scripps College, DVM California (Davis), MS Georgia, MPP Duke - Dean, Ontario Veterinary College

Donald Trout
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Alexander Valverde
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Adronie Verbrugghe
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Laurent Viel
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J. Paul Woods
DVM Guelph, MS Wisconsin, Dipl. ACVIM (Internal Medicine, Oncology) - Professor

MSc Thesis Program
The MSc program provides focused research training in areas related to veterinary medicine. Research projects may examine aspects of clinical practice or concepts but are not considered discipline or specialty training. Candidates are accepted based on adequate background preparation and availability of an advisor in the area of interest. Applicants should contact potential faculty advisors with established research programs listed in the department website.

Admission Requirements
Candidates must have either an honours baccalaureate degree or a DVM degree; licensure to practice veterinary medicine in Ontario is not required.

Degree Requirements
Candidates are required to carry out an independent experimental study and produce a thesis. Three graduate level courses are required.

MSc Course-work Program
The coursework-plus-major-project option will comprise a minimum of 4.5 credits, including six 0.5-credit graduate courses and a mandatory 1.0 credit, 2-semester major project course. The major project course will be supervised by the student’s advisory committee, and will consist of a literature review, participation in a clinical research project or retrospective study, preparation of a manuscript suitable for publication in a peer-reviewed scientific journal, and presentation in a Departmental seminar. A mark will be assigned by the advisory committee, based on the manuscript and oral presentation.

There will be no required courses beyond the 1.0 credit project course. The remaining courses will be chosen from courses currently provided by the Department of Clinical Studies and other Ontario Veterinary College Departments, and will be tailored to the student’s particular research interests. It is anticipated that most courses will be taken from within the Department. Undergraduate courses will not normally be eligible for credit toward this program. Course selection will be made by the student in consultation with the advisory committee, and will be approved by the departmental Graduate Studies and Research Committee. This option will normally require a minimum of 3 semesters of full-time study.

Admission Requirements
Candidates must have either an honours baccalaureate degree or a DVM degree; licensure to practice veterinary medicine in Ontario is not required.

Degree Requirements
See above.

DVSc Program
The DVSc degree is offered in large animal surgery, small animal surgery, large animal medicine, small animal medicine, anaesthesiology, cardiology, neurology, ophthalmology, dermatology and radiology, depending upon availability. The program provides advanced academic preparation in both clinical training and research and is a unique post-professional doctoral-level degree. The DVSc differs from PhD training by emphasizing the development of both research and applied skills in the various areas of clinical specialization, leading to specialty Board certification.

Doctor of Veterinary Science positions are usually funded positions, and are usually advertised and selected through the American Association of Veterinary Clinicians’ website at www.virm.org which can be accessed in early October. Completed applications are due to us by December 1st each year, announcements made in early March and the start date is mid-July. Occasionally specialty training positions become available and are advertised on our website, as well as in the Canadian Veterinary Journal. This program involves one-third of the time taking a minimum of 5 graduate courses, conducting a research project and writing a thesis on the research, and two-thirds of the time in applied clinical practice. Applicants must be eligible to be licensed by the College of Veterinarians of Ontario.

The DVSc is currently an interdepartmental program and receives input from all academic departments in the Ontario Veterinary College (OVC): Biomedical Sciences, Clinical Studies, Pathobiology and Population Medicine.
Admission Requirements

A doctor of veterinary medicine (DVM) or equivalent which would allow the applicant to be eligible for licensure to practice veterinary medicine in Ontario. In addition a completed internship or equivalent is usually required.

Degree Requirements

Candidates are required to develop investigative skills in their chosen area of specialization by carrying out an original study, generally related to animal health. The results of the research must make a significant contribution to the candidate's area of specialization and be written up as a thesis. Five graduate level courses are required.

Graduate Diploma Program

The diploma program in clinical studies was introduced to provide appropriate postgraduate discipline training for veterinarians who wish to improve their expertise in a specific area. It entails a full-time three-semester program for candidates who are veterinarians with limited time for graduate study but who desire to upgrade their knowledge and skills. The program requires the completion of formal graduate courses and extensive participation in the care of animals admitted to the Veterinary Teaching Hospital.

Clinical instruction is done using a service team concept, wherein a graduate diploma student interacts with DVM students and faculty advisors. It is expected that graduates will return to private practice with enhanced clinical skills, or progress into MSc or internship programs.

Candidates are accepted based on adequate background preparation and availability of an advisor in the area of interest. Applicants should contact potential faculty advisors listed in the department website. This program is not intended to upgrade general knowledge to North American standards nor is this program intended to prepare foreign graduates for national board exams.

Admission Requirements

Admission to a postgraduate diploma program as a regular student may be granted, on recommendation of the department, to the holder of a recognized DVM degree (or equivalent) with at least 'B-' standing during the final two years of study.

Diploma Requirements

The student is assigned an advisor who is responsible for the planning and regular review of the program of the candidate. A thesis is not required. Both undergraduate and graduate courses may be taken and, when appropriate for the student, a review manuscript suitable for publication in a refereed scientific journal is prepared. For some students, a heavier course load is substituted for the manuscript requirement.

Collaborative Program

Faculty in Clinical Studies also participate in the collaborative program in Neuroscience.

Courses

Medicine

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CLIN*6010</td>
<td>Clinical Medicine F [0.50]</td>
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<tr>
<td></td>
<td>These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty commonly occurring in the Fall (F), Winter (W), and Summer (S) semesters respectively.</td>
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<td></td>
<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6030</td>
<td>Clinical Medicine W [0.50]</td>
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<tr>
<td></td>
<td>These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty commonly occurring in the Fall (F), Winter (W), and Summer (S) semesters respectively.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6031</td>
<td>Clinical Medicine S [0.50]</td>
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<td></td>
<td>These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty commonly occurring in the Fall (F), Winter (W), and Summer (S) semesters respectively.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6190</td>
<td>Neurology F [0.50]</td>
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<tr>
<td></td>
<td>Basic principles of lesion localization in the domestic species with discussions of diagnostic problems in veterinary neurology. Offered alternate years.</td>
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<td>Restriction(s): Instructor consent required.</td>
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<td></td>
<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6200</td>
<td>Concepts and Application of Infection Control U [0.50]</td>
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<tr>
<td></td>
<td>This course will involve principles of infection control in veterinary hospitals, drawing heavily from information from human medicine and evaluating human information in a veterinary context.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6380</td>
<td>Electrophysiology in Domestic Animals F,W,S [0.50]</td>
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<td></td>
<td>This course will deal with the study of the electrophysiology of the cat, dog, cow and horse. Students will review the mechanisms of arrhythmogenesis and the role of anti-arrhythmic agents in the control of arrhythmogenesis.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6550</td>
<td>Small Animal Internal Medicine I F [0.50]</td>
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<td></td>
<td>This is a graduate course designed for DVM students and residents pursuing further study in the area. The basis of the course is the acquisition and application of knowledge of the pathophysiologic mechanisms of disease. Subject areas to be addressed may include: cardiovascular disease, respiratory disease and acid-base-electrolyte abnormalities.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6560</td>
<td>Small Animal Internal Medicine II W [0.50]</td>
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<tr>
<td></td>
<td>A continuation of Small Animal Internal Medicine I. Subject areas to be addressed may include: endocrine diseases, pharmacodynamics, renal disease and neurologic disease.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6570</td>
<td>Large Animal Internal Medicine I W [0.50]</td>
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<td></td>
<td>Advanced study in general medicine and pathophysiologic principles of disorders of the gastrointestinal and urinary systems in ruminants, swine and horses. Offered every third year.</td>
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<td></td>
<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6580</td>
<td>Large Animal Internal Medicine II W [0.50]</td>
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<tr>
<td></td>
<td>Advanced study in general medicine and the pathophysiologic principles of disorders of the cardiovascular, respiratory and musculo-skeletal systems of ruminants and horses. Offered every third year.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6590</td>
<td>Large Animal Internal Medicine III W [0.50]</td>
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<tr>
<td></td>
<td>Advanced study in general medicine and the pathophysiologic principles of neonatal disorders and disorders of the nervous system, skin and general systemic disorders. Offered every third year.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6661</td>
<td>Respiratory Physiology &amp; Pathophysiology I U [0.50]</td>
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<td>This is a graduate course designed for veterinarians pursuing advanced training in residency and DVM programs. The course will cover normal respiratory anatomy, physiology and pulmonary function. A focus on respiratory pathophysiology will include respiratory failure, oxygen therapy and positive pressure ventilation. (offered every three years).</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6670</td>
<td>Structure &amp; Function of Animal Skin F,W,S [0.50]</td>
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<td>A review of structure and function of skin in veterinary dermatology including the epidermis, dermis, subcutis and adnexal tissue. Application of knowledge in a clinical setting will follow with attention to modalities that will improve the epidermal barrier</td>
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<td>Restriction(s): Instructor consent required.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6680</td>
<td>Readings in Cardiology I F,W,S [0.50]</td>
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<td>Original articles, review articles and textbook chapters dealing with the most recent concepts of pathophysiology, diagnostic procedures and therapeutic advancements will be reviewed, analyzed and discussed.</td>
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<td>Department(s): Department of Clinical Studies</td>
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<tr>
<td>CLIN*6690</td>
<td>Readings in Cardiology II F,W,S [0.50]</td>
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<td>Readings in Cardiology II will be a continuation of the format of Readings in Cardiology I with further readings in clinical cardiology.</td>
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<td>Department(s): Department of Clinical Studies</td>
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</tbody>
</table>
Surgery

**CLIN*6170 Clinical Surgery F [0.50]**

These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty occurring in Fall (F), Winter (W), and Summer (S) semesters respectively. The student is required to prepare a paper for publication in a recognized peer review journal based on clinical case material presented to the teaching hospital. An alternative, the paper can be an in-depth review article on a clinically relevant topic.

*Department(s):* Department of Clinical Studies

**CLIN*6180 Clinical Surgery W [0.50]**

These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty occurring in Fall (F), Winter (W), and Summer (S) semesters respectively. The student is required to prepare a paper for publication in a recognized peer review journal based on clinical case material presented to the teaching hospital. As an alternative, the paper can be an in-depth review article on a clinically relevant topic.

*Department(s):* Department of Clinical Studies

**CLIN*6181 Clinical Surgery S [0.50]**

These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty occurring in Fall (F), Winter (W), and Summer (S) semesters respectively. The student is required to prepare a paper for publication in a recognized peer review journal based on clinical case material presented to the teaching hospital. As an alternative, the paper can be an in-depth review article on a clinically relevant topic.

*Department(s):* Department of Clinical Studies

**CLIN*6270 Applied Surgical Principles U [0.25]**

General surgical principles associated with surgical and related treatment of various body systems. This is an applied course with laboratory and written components. Prerequisite: must have prior surgical training.

*Department(s):* Department of Clinical Studies

**CLIN*6310 Advanced Equine Veterinary Orthopaedics U [0.50]**

This course will provide the student with an in-depth understanding of orthopaedic practice and will facilitate revision of materials to prepare board certification.

*Prerequisite(s):* DVM or BSc

*Department(s):* Department of Clinical Studies

**CLIN*6600 Equine Soft Tissue Surgery I F,W,S [0.50]**

Based on required reference reading, every other week discussion will cover advanced soft tissue procedures performed in equine surgery. Guest lectures on selected topics will be presented. Laboratory will be given.

*Department(s):* Department of Clinical Studies

**CLIN*6610 Equine Soft Tissue Surgery II F,W,S [0.50]**

Based on required reference reading, every other week discussion will cover advanced soft tissue procedures performed in equine surgery. Guest lectures on selected topics will be presented. Laboratory will be given.

*Department(s):* Department of Clinical Studies

**CLIN*6620 Ruminant Surgery W [0.50]**

Through lectures/seminars, medical and surgical laboratories, and detailed case discussions, this course provides practical experience in ruminant medical, radiological and surgical procedures and in problem-solving related to ruminant practice.

*Department(s):* Department of Clinical Studies

**CLIN*6700 Pathophysiology in Small Animal Surgery I F,W,S [0.50]**

Based on required reference reading, weekly discussions will cover the disease mechanisms involved in medical problems commonly encountered in small animal surgical practice. Guest lectures on selected topics will be presented.

*Department(s):* Department of Clinical Studies

**CLIN*6710 Pathophysiology in Small Animal Surgery II F,W,S [0.50]**

Based on required reference reading, weekly discussions will cover the disease mechanisms involved in medical problems commonly encountered in small animal surgical practice. Guest lectures on selected topics will be presented.

*Department(s):* Department of Clinical Studies

Anesthesiology

**CLIN*6420 Anesthesiology I S [0.50]**

A course in advanced veterinary anesthesia and allied topics such as fluid, acid-base, and electrolyte balance, shock therapy, and cardio pulmonary resuscitation.

*Department(s):* Department of Clinical Studies

**CLIN*6440 Anesthesiology II F,W,S [0.50]**

A discussion, reading and investigative course on research methods in comparative anesthesiology.

*Prerequisite(s):* CLIN*6420 is normally a prerequisite

*Department(s):* Department of Clinical Studies

**CLIN*6460 Anesthesiology III: Species Specific and Coexisting Disease Considerations F-W [0.50]**

A course in advanced veterinary anesthesia that focuses on the scientific literature related to the anesthesiology of specific species and veterinary patients with varying underlying diseases.

*Prerequisite(s):* DVM; CLIN*6420 and CLIN*6440

*Department(s):* Department of Clinical Studies

Radiology

**CLIN*6330 Advanced Principles of Diagnostic Imaging U [0.50]**

This course is intended for students pursuing a career in veterinary radiology. Using a lecture-discussion format, the science of x-ray production and the fundamentals of other diagnostic imaging modalities will be presented. The specific applications of these techniques to research and clinical situations will be investigated.

*Department(s):* Department of Clinical Studies

**CLIN*6350 Advanced Radiology I F,W,S [0.50]**

Radiographic changes seen in diseases of the thorax and abdomen are demonstrated by using radiographs. Contrast and special studies are included where applicable.

*Department(s):* Department of Clinical Studies

**CLIN*6370 Advanced Radiology II F [0.50]**

A continuation of CLIN*6350, covering radiographic abnormalities of the neurological and skeletal systems.

*Department(s):* Department of Clinical Studies

General

**CLIN*6900 Clinical "Grand Rounds" Seminar F-W [0.25]**

This course allows each participant the opportunity to present a clinical case to colleagues in the veterinary school. The topic must be approved by the course co-ordinator. The oral presentation will be evaluated, as will the written presentation, which should be in a form suitable for submission to a veterinary journal.

*Department(s):* Department of Clinical Studies

**CLIN*6920 Veterinary Clinical Practice I F [0.50]**

These are in-service clinical training courses for intern/graduate-diploma students based on case material presented to the Veterinary Teaching Hospital. Under supervision, the intern/graduate-diploma student, as part of a service team with a faculty clinician, is expected to hone his/her diagnostic, therapeutic and surgical skills, and gain experience with animal restraint and nursing care. They will also develop a problem-oriented approach to health management and disease. Case material studied in each course reflects the clinical problems commonly occurring in the Fall, Winter and Summer semesters respectively.

*Restriction(s):* Instructor consent required.

*Department(s):* Department of Clinical Studies

**CLIN*6930 Veterinary Clinical Practice II W [0.50]**

These are in-service clinical training courses for intern/graduate-diploma students based on case material presented to the Veterinary Teaching Hospital. Under supervision, the intern/graduate-diploma student, as part of a service team with a faculty clinician, is expected to hone his/her diagnostic, therapeutic and surgical skills, and gain experience with animal restraint and nursing care. They will also develop a problem-oriented approach to health management and disease. Case material studied in each course reflects the clinical problems commonly occurring in the Fall, Winter and Summer semesters respectively.

*Restriction(s):* Instructor consent required.

*Department(s):* Department of Clinical Studies
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Restrictions</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIN*6940</td>
<td>Veterinary Clinical Practice III S [0.50]</td>
<td></td>
<td>These are in-service clinical training courses for intern/graduate-diploma students based on case material presented to the Veterinary Teaching Hospital. Under supervision, the intern/graduate-diploma student, as part of a service team with a faculty clinician, is expected to hone his/her diagnostic, therapeutic and surgical skills, and gain experience with animal restraint and nursing care. They will also develop a problem-oriented approach to health management and disease. Case material studied in each course reflects the clinical problems commonly occurring in the Fall, Winter and Summer semesters respectively.</td>
<td>Instructor consent required.</td>
<td>Department of Clinical Studies</td>
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<tr>
<td>CLIN*6950</td>
<td>Special Topics in Clinical Studies F,W,S [0.50]</td>
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<td>Department of Clinical Studies</td>
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<tr>
<td>CLIN*6990</td>
<td>Project in Clinical Studies F,W,S [0.50]</td>
<td></td>
<td>This course involves participation in a clinical research project or clinical retrospective study. A review of the relevant literature will be performed. A manuscript suitable for publication in a peer-reviewed journal will be prepared, and the study will be presented in a departmental seminar.</td>
<td>Only available to students enrolled in the MSc by Coursework Program.</td>
<td>Department of Clinical Studies</td>
</tr>
</tbody>
</table>
Computer Science

The School of Computer Science offers a program of study leading to the MSc and PhD in Computer Science degrees.

Administrative Staff

Director
Stefan Kremer (222 Reynolds, Ext. 58913)
director@socs.uoguelph.ca

Graduate Coordinator
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Rebecca Worley (224 Reynolds, Ext. 56402)
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David K.Y. Chiu
BA Waterloo, BSc Guelph, MSc Queen's, PhD Waterloo - Professor

William Gardner
BSEE MIT, BEd Toronto, PhD Victoria - Associate Professor

Gary Gréval
BSc Brock, MSc, PhD Guelph - Associate Professor and Graduate Coordinator

Stefan C. Kremer
BSc Guelph, PhD Alberta - Associate Professor and Director

Xining Li
BSc, MSc Nanjing, PhD Calgary - Professor

Pascal Matsakis
BSc, MSc, PhD Paul Sabatier (France) - Professor

Judi R. McCuaig
BEd, BSc, MS, PhD Saskatchewan - Associate Professor

Blair Nonnecke
BSc, MSc Guelph, PhD South Bank - Associate Professor

Charlie F. Obimbo
MSc Kiev, PhD New Brunswick - Associate Professor

Joseph Sawada
BSc, PhD Victoria (British Columbia) - Associate Professor

Fei Song
BSc Jilin (China), MSc Academia Sinica (China), PhD Waterloo - Associate Professor

Deborah A. Stacey
BSc Guelph, MASc, PhD Waterloo - Associate Professor and Director

Fangju Wang
BE Changsha, MSc Peking, PhD Waterloo - Professor

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BSc Toronto, MSc, PhD Carleton - Associate Professor

Michael A. Wirth
BSc New England (Aust.), MSc Manitoba, PhD RMIT Melbourne - Associate Professor

Yang Xiang
BSs, MSc BUAA (Beijing), PhD UBC - Professor

MSc Program

The MSc program emphasizes research that can potentially contribute to industry and government. The School of Computer Science (SOCS) offers the MSc degree in Computer Science in the fields of applied modelling, artificial intelligence, distributed computing, and human computer interaction as detailed below:

1. Applied Modelling (AM): Students working in this field will engage in research on topics such as graph theory and algorithms, formal specifications, hardware-software co-design, and interdisciplinary work in environmental modeling and spread modeling.

2. Artificial Intelligence (AI): Students working in this field will engage in research on topics such as Bayesian techniques, artificial neural networks, evolutionary computation, fuzzy systems, datamining, pattern recognition, intelligent agents.

3. Distributed Computing (DC): Students working in this field will engage in research on topics such as parallel computing, distributed systems, embedded systems, multi-agent systems, mobile computing, wireless networks, and ad hoc networks.

4. Human Computer Interaction (HCI): Students working in this field will engage in research on topics context-aware systems, usability, interface design, mobile and ubiquitous computing.

Admission Requirements

Most spaces are filled in March for entry the following September, and in October for entry the following January. Prospective students should check the SOCS website http://www.socs.uoguelph.ca/ for admission procedures and deadlines.

General Requirements

To be considered for admission, applicants must have a four-year honours degree in computer science, or a four-year honours degree in another discipline with a minor in computer science. Applicants must meet the minimum admission requirements of both the university and the SOCS, including at least a 75% average during the previous two years of full-time university study for a degree.

Course Requirement

Entrants who have a four-year honours degree in another discipline and a minor (or equivalent) in computer science must have taken at least 12 courses as described below. University of Guelph equivalents are given for comparison as appropriate.

(A) Seven prescribed courses:
- An introductory programming course (CIS*1500).
- An intermediate programming course (CIS*2500).
- An object-oriented programming course (CIS*2430).
- A software systems development course (CIS*2900).
- A course on discrete structures (CIS*1910 or CIS*2910).
- An introductory course in calculus (MATH*1200).
- An intermediate programming course (CIS*2500).

(B) Three core courses at the second-year or higher level selected from the following:
- A course on hardware and/or assembly language (CIS*2030).
- A course on digital systems (CIS*3120).
- A course on simulation and/or modelling (CIS*2460).
- A database course (CIS*3530).
- An operating systems course (CIS*3110).
- A computer algorithms course (CIS*3490).
- A course on automata theory (CIS*3150).
- A statistics course (STAT*2040).

(C) Two elective courses at the third-year or higher level:
- These courses should be related to the applicant's proposed research area. They can be from a discipline other than computer science if deemed relevant by the proposed supervisor.

Applicants who meet requirements (A) and (C) but who do not meet requirement (B) may be granted provisional admission, i.e., they may be granted admission with the provision that they take specified courses within a specified time and achieve grades above a specified threshold.

English Proficiency

A test of English proficiency is required of all applicants whose first language is not English. Required scores are shown below:

- Paper-based TOEFL- 600.
- Internet-based TOEFL- 100, 26 speaking and writing, 21 reading and listening.
- IELTS- 7.5.
- MELAB- 90, speaking 3, no score lower than 80.
- CAEL- 70 overall, 70 writing and speaking, no score lower than 60.
- University of Guelph English Language Certificate at the Advanced Level.

The proof of English proficiency requirement may be waived in exceptional circumstances (e.g., applicants who have studied full-time for two years in a country where English is the native language AND in a university where English is the language of instruction). Graduate Program Committee approval required.

Degree Requirements

Once a student has been admitted to the MSc program, the following components are required for the successful completion of the MSc degree:

1. Completion of the Technical Communication and Research Methodology course (CIS*6890) and at least four other graduate courses

2. Completion of the seminar requirement.

An accepted thesis.

There is no qualifying exam or second-language requirement. Supplementary program information is available to students via the SOCS website http://www.socs.uoguelph.ca/.

Duration of the Program

Heavy emphasis is placed on the thesis, which usually requires at least two semesters. Students should plan on spending at least four full-time semesters in the program assuming adequate preparation for graduate work. Normally, students are expected to fulfill all the requirements in six semesters.

Course Requirement
An MSc student has to take the Technical Communication and Research Methodology course CIS*6890 and at least four other CIS graduate courses. Of these four courses, at least two should be outside of the student’s thesis topic area. This area and the courses which fall outside of this area are identified by the student’s advisor. With approval from the Graduate Program Committee, a CIS graduate course requirement may also be met by a non-CIS graduate course or by a 4000-level course. At most one reading course (CIS*6660) and at most one 4000-level course can count towards the course requirement.

Seminar Requirement
An MSc student must give one publicly announced research seminar on his/her MSc thesis research. The student will be allocated times and dates for the seminar. It must be attended by the student’s advisor and at least one other member of the student’s Advisory Committee. The quality of the presentation is graded on a pass/fail basis. The MSc seminar requirement is intended for students to practice presentation and communication skills and to participate in the process of knowledge dissemination as part of the academic life.

Thesis Defence
Arrangements for the MSc thesis defence should be made at least 4 weeks prior to the anticipated date of the defence, and the student must submit his/her MSc thesis to the Examination Committee at least 2 weeks prior to the defence. The examination consists of an oral presentation by the student followed by questions from the Examination Committee.

PhD Program

Note
Please note that this program is not accepting applicants at this time.

The School of Computer Science (SOCS) offers the PhD degree in Computer Science in the fields of applied modelling, artificial intelligence, distributed computing, and human computer interaction as detailed below:

1. Applied Modelling (AM): Students working in this field will engage in research on topics such as graph theory and algorithms, formal specifications, hardware/software co-design, and interdisciplinary work in environmental modeling and disease spread modeling.

2. Artificial Intelligence (AI): Students working in this field will engage in research on topics such as Bayesian techniques, artificial neural networks, evolutionary computation, fuzzy systems, data mining, pattern recognition, intelligent agents

3. Distributed Computing (DC): Students working in this field will engage in research on topics such as parallel computing, distributed systems, embedded systems, multi-agent systems, mobile computing, wireless networks, and ad hoc networks.

4. Human Computer Interaction (HCI): Students working in this field will engage in research on topics context-aware systems, usability, interface design, mobile and ubiquitous computing.

Admission Requirements
Most spaces are filled in March for entry the following September, and in October for entry the following January. Prospective students should check the SOCS website http://www.socs.uoguelph.ca/ for admission procedures and deadlines.

General Requirements
Admission to the PhD program will normally require a recognized master’s degree in Computer Science or a closely related discipline obtained with high academic standing. Entrants are expected to have previously studied the following areas in Computer Science:

• Advanced Programming
• Computer Architecture
• Data Structures
• Operating Systems
• Databases
• Software Engineering
• Discrete Mathematics
• Algorithms
• Computer Networks

and the following areas in Mathematics and Statistics:

• Calculus
• Linear Algebra
• Probability and Statistics
• Numerical Analysis

Students who lack sufficient breadth may be required to complete specific courses as a condition of admission. Students entering the program are expected to have demonstrated good research potential, an ability to critically evaluate experimental or theoretical results, and strong communication skills. Evidence for these are normally provided by scholarly publications during and immediately following the master’s degree.

English Proficiency
A test of English proficiency is required of all applicants whose first language is not English. Required scores are shown below:

• Paper-based TOEFL- 600.
• Internet-based TOEFL- 100, 26 speaking and writing, 21 reading and listening
• IELTS- 7.5.
• MELAB- 90, speaking 3, no score lower than 80.
• CAEL- 70 overall, 70 writing and speaking, no score lower than 60.
• University of Guelph English Language Certificate at the Advanced Level.

The proof of English proficiency requirement may be waived in exceptional circumstances (e.g., applicants who have studied full-time for two years in a country where English is the native language AND in a university where English is the language of instruction). Graduate Program Committee approval required.

GRE Tests
Students who have obtained a Masters degree from a university outside of Canada are encouraged to supply GRE scores (GRE General and/or GRE Subject in CS).

Admission without an MSc Degree
A student who has achieved excellent standing in an honours Computer Science degree (or an equivalent 4-year Computer Science degree) and who wishes to proceed to doctoral study may enrol, in the first instance, in the MSc program. If the student achieves a superior academic record and shows a particular aptitude for research, the student may be transferred into the PhD program without completing the MSc degree. The application for transfer must be made between the end of the second semester and the end of the fourth semester.

In exceptional circumstances, a student who has completed an honours Computer Science degree (or an equivalent 4-year Computer Science degree) may apply for direct admission to the PhD program. The successful applicant must have an outstanding academic record, breadth of knowledge in Computer Science, demonstrated research accomplishments, and strong letters of recommendation. Contact the SOCS for additional information.

Transfer From Another PhD Program
A student who wishes to transfer from another closely related PhD program at the University of Guelph into the PhD in Computer Science program should submit:

• a program transfer application form;
• original transcripts from all past programs; and
• a written description of the progress in the previous program including copies of qualifying examination documents or thesis proposal where available.

Part-Time Study
Students may not enter the PhD program as part-time. A full-time PhD student may apply for part-time studies only after the minimum duration for the degree has been completed. The application will not be granted unless the candidate has completed the qualifying exam and the thesis research is well established.

Degree Requirements
Once a student has been admitted to the PhD program, the following components are required for the successful completion of the PhD degree:

• Completion of the minimum specified duration of the program.
• Completion of the Technical Communication and Research Methodology course CIS*6890 (unless the student has taken an equivalent course in the MSc program) and at least four other graduate courses with an overall average of at least 70%. Students who are admitted without an appropriate MSc are required to take the Technical Communication and Research Methodology course CIS*6890 and at least eight other graduate courses with an overall average of at least 70%.
• Satisfaction of the breadth requirement.
• Completion of the seminar requirement.
• A successfully completed Qualifying Examination.
• An accepted thesis and the successful completion of a final oral examination.

Duration of the Program
At least 5 semesters of full-time study must be completed in the doctoral program following completion of a recognized master’s degree in Computer Science or a related discipline. At least 7 semesters are required for those who are permitted to proceed from the honours baccalaureate without completing a master’s degree. The actual length of the program depends on the academic preparation of the student and the choice of research topic. A typical PhD student (after an MSc) is expected to complete the program in 12 semesters.

Course Requirement
A PhD student, following the completion of a recognized master’s degree in Computer Science or related discipline, is required to take the Technical Communication and Research Methodology course CIS*6890 (unless the student has taken an equivalent course in the Masters program) and at least four other CIS graduate courses with an overall average of at least 70%. With approval from the Graduate Committee, a CIS graduate course requirement may also be met by a non-CIS graduate course. At most one may be a reading course CIS*6660.
A PhD student admitted without an appropriate Masters is required to take the Technical Communication and Research Methodology course CIS*6890 and at least eight CIS graduate courses with an overall average of at least 70%. With approval from the Graduate Program Committee, a CIS graduate course requirement may also be met by a non-CIS graduate course. At most two reading courses CIS*6660 and at most one 4000-level course can count towards the course requirement.

Breadth Requirement
For breadth requirement purposes, the subject matter of computer science is divided into three broad categories, and each category is subdivided into two to three areas:

Systems (category S)
- Software Engineering (area S1)
- Programming Languages (area S2)
- Computer Architecture and System Software (area S3)

Mathematics of Computation (category M)
- Algorithms and Complexity (area M1)
- Scientific and Symbolic Computing (area M2)

Applications (category A)
- Artificial Intelligence (area A1)
- Databases (area A2)
- Graphics, Imaging and User Interfaces (area A3)

Each SOCS graduate course falls into one of the eight areas. A student must have sufficient background in five of these areas, including at least one from each category.

A student has gained sufficient background in an area if the student:
- has taken a CIS graduate course in the area** or
- has taken a non-CIS equivalent course in the area** (approval required from Graduate Committee), or
- has extensive industrial experience in the area (approval required from Graduate Program Committee), or
- has written a Master thesis in the area (approval required from Graduate Program Committee).

**Each course must have a grade of at least 70% and at most one reading course may be counted towards fulfilling the breadth requirements.

A student must satisfy the breadth requirement no later than the fourth semester after entering the program, otherwise the student may be required to withdraw from the program. The student, therefore, should develop a plan of study no later than the end of the second semester, and seek approval from the Graduate Coordinator.

Seminar Requirement
A PhD student must give two publicly announced research seminars on his/her PhD thesis research.

The first seminar is intended to be an exploratory look at the student’s research area. It may include a Literary Review and a Survey of the area. The following apply:
- Must be presented prior to the Qualifying Examination.
- The student will be allocated times and dates for the seminars.
- Must be attended by the student’s advisor and at least one other member of the student’s Advisory Committee.
- The quality of the presentation is graded on a pass/fail basis.

The second seminar is intended for students to present their preliminary results to get feedback on analysis presentation and progress towards defense. The following apply:
- Must be presented prior to the thesis defence.
- The student will be allocated times and dates for the seminars in consultation with the Advisory Committee.
- Students will provide a title and extended abstract to the Graduate Secretary at least two weeks before seminar.
- Must be attended by at least two members of the student’s Advisory Committee and two SOCS regular graduate faculty members.
- Must be one hour in length. The student must speak for a minimum of thirty minutes and no more than forty-five minutes.
- The quality of the presentation is graded on a pass/fail basis. The student must receive three or more pass votes to pass. Two pass votes and two fail votes will mean the student must attempt the seminar again.

Qualifying Examination
The student must satisfy the breadth requirement before the Qualifying Examination (QE). The QE must be completed no later than the final semester of the minimum duration for the degree (either 5 or 7 semesters). The focus of the examination is to assess the candidate's ability and promise in the selected research area.

Arrangements for the QE should be made at least 4 weeks prior to the anticipated date of the QE oral presentation, and the student must submit a research proposal to the Examination Committee at least 2 weeks prior to the QE. The research proposal should contain, as a minimum, the following items:
- A description of the proposed research.
- A statement describing the merits and scholarly value of the proposed research.
- A schedule of the research program that the candidate will follow, including a sequence of milestones and objectives.

The examination consists of an oral presentation by the student followed by questions from the Examination Committee.

Thesis Defence
Arrangements for the PhD thesis defence should be made 8 weeks prior to the anticipated date of the defence, and the student must submit his/her PhD thesis to the Examination Committee at least 4 weeks prior to the defence. The examination consists of an oral presentation by the student followed by questions from the Examination Committee.

Courses
Core Courses
The core graduate courses are designed to be accessible to any student with an appropriate background in Computer Science and will provide enough introduction for those unfamiliar with the specific area to allow them to keep up with the advanced material.

CIS*6000 Distributed Systems U [0.50]
Department(s): School of Computer Science

CIS*6020 Artificial Intelligence U [0.50]
An examination of Artificial Intelligence principles and techniques such as: logic and rule based systems; forward and backward chaining; frames, scripts, semantic nets and the object-oriented approach; the evaluation of intelligent systems and knowledge acquisition. A sizeable project is required and applications in other areas are encouraged.
Department(s): School of Computer Science

CIS*6030 Information Systems U [0.50]
Relational and other database systems, web information concurrency protocols, data integrity, transaction management, distributed databases, remote access, data warehousing, data mining.
Department(s): School of Computer Science

CIS*6070 Discrete Optimization U [0.50]
This course will discuss problems where optimization is required and describes the most common techniques for discrete optimization such as the use of linear programming, constraint satisfaction methods, and genetic algorithms.
Department(s): School of Computer Science

CIS*6320 Image Processing Algorithms and Applications U [0.50]
Brightness transformation, image smoothing, image enhancement, thresholding, segmentation, morphology, texture analysis, shape analysis, applications in medicine and biology.
Department(s): School of Computer Science

CIS*6420 Soft Computing U [0.50]
Neural networks, artificial intelligence, connectionist model, back propagation, resonance theory, sequence processing, software engineering concepts.
Department(s): School of Computer Science

CIS*6890 Technical Communication and Research Methodology U [0.50]
This course aims to develop students' ability in technical communication and general research methodology. Each student is expected to present a short talk, give a mini lecture, review a conference paper, write a literature survey and critique fellow students' talks and lectures.
Department(s): School of Computer Science

Advanced Courses
The advanced graduate courses are taught with the assumption that the student has sufficient background in the research area to understand the advanced concepts and research ideas. Students who intend to take a course for which they have insufficient background should consult with the instructor prior to enrollment in the course.

CIS*6050 Neural Networks U [0.50]
Department(s): School of Computer Science

CIS*6060 Bioinformatics U [0.50]
Data mining and bioinformatics, molecular biology databases, taxonomic groupings, sequences, feature extraction, Bayesian inference, cluster analysis, information theory, machine learning, feature selection.
Department(s): School of Computer Science

2014-2015 Graduate Calendar
March 9, 2015
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS*6080</td>
<td>Genetic Algorithms U [0.50]</td>
<td></td>
<td>This course introduces the student to basic genetic algorithms, which are based on the process of natural evolution. It is explored in terms of its mathematical foundation and applications to optimization in various domains.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6090</td>
<td>Hardware/Software Co-design of Embedded Systems U [0.50]</td>
<td></td>
<td>Specification and design of embedded systems, system-on-a-chip paradigm, specification languages, hardware/software co-design, performance estimation, co-simulation and validation, processes architectures and software synthesis, retargetable code generation and optimization.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6100</td>
<td>Parallel Processing Architectures U [0.50]</td>
<td></td>
<td>Parallelism in uniprocessor systems, parallel architectures, memory structures, pipelined architectures, performance issues, multiprocessor architectures.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6120</td>
<td>Uncertainty Reasoning in Knowledge Representation U [0.50]</td>
<td></td>
<td>Representation of uncertainty, Dempster-Schafer theory, fuzzy logic, Bayesian belief networks, decision networks, dynamic networks, probabilistic models, utility theory.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6130</td>
<td>Object-Oriented Modeling, Design and Programming U [0.50]</td>
<td></td>
<td>Objects, modeling, program design, object-oriented methodology, UML, CORBA, database  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6140</td>
<td>Software Engineering U [0.50]</td>
<td></td>
<td>This course will discuss problems where optimization is required and describes the most common techniques for discrete optimization such as the use of linear programming, constraint satisfaction methods, and meta-heuristics.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6160</td>
<td>Multiagent Systems U [0.50]</td>
<td></td>
<td>Intelligent systems consisting of multiple autonomous and interacting subsystems with emphasis on distributed reasoning and decision making. Deductive reasoning agents, practical reasoning agents, probabilistic reasoning agents, reactive and hybrid agents, negotiation and agreement, cooperation and coordination, multiagent search, distributed MDP, game theory, and modal logics.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6200</td>
<td>Design Automation in Digital Systems U [0.50]</td>
<td></td>
<td>Techniques and software tools for design of digital systems. Material covered includes high-level synthesis, design for testability, and FPGAs in design and prototyping.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6490</td>
<td>Analysis and Design of Computer Algorithms U [0.25]</td>
<td></td>
<td>The design and analysis of efficient computer algorithms: standard methodologies, asymptotic behaviour, optimality, lower bounds, implementation considerations, graph algorithms, matrix computations (e.g. Strassen's method), NP-completeness.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6650</td>
<td>Topics in Computer Science I U [0.50]</td>
<td></td>
<td>This special topics course examines selected, advanced topics in computer science that are not covered by existing courses. The topic(s) will vary depending on the need and the instructor.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
</tr>
<tr>
<td>CIS*6660</td>
<td>Topics in Computer Science II U [0.50]</td>
<td></td>
<td>This is a reading course. Its aim is to provide background knowledge to students who need to get a head-start in their thesis research fields early during their program while no suitable regular graduate courses are offered. Admission is under the discretion of the instructor.  &lt;br&gt; <em>Restriction(s):</em> Instructor consent required.  &lt;br&gt; <em>Department(s):</em> School of Computer Science</td>
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</table>
IX. Graduate Programs, Creative Writing

Creative Writing

The Master of Fine Arts (MFA) Program in Creative Writing is designed to prepare students for careers in creative writing, by exploring and developing their skills as writers, and providing them with a wide range of opportunities to connect with the arts and culture community. Critically acclaimed writers and literary professionals participate in the program as workshop instructors, mentors and visitors. Through its master classes, workshops and plenary courses, the MFA Program aims to assist new writers in locating their work in both a global and a national context. Students will pursue the program on a full-time basis. The program has been designed to facilitate completion within two years.

Administrative Staff

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Graduate Faculty

Dionne Brand
BA, MA O.I.S.E. Toronto - Professor and University Research Chair

Judith Thompson
BA Queen’s, Cert. National Theatre School - Professor

MFA Program

Admission Requirements

The normal minimum requirement for admission to the MFA Program is a baccalaureate degree, in an honors program or the equivalent, from a recognized degree-granting institution. There are no requirements as to the discipline in which the degree was earned. Successful applicants will be expected to have achieved an average standing of at least second-class honours (B-) in their last four semesters of study. A limited number of students, however, may be admitted to the MFA without having satisfied the degree requirement and/or academic standing requirements set out above if they are assessed as qualified to undertake graduate studies in creative writing on the basis of other experience and/or practice.

Admissions Portfolio

Applicants will be selected for admission to the MFA Program primarily on the basis of a portfolio and a letter of no more than three pages describing the applicant’s aspirations as a writer and an indication of the genres in which he/she is most interested. The portfolio should be between 25 and 40 pages in length, double-spaced, and may contain published and/or unpublished work and/or work-in-progress. It must include a minimum of three separate works (or excerpts from separate works). Applicants are strongly encouraged to submit works in more than one genre, e.g., fiction and poetry. Considerations of balance over the program as a whole, with respect to genres in which applicants are particularly interested and demonstrate special strength, will have some impact on admission decisions.

Degree Requirements

Students will take one workshop and one plenary course in the first (Fall) semester of study; one workshop in the second (Winter) semester; the individual study course in the third (Summer) semester; and one workshop and a second plenary course in the fourth (Fall) semester. The remaining two semesters of the two-year program will be devoted to the thesis. With permission, MFA students may choose to take one or two courses at the University of Guelph - e.g., MA courses in the School of English and Theatre Studies. All students will be required to complete at least six semesters of study.

Plenary Courses

There are two Plenary courses, CRWR*6000 and CRWR*6010, and both are required courses for MFA students. Plenary courses will be offered on an alternate-year basis in the Fall semester, allowing students to take one in the Fall semester of their first year, and one in the Fall semester of their second year. These courses are intended in part to provide a forum for visiting writers and other literary professionals. Each course will also have a substantial component addressing practical matters associated with the progress of a writer’s career.

Workshops

Students are required to take three workshops over the course of the program; the genres in which workshops will be offered are fiction, poetry, drama, and creative non-fiction. Students are also required to ensure through their selection of workshops that they work in a minimum of two separate genres and are strongly encouraged to take workshops that include work in at least three genres. The workshops will be strongly focused on writing, but each will also incorporate a substantial reading component.

Individual Study Course

The individual study course, required in the third (Summer) semester of the program, pairs each student with a mentor. It is intended to install within the curriculum a critical opportunity to address the variable learning needs of individual students. For the majority of students, it will be an intensive writing course, supplemented by a reading component that allows for additional work in the student’s primary genre and offers the chance to build a body of work towards the thesis. For some students, it may be primarily a reading course, with practice in writing in relation to particular models, or provide an opportunity to develop a significant project in a secondary genre.

Thesis

The thesis is the single most important component of the MFA Program. Students should register for UNIV*7500 in each semester that they are writing their thesis. The thesis may be a novel, a book-length manuscript of poems, a collection of short stories, a full-length play or screenplay, or a work of creative non-fiction. The standard to be applied is that the thesis should not be a first draft but have undergone significant revision and be approaching publishable quality in the estimation of the examiners.

Courses

For courses without a semester designation the student should consult the Associate Coordinator or Assistant to the Associate Coordinator.

<table>
<thead>
<tr>
<th>CRWR*6000 Plenary Course: Writers on Writing F [0.50]</th>
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<tbody>
<tr>
<td>This required plenary course addresses important historical and contemporary perspectives on creative writing as an art, a practice, and a profession. Readings, discussion and visits from writers and other literary professionals will help students to articulate effectively their own literary aesthetic and to develop professional skills.</td>
</tr>
<tr>
<td>Restriction(s): MFA, CW students only</td>
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<tr>
<td>Department(s): School of English and Theatre Studies</td>
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<tr>
<th>CRWR*6010 Plenary Course: Writers in the World F [0.50]</th>
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<tbody>
<tr>
<td>This required plenary course addresses changing and conflicting ideas about the responsibilities of the writer in the world. Readings, discussion, and visits from writers and other literary professionals will help students to articulate effectively their own positions and to develop professional skills.</td>
</tr>
<tr>
<td>Restriction(s): MFA, CW students only</td>
</tr>
<tr>
<td>Department(s): School of English and Theatre Studies</td>
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<tr>
<th>CRWR*6100 Poetry Workshop F-W [0.50]</th>
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<tbody>
<tr>
<td>The Poetry Workshop engages students in an intensive program of reading and writing work. The workshops will be strongly focused on writing and on responding to the work of students in the course with productive, constructive criticism. Students will have the opportunity to work closely with a nationally recognized poet to develop their own skills as poets and editors. Students are expected to read widely and to develop their understanding of the technical aspects of their craft.</td>
</tr>
<tr>
<td>Restriction(s): MFA, CW students only</td>
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<tr>
<td>Department(s): School of English and Theatre Studies</td>
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<thead>
<tr>
<th>CRWR*6200 Fiction Workshop F-W [0.50]</th>
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<tbody>
<tr>
<td>The Fiction Workshop engages students in an intensive program of reading and writing work. The workshops will be strongly focused on writing and on responding to the work of students in the course with productive, constructive criticism. Students will have the opportunity to work closely with a nationally recognized author to develop their skills as writers and editors. Students are expected to read widely and to develop their understanding of the technical aspects of their craft.</td>
</tr>
<tr>
<td>Restriction(s): MFA, CW students only</td>
</tr>
<tr>
<td>Department(s): School of English and Theatre Studies</td>
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<tr>
<th>CRWR*6300 Drama Workshop U [0.50]</th>
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<tbody>
<tr>
<td>The Drama Workshop engages students in an intensive program of reading and writing work. Students will produce a substantial amount of dramatic writing and will also provide constructive criticism of the work of other workshop participants. Required reading will cover a wide range of dramatic literature and the study of dramatic forms and techniques.</td>
</tr>
<tr>
<td>Restriction(s): MFA, CW students only</td>
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<tr>
<td>Department(s): School of English and Theatre Studies</td>
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<table>
<thead>
<tr>
<th>CRWR*6400 Practicum in Creative Writing U [0.50]</th>
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<tbody>
<tr>
<td>In this course of guided study, the student will work on a creative project with a mentor who is a recognized member of the professional writing community.</td>
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<tr>
<td>Restriction(s): MFA, CW students only</td>
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<tr>
<td>Department(s): School of English and Theatre Studies</td>
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<tr>
<td>Course Code</td>
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<tr>
<td>CRWR*6500</td>
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<td>CRWR*6600</td>
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## Criminology and Criminal Justice Policy

The MA in Criminology and Criminal Justice Policy (CCJP) is a program jointly run by the Department of Sociology and Anthropology and the Department of Political Science. As such, the program offers a unique opportunity for students to pursue advanced studies and research in crime and the criminal justice system from both sociological and criminological perspectives as well as from political science and public policy and management perspectives.

### Administrative Staff

**Chair, Department of Political Science**  
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**Graduate Secretary**  
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- **Myrna Dawson**  
  BA York, MA PhD Toronto - Associate Professor
- **Andrew Hathaway**  
  BA, MA Calgary, PhD McMaster - Associate Professor
- **Madonna Maidment**  
  BA, MA Memorial, PhD Carleton - Associate Professor
- **Mavis Morton**  
  BA Carleton, MA PhD York - Assistant Professor
- **William O’Grady**  
  BA, MA Carleton, PhD Toronto - Professor
- **Patrick Parnaby**  
  BA, MA Queen’s, PhD McMaster - Associate Professor and Department Chair
- **Troy Riddell**  
  BA, MA Calgary, PhD McGill - Associate Professor
- **Byron M. Sheldrick**  
  BA Carleton, LLB Toronto, MA, PhD York - Associate Professor and Department Chair
- **Ron Stansfield**  
  BSc McMaster, BA, MA Toronto, PhD York - Associate Professor
- **Carolyn Yule**  
  BA UBC, MA PhD Toronto - Assistant Professor

### MA Program

#### Admission Requirements

The program requires a 4-year undergraduate degree in Sociology, Criminology or Political Science, but students with at least 5 courses in one or more of these three disciplines may be admitted as long as these were part of a major in another social science or humanities program. The program requires a minimum of a “B+” average (second place standing) to be considered for admission. Generally, those admitted will have a higher academic average.

#### Degree Requirements

Students are required to complete 2.0 credits and write a thesis OR complete 3.0 credits and write a major research paper CCJP*6660.

All students must take the following core courses:

- **CCJP*6100 Governing Criminal Justice [0.50]**
- **CCJP*6300 Research Methods in Criminal Justice [0.50]**
- **SOC*6350 Society, Crime and Control [0.50]**

Remaining credits can be fulfilled by taking elective courses, such as Courts CCJP*6000 and/or certain selected courses in Sociology and Anthropology and Political Science (see Courses section below).

### Courses

For courses without a semester designation the student should consult the graduate coordinator.

<table>
<thead>
<tr>
<th>Core Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CCJP*6100 Governing Criminal Justice [0.50]</strong></td>
</tr>
<tr>
<td>This course analyzes criminal justice policy and governance of the criminal justice system from applied and theoretical perspectives. Particular attention is paid to the interplay between criminal justice policy and management and the larger political process.</td>
</tr>
<tr>
<td><strong>Department(s):</strong> CCJP students, Department of Political Science</td>
</tr>
</tbody>
</table>

| **CCJP*6300 Research Methods in Criminal Justice [0.50]** |
| This course introduces students to the primary methods, data sources and statistical methods used in criminal justice and criminology research. Particular attention will be paid to the role research and methods and statistics play in shaping criminal justice/criminological theory, research and policy. |
| **Department(s):** CCJP students. Instructor consent required, Department of Sociology and Anthropology |

### Elective Courses

| **CCJP*6000 Courts W [0.50]** |
| This course examines courts from a variety of political, social, and socio-legal perspectives depending on the interest of the instructor(s). Particular attention will be paid to the role of courts in shaping criminal justice policy through such means as constitutional decisions and sentencing decisions. |
| **Department(s):** CCJP students. Instructor consent required, Department of Sociology and Anthropology, Department of Political Science |

| **SOC*6070 [0.50]** |
| Sociological Theory |
| **SOC*6130 [0.50]** |
| Quantitative Research Methods |
| **SOC*6140 [0.50]** |
| Qualitative Research Methods |
| **SOC*6270 [0.50]** |
| Diversity and Social Equality |
| **POLS*6400 [0.50]** |
| Comparative Social Policy |
| **POLS*6630 [0.50]** |
| Approaches to Public Policy |
| **POLS*6640 [0.50]** |
| Canadian Public Administration: Public Sector Management |
| **POLS*6950 [0.50]** |
| Specialized Topics in Political Studies |
| **SOC*6600 [0.50]** |
| Reading Course |

### Major Research Paper Course

| **CCJP*6660 Major Research Paper S,F,W [1.00]** |
| The major paper is an extensive research paper for those who do not elect to complete a thesis. It may be taken over two semesters. |
| **Department(s):** Restricted to CCJP graduate students, Department of Sociology and Anthropology, Department of Political Science |
Economics

The Department of Economics and Finance www.economics.uoguelph.ca offers programs of study leading to the MA and PhD degrees. Students may also register in this Department to take programs in collaborative International Development Studies (IDS).

Administrative Staff

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IX. Graduate Programs, Economics

MA Program

The MA program contains core courses in theory and quantitative methods. Fields are offered in most areas of economics.

Admission Requirements

The university requires that students have the equivalent of an honours degree at the baccalaureate level.

Admission to the MA program requires that students have a solid background in economic theory and econometrics from a recognized undergraduate program. Normally, the Department requires a ‘B+’ (upper-second class) average as a minimum. Students whose background is not in economics but who are otherwise outstanding should consult the Department website for further information. Applicants whose background in economics is difficult to evaluate may be granted admission as a provisional graduate student for one semester. If, at the end of the semester, the Department is satisfied with the student's progress, it will recommend to the Assistant VP of Graduate Studies that the student be transferred to regular graduate student status.

Program offices should be consulted for admission deadlines.

Degree Requirements

The MA requires the completion of 4 course credits. Most one-semester courses have 0.5 course credits. With approval from the Department, up to 1 credit of the required 4 credits can be taken outside the Department of Economics and Finance. However students may, with approval, take additional courses from other Departments provided that their program includes at least six course equivalents (3.0 credits) from the Department of Economics and Finance. The minimum duration of the program is 2 semesters of full-time study as a regular graduate student.

There are two main routes to the MA in Economics: by course work and major paper, and by course work and thesis. Most candidates pursue the first route.

MA Core

Usually it takes three semesters to complete the requirements for the MA though it is possible to intensify the program and complete it in two semesters. The program of study includes three core courses (ECON*6000, ECON*6020 and, at the discretion of the graduate program committee, ECON*6180 or ECON*6140).

The alternative econometrics sequences are designed to benefit students with different undergraduate backgrounds. Students with a satisfactory record of undergraduate work in econometrics will be required to take ECON*6140, while those with less undergraduate preparation will be required to take ECON*6180. The course ECON*6050 is offered primarily to students outside the Department but is available to incoming MA students as an extra course in preparation for ECON*6180.

MA Options

In addition to the core (1.5 credits), students may take one of the following two options. The vast majority of students choose option 1.

1. 1.5 graduate course credits and the Research Project - ECON*6940 (1.0 credit)
2. 0.5 graduate course credits and a Thesis.

PhD Program

The objective of the PhD program is to train individuals who already have a strong background in economics to become independent and skilled researchers, in preparation for a career in academia, government or the private sector. Course offerings cover a broad range of topics in theoretical and applied economics. PhD candidates may write a dissertation in any of the areas of expertise of the graduate faculty in the Department. In addition, the Department participates in a collaborative PhD program in International Development Studies.

Graduates are expected to have demonstrated competence at an advanced level in the core areas of Microeconomic theory, Macroeconomic theory, and Econometrics, to have demonstrated competence at the cutting edge of knowledge in their area of specialization and advanced competence in at least one other area, and to have demonstrated mature scholarship, research and communication abilities.

Admission Requirements

Applicants to the PhD program should have a master's degree in economics with a minimum average of 80% (A-) in their postgraduate studies. Applicants without a master's degree but with an outstanding record at the baccalaureate level, may be admitted initially to the MA program in economics. For students who achieve a superior record and show an aptitude for research, The Board of Graduate Studies, on the recommendation of the Department, may authorize transfer to the PhD program without requiring the student to complete a master's degree.

Degree Requirements

The program requires the satisfactory completion of a minimum of 12 courses covering core theory, econometrics, and field courses. (Students with an MA will be given credit for courses already in hand, where appropriate). The following sequence of milestones represents the typical path through the PhD program.
Year I: Core Courses
Students must complete the following courses, in preparation for the comprehensive examinations in economic theory, which is written at the end of Year I:

Econometrics
- ECON*6140 [0.50] Econometrics I
- ECON*6160 [0.50] Econometrics II

Theory
- ECON*6000 [0.50] Microeconomic Theory I
- ECON*6010 [0.50] Microeconomic Theory II
- ECON*6020 [0.50] Macroeconomic Theory I
- ECON*6040 [0.50] Macroeconomic Theory II

Year II: Dissertation Proposal
After the theory comprehensive exams are passed, students must prepare a PhD proposal under the supervision of a faculty member. Proposals are presented to the Department at a symposium, and upon acceptance the Graduate Coordinator will notify the Assistant VP of Graduate Studies that the student has passed the "Qualifying Examination" requirement as set out by the Faculty of Graduate Studies. At this point, the student becomes a "candidate" for the PhD.

Year III and IV: Thesis
Submission and defence of an acceptable thesis on a topic approved by the student's advisor is a major requirement for the PhD. This thesis is expected to be a significant and original contribution to knowledge in its field and must demonstrate scholarship and critical judgement on the part of the candidate. Theses must be submitted within 48 months of completing the minimum duration.

Business Studies MBA Program
The Department of Economics and Finance participates in the MBA program in the fields of agribusiness management which is offered by the Department of Food, Agricultural and Resource Economics.

Collaborative Programs
International Development Studies MA
The Department of Economics and Finance participates in the collaborative International Development Studies (IDS) program. Applicants for this program enter through one of the participating departments; course selections are based, in part, on the applicant's primary discipline. Those faculty members in the Department of Economics and Finance whose research and teaching expertise includes aspects of international development studies may serve as advisors for these MA students. Please consult the International Development Studies listing for a detailed description of the MA collaborative program including the special additional requirements for each of the participating departments.

Courses

Econometric Methods for Economics

- ECON*6060 Mathematical Methods for Economics F [0.00]
  This course is designed to provide students with the necessary mathematical tools to follow the contents of the core economics and econometrics courses in the MA program and successfully complete them. The material covered will include advanced topics in linear algebra, multivariate optimization techniques and comparative statics.
  Department(s): Department of Economics and Finance

- ECON*6090 Game Theory U [0.50]
  This course introduces the student to game theory, which is an important tool for modelling economic situations with multi-person interaction. Economic applications such as oligopoly, bargaining, auctions, and public goods provision will be discussed. Broader applications to voting games, candidate strategy, war games, and parlour games will also be briefly discussed. Students need to be very familiar with optimization and single person decision-making.
  Department(s): Department of Economics and Finance

- ECON*6100 Experimental Economics U [0.50]
  This course examines the use of the experimental methodology in economics. We will study how experiments have been used to test theories in many subfields within economics. In the process, students will learn how to construct and run economics experiments and analyze experimental data.
  Department(s): Department of Economics and Finance

- ECON*6110 Mathematical Economics U [0.50]
  This course introduces students to the mathematical techniques used in advanced economic analysis. Topics covered in any year: analysis of dynamic economic models and optimization in dynamic economic models.
  Department(s): Department of Economics and Finance

Econometrics

- ECON*6050 Introduction to Econometric Methods U [0.50]
  Introduction to the specification, estimation and testing of economic models. Topics include the classical linear regression model, t tests, structure tests, specification error, the consequences of the violation of the classical assumptions, detection and correction of autocorrelation and heteroscedasticity.
  Department(s): Department of Economics and Finance

- ECON*6140 Econometrics U [0.50]
  Topics include a review of the classical linear regression model, applications of generalized least squares, maximum likelihood methods and various statistical test procedures.
  Department(s): Department of Economics and Finance

- ECON*6160 Econometrics II U [0.50]
  Topics include maximum likelihood as a method of estimation and inference, nonlinear estimation and simultaneous equations. Also more specialized topics such as limited-dependent-variable models and non-parametric regression methods may be covered.
  Department(s): Department of Economics and Finance

- ECON*6170 Topics in Econometrics U [0.50]
  This is an advanced econometrics topics course that covers the area of non-parametric and semiparametric estimation and testing of econometrics models, including time series and panel data semiparametric models.
  Department(s): Department of Economics and Finance

- ECON*6180 Econometric Methods U [0.50]
  This course follows ECON*6050. It covers estimation by instrumental variables, estimations of simultaneous systems, asymptotic distribution theory, maximum likelihood estimation, binary choice and limited dependent variable models, and issues in time series analysis.
  Department(s): Department of Economics and Finance

Economic History

- ECON*6200 Economic History I U [0.50]
  This course considers topics in economic history which vary from year to year. The emphasis will be usually on late-19th or 20th century topics and often involves a world emphasis. Student presentations and papers form a large part of the course.
  Department(s): Department of Economics and Finance

- ECON*6370 Economic Development in Historical Perspective U [0.50]
  This course will examine the experience of economic development focusing on the emergence of the Third World. Topics for discussion will vary from year to year; they may include the impact of trade expansion during the eighteenth and nineteenth centuries, the role of manufacturing as a leading sector, statism vs. the new classical approaches to government policy, and others.
  Department(s): Department of Economics and Finance

ECON*6000 Microeconomic Theory I U [0.50]
A first graduate course in microeconomics, presenting a rigorous treatment of consumer theory, producer theory, applications of duality, partial equilibrium, general equilibrium and the fundamental theorems of welfare economics.
Department(s): Department of Economics and Finance

ECON*6010 Microeconomic Theory II U [0.50]
Advanced topics in modern microeconomics to include elements of game theory, information economics, economics of risk and uncertainty, the theory of incentives and others.
Prerequisite(s): ECON*6000
Department(s): Department of Economics and Finance

ECON*6020 Macroeconomic Theory I U [0.50]
A first graduate course in macroeconomics, presenting a rigorous introduction to the tools and basic models of dynamic general equilibrium theory. The topics covered include economic growth and development, economic fluctuations, and monetary and fiscal policies.
Department(s): Department of Economics and Finance

ECON*6040 Macroeconomic Theory II U [0.50]
This course considers the dynamics resulting from intertemporal optimization models. Foundations of unemployment theory. Approaches to business cycles. Models of long-run growth.
Prerequisite(s): ECON*6020
Department(s): Department of Economics and Finance

ECON*6160 Economic History II U [0.50]
This course considers topics in economic history which vary from year to year. The emphasis will be usually on late-19th or 20th century topics and often involves a world emphasis. Student presentations and papers form a large part of the course.
Department(s): Department of Economics and Finance

ECON*6180 Econometric Methods U [0.50]
This course follows ECON*6050. It covers estimation by instrumental variables, estimations of simultaneous systems, asymptotic distribution theory, maximum likelihood estimation, binary choice and limited dependent variable models, and issues in time series analysis.
Department(s): Department of Economics and Finance

ECON*6200 Economic History I U [0.50]
This course considers topics in economic history which vary from year to year. The emphasis will be usually on late-19th or 20th century topics and often involves a world emphasis. Student presentations and papers form a large part of the course.
Department(s): Department of Economics and Finance

ECON*6370 Economic Development in Historical Perspective U [0.50]
This course will examine the experience of economic development focusing on the emergence of the Third World. Topics for discussion will vary from year to year; they may include the impact of trade expansion during the eighteenth and nineteenth centuries, the role of manufacturing as a leading sector, statism vs. the new classical approaches to government policy, and others.
Department(s): Department of Economics and Finance
Money and Finance

ECON*6320 International Finance U [0.50]
This course deals with the theoretical policy and issues of international finance. Topics may include exchange rate determination, capital flows in international markets, the financing of trade flows, and open economy macroeconomic models and policy issues.

Department(s): Department of Economics and Finance

ECON*6380 Financial Economics U [0.50]
This course has three objectives: (i) build a common background for all students in asset pricing and corporate finance in order to facilitate discussion of finance research, (ii) provide an in-depth look at selected finance topics, and (iii) expose students to top published research papers.

Department(s): Department of Economics and Finance

ECON*6390 Empirical Finance and Financial Econometrics U [0.50]
This course covers topics in empirical finance, involving the integration of financial theory, financial econometrics, and data analysis. Students will learn how empirical research in finance is conducted through reading involving both textbooks and journal articles and from conducting an independent research project.

Co-requisite(s): ECON*6140
Department(s): Department of Economics and Finance

ECON*6400 Money and Banking U [0.50]
This course studies monetary economies using overlapping generations models, MII and CIA models. More specifically, we will study major issues in money and banking, such as the role of money and banks, the cost of inflation, and the optimal monetary policies.

Department(s): Department of Economics and Finance

Developmental Economics

ECON*6500 Economic Development U [0.50]
This course examines economic development from an international perspective: theories, history, policies and prospects.

Department(s): Department of Economics and Finance

Labour Economics

ECON*6600 Labour Economics U [0.50]
Major themes in labour market theory including static and dynamic labour demand and supply, migration and wage structures and dynamics, unemployment, migration and the role of social programs.

Department(s): Department of Economics and Finance

ECON*6610 Topics in Labour Economics U [0.50]
This course complements ECON*6600. Topics include advanced issues in family labour supply, human capital, wage bargaining and contract theory, search theory, duration analysis and its application to major labour market spells such as employment and unemployment.

Department(s): Department of Economics and Finance

Environmental and Resource Economics

ECON*6800 Environmental Economics U [0.50]
A topics course concerning the interrelationships between economic activities and the state of the natural environment. Topics may include: pollution and economic growth, energy use and environmental quality; international trade and pollution; policies for controlling pollution; techniques for assessing the benefits of environmental improvement.

Department(s): Department of Economics and Finance

ECON*6810 Economic Theory of Natural Resources Use U [0.50]
This course examines economic models of the use of non-renewable resources to analyze issues such as resource conservation, sustainable development, taxation of resource rents, and price determination in resource markets.

Department(s): Department of Economics and Finance

Other

ECON*6300 International Trade Theory U [0.50]
This course provides a rigorous treatment of both positive and normative aspects of trade theory through extensive use of general equilibrium models under varying assumptions. Topics may also include barriers to trade, international factor movements, growth and development, and strategic trade policy.

Department(s): Department of Economics and Finance

ECON*6400 Public Finance U [0.50]
This course surveys the normative theory of the public sector. Topics may include public expenditure theory, tax theory, cost benefit analysis and fiscal federalism.

Department(s): Department of Economics and Finance

ECON*6650 Economics of Social Welfare U [0.50]
This course deals with the analysis of social welfare programs, concentrating on national health insurance. It covers their structure, incentives and distribution effects, and includes empirical analysis of existing programs.

Department(s): Department of Economics and Finance

ECON*6700 Industrial and Market Organization U [0.50]
The major topics of industrial organization are analyzed from both a game theoretic perspective and from a Structure-Conduct-Performance perspective. Typical topics include: oligopoly theory, determinants of industrial structure, Coase theorem, market entry, advertising, research and development, product differentiation, and price discrimination.

Department(s): Department of Economics and Finance

ECON*6750 Managerial Economics U [0.50]
The course introduces students to the latest developments in the economic analysis of the inside workings and organization of firms. The course tries to explain the diversity of economic organizations, and more generally why economic activity is sometimes carried out through firms and sometimes through markets. For graduate students outside the Department of Economics and Finance.

Department(s): Department of Economics and Finance

ECON*6770 Financial Management U [0.50]
This course examines the implications of financing decisions made by firms in a world of uncertainty. Topics such as capital budgeting, capital structure, dividend policy, market efficiency and capital asset pricing will be analyzed from the perspective of corporate finance and portfolio management theory. Co-requisite: AGEC*6070. For graduate students outside the Department of Economics and Finance.

Department(s): Department of Economics and Finance

ECON*6930 Reading Course U [0.50]
In some circumstances, students may arrange to take a reading course under the direction of a faculty member.

Department(s): Department of Economics and Finance

ECON*6940 Research Project U [1.00]
All students who choose the research project option in the MA program will register in this course. Research projects are written under the direct supervision of a faculty member. Normally, research projects are completed within one or two semesters. Students must make a presentation of their work and a copy of the final report must be submitted to the Department before the final grade is submitted to the Office of Graduate Studies.

Department(s): Department of Economics and Finance

ECON*6940 Research Project U [1.00]
Department before the final grade is submitted to the Office of Graduate Studies.

Department(s): Department of Economics and Finance
Engineering

The graduate degree programs offered in the School of Engineering include a course work MEng and research thesis programs at the MASc and PhD levels. All programs are offered as full- or part-time studies. These programs provide for specialization in four fields of study: Biological Engineering, Environmental Engineering, Engineering Systems and Computing and Water Resources Engineering. In addition, the School of Engineering offers two graduate diploma programs: Modelling Applications in Water Resources Engineering and Engineering Design of Sustainable Water Resource Systems.

Biological Engineering is broadly categorized as bio-process, food, biomedical or biomechanical engineering. Research is conducted in many areas such as: physical, chemical and thermal processing of food, biomaterials or waste; physical properties of biological materials; process control; remote sensing; medical imaging; bioinstrumentation design and the development of medical diagnostics; ergonomic and prosthetic biomechanics; design of implants and surgical tools for human and veterinary applications.

Environmental Engineering involves methods to prevent or mitigate damage to the environment by the reduction, treatment, or reclamation of solid, liquid, or gaseous by-products of industrial, agricultural and municipal activities. Emphasis is on the behaviour and fate of contaminants in the environment. Recent research topics include the following: composting of organic solids; control and remediation of chemical spills; wastewater treatment; soil/site remediation technology; policy innovations; air pollution and meteorology; vapour exchange and supercritical fluid extraction; air-surface pollutant exchange measurement; bio-filtration and membrane technologies; modelling of environmental processes.

Engineering Systems and Computing involves development of digital or microelectronic devices, computer or robotic technologies and their application to manufacturing, computing, mechatronic or embedded systems. Some active research areas include: soft computing and neural networks; autonomous robots; intelligent control systems; micro-electromechanical (MEMS) devices; embedded systems and special purpose computing; VLSI circuit design and layout; analog integrated circuits and system-on-chip design; integrated sensor systems and networks; digital devices and signal processing; wireless and optical communication systems; cryptographic systems.

Water Resources Engineering involves investigation, analysis and design of systems for control and utilization of land and water resources as part of the management of urban and rural watersheds. Research areas include: water quality control and safety; resource use and groundwater quality; hydrologic modelling; design and planning of urban water and sewage infrastructure; rural waste treatment systems; erosion control; non-point source pollution and mitigation; Geographic Information Systems (GIS); sediment and contaminant transport; irrigation and drainage modelling.

The objective of the graduate diploma is to provide mid-career, engineering professionals from Canada and abroad with post graduate education and training to improve their job-related expertise within an 8 month period. The program enhances the ability of these professionals to gain employment in the field of Water Resources engineering by developing specialized knowledge in one of two areas of Water Resources. The first area will emphasize higher learning in the application of Modelling in a Water Resources context. Application of existing tools, particularly GIS, to a variety of contemporary water resources problems will be emphasized. The second area focuses on the Design of Sustainable Water Resource Systems that will be sustainable in today’s development environment.

The objective of the course-work master's degree program (MEng) is to provide an opportunity for engineering graduates, usually practising engineers, to advance their understanding of engineering principles and increase their grasp of the application of these principles to the solution of complex, practical problems. Many of these students are returning to school in order to learn about recent technological developments that have occurred since graduation in their field. The objective is achieved through selecting from a number of core and elective courses and completing a major project. The project requires a final written report that is presented in a public seminar followed by an oral examination of the candidate.

The MASc program is intended to provide advanced training in engineering sciences, analysis, design, and research methodology. This objective is achieved through a combination of course work, applied research, and thesis writing. Upon graduation students will be able to analyse and research an engineering problem and apply their acquired skills and knowledge in a practical solution. A final examination is conducted following a public seminar presentation of the student's thesis.

The PhD program prepares candidates for a career in engineering teaching, research, or consulting. The program is designed to provide both broad knowledge of engineering science and training in advanced research. Doctoral research carries the expectation of making an original contribution to the body of existing knowledge or technology. It is also expected that the responsibility of problem definition and solution is that of the student, and that the student's advisor acts truly in an advisory capacity. Therefore, graduates are expected to have acquired the necessary knowledge in defining and analysing problems, conducting research, and preparing scholarly publications. These objectives are achieved through a combination of course work, independent research, a qualifying examination, and the production and defence of a research dissertation.

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Edward McBean

March 9, 2015
Admission Requirements

MASc by Thesis

In addition to the general admission standards of the university, the school has adopted additional admissions criteria for MASc studies. Applicants must meet one of the following requirements:

- Baccalaureate degree in engineering or equivalent. Applicant must be a graduate from an honours engineering program with at least a 75% average in the past four full-time semesters or the equivalent. International degree and grade equivalents will be determined by the Office of Graduate Studies.
- Master's degree with exceptionally high academic standing and have related research experience. The prescribed program of study must consist of no fewer than 2.0 credits, of which at least 1.5 credits must be at the graduate level, and at least 1.0 must be engineering graduate courses. Under special circumstances the school may reduce the 1.5 credit course requirement; however, the 1.0 graduate-engineering-course credit requirement will not be changed. In all cases the remaining courses must be acceptable for graduate credit; that is, they must be either graduate courses or senior undergraduate courses. Depending on the student's background, the advisory committee may specify more than four courses, including undergraduate make-up courses. If make-up courses are deemed necessary, they will be considered additional courses.

MEng Degree

The prescribed program of studies consists of at least 5.0 credits acceptable for graduate credit. This includes 2.5 credits from the program core (see the School of Engineering Graduate Handbook), and 2.5 additional credits chosen from approved courses (section 5.5 of the School of Engineering Graduate Handbook). No more than 1.0 of these credits will be for undergraduate engineering courses, as approved by the Director, and no more than 1.5 credits will be from courses offered outside the School of Engineering. For the final project course (1.0 credit), one member of the graduate faculty will be appointed by the Associate Director, Graduate Studies as an advisor.

PhD Program

Admission Requirements

The minimum academic requirement for admission to the PhD program is normally a recognized Master's degree in engineering. Applicants are usually required to have completed a Bachelor's and a Master's degree from a recognized post-secondary institution and must have achieved a minimum B average in their Master's program. Applicants must also have demonstrated strong potential for research. A strong recommendation from the MASc advisor is necessary. Direct admission to the PhD program from a Bachelor's program is rarely granted. Applicants requesting direct admission must hold a bachelor's degree with exceptionally high academic standing and have related research experience. Such applicants should discuss this option with the Associate Director, Graduate Studies at the earliest opportunity.
Degree Requirements

The prescribed program of study must consist of no fewer than 2.0 credits in addition to those taken as part of the Masc degree. At least 1.5 of the credits must be at the graduate level, and at least 1.0 must be engineering graduate courses. Under special circumstances and with the approval of the Director, the school may reduce the requirement for 1.5 credit course requirement; however the 1.0 graduate-engineering-course credit requirement will not be changed. In all cases the remaining courses must be acceptable for graduate credit; that is, they must be either graduate courses or senior undergraduate courses. Depending on the student’s background, the advisory committee may specify more than four courses, including undergraduate make-up courses. If make-up courses are deemed necessary, they will be considered additional courses.

The qualifying examination as outlined in the Graduate Calendar is held by the end of the fourth semester but no later than the fifth semester after the student has completed the required courses.

Diploma Program

Admission Requirements

Students with an honours degree will be considered for the Graduate Diploma program provided they have satisfactory preparation in mathematical and physical sciences. A minimum average grade of 70% for the last four full-time semesters, or the last two complete undergraduate years, prior to entry will normally be required.

Since an adequate background in undergraduate engineering courses is prerequisite for courses offered in the program, there is a requirement of the following courses or equivalent:

- ENGG*2230 Fluid Mechanics
- ENGG*3650 Hydrology
- ENGG*3340 Geographic Information Systems

The qualification will be assessed by transcripts supplied by the student at the time of application. Students deficient in certain areas will be required to take make-up undergraduate courses as decided by the Graduate Studies Committee. The student will be admitted on probation until the requirements have been completed. These courses will not count toward the student graduate degree requirement.

1 Only required for students in the Modelling Applications in Water Resources Systems

Diploma Requirements

The prescribed program consists of 2.0 credits acceptable at the graduate level.

Modelling Applications in Water Resource Engineering

The core courses consist of a total of 2.0 credits. 1.5 credits must come from the list below. One of these must be ENGG*6800.

- ENGG*6800 [0.50] Deterministic Hydrological Modelling
- ENGG*6740 [0.50] Ground Water Modelling
- ENGG*6840 [0.50] Open Channel Hydraulics
- ENGG*6880 [0.50] Soil Erosion and Fluvial Sedimentation
- ENGG*6030 [0.50] Finite Difference Methods
- ENGG*6050 [0.50] Finite Element Methods
- ENGG*4510 [0.50] Risk Assessment and Management
- ENGG*6060 [0.50] Engineering Systems Modelling and Simulation

In addition, the student must complete ENGG*6910. This is a 0.5 credit, 1 semester course. This special topics course will focus on one of the following areas:

- Watershed Systems Design
- Soil-Water Conservation Systems Design
- Urban Water Systems Design

And include a project utilizing a GIS-based modeling approach.

Engineering Design of Sustainable Water Resource Systems

The courses consist of a total of 2.0 credits. Two courses (1.0 credits) must be selected from the following courses:

- ENGG*6610 [0.50] Urban Stormwater Management
- ENGG*6840 [0.50] Stream and Wetland Restoration Design
- ENGG*6840 [0.50] Open Channel Hydraulics
- ENGG*6140 [0.50] Optimization Techniques for Engineering
- ENGG*4510 [0.50] Risk Assessment and Management
- ENGG*6680 [0.50] Advanced Water and Wastewater Treatment
- ENVS*6280 [0.50] Soil Physics
- RPDS*6310 [0.50] Environmental Impact Assessment
- ENGG*4250 [0.50] Watershed Systems Design
- ENGG*4360 [0.50] Soil-Water Conservation Systems Design
- ENGG*4370 [0.50] Urban Water Systems Design

In addition to the courses above, the course ENGG*6910 must be completed. This is a 0.5 credit, one semester course. For each of these an area of emphasis from one of the following areas must be selected:

- Watershed Systems Design
- Soil-Water Conservation Systems Design
- Urban Water Systems Design

For this special topics course the project must focus on sustainability of water resources within the area of emphasis selected.

2 Only one of these courses may be selected.

3 If one of the undergraduate courses listed above are selected, the area of emphasis for this course must differ from the undergraduate course.

Interdepartmental Programs

MSc Food Safety and Quality Assurance

The School of Engineering participates in the MSc program in food safety and quality assurance. Those faculty members whose research and teaching expertise includes aspects of food safety and quality assurance may serve as advisors for MSc students. Please consult the Food Safety and Quality Assurance listing for a detailed description of the MSc program.

Collaborative Programs

Masters and PhD International Development Studies

The School of Engineering participates in the collaborative International Development Studies (IDS) MEng, MASc and PhD programs. The collaborative International Development Studies program provides an interdisciplinary framework for the study of international development combining training in a selected academic discipline with exposure to a broad range of social science perspectives. This program will add the designation “International Development Studies” to your degree. Applicants apply directly through the School of Engineering and must meet the University of Guelph and department program admission requirements. Students should consult the International Development Studies listing to confirm the IDS program degree requirements.

Courses

General

- ENGG*6000 Advanced Heat and Mass Transfer U [0.50]
  - Basic physical principles of transport phenomena. Heat and mass transfer methods for physical systems. Time and volume averaging. Dimensional analysis. (Department(s): School of Engineering)

- ENGG*6010 Assessment of Engineering Risk U [0.50]
  - The question of "how safe is safe enough?" has no simple answer. In response, this course develops the bases by which we can assess and manage risk in engineering. Course deals with fate and transport issues associated with risk, as relevant to engineering and how these aspects are employed in the making of decisions. (Prerequisite(s): STAT*2040 or STAT*2120) (Department(s): School of Engineering)

- ENGG*6020 Advanced Fluid Mechanics U [0.50]

- ENGG*6030 Finite Difference Methods U [0.50]
  - Numerical solution of partial differential equations of flow through porous media; flow of heat and vibrations; characterization of solution techniques and analysis of stability; convergence and compatibility criteria for various finite difference schemes. (Department(s): School of Engineering)

- ENGG*6050 Finite Element Methods U [0.50]

- ENGG*6060 Engineering Systems Modelling and Simulation U [0.50]
  - A study of theoretical and experimental methods for characterizing the dynamic behaviour of engineering systems. Distributed and lumped parameter model development. Digital simulation of systems for design and control. (Department(s): School of Engineering)

- ENGG*6080 Engineering Seminar U [0.00]
  - The course objective is to train the student in preparing, delivering and evaluating technical presentations. Each student is required to: (a) attend and write critiques on a minimum of six technical seminars in the School of Engineering; and (b) conduct a seminar, presenting technical material to an audience consisting of faculty and graduate students in the school. This presentation will then be reviewed by the student and the instructor. (Department(s): School of Engineering)

- ENGG*6090 Special Topics in Engineering U [0.50]
  - A course of directed study involving selected readings and analyses in developing knowledge areas which are applicable to several of the engineering disciplines in the School of Engineering. (Department(s): School of Engineering)
Biological Engineering

**ENGG*6110 Food and Bio-Process Engineering U [0.50]**
Kinetics of biological reactions, reactor dynamics and design. Food rheology and texture, water activity and the role of water in food processing; unit operations design-thermal processing; and drying, freezing and separation processes.
*Department(s):* School of Engineering

**ENGG*6120 Fermentation Engineering U [0.50]**
Modelling and design of fermenter systems. Topics include microbial growth kinetics, reactor design, heat and mass transfer. Instrumentation and unit operations for feed preparation and product recovery. Prerequisite: undergraduate course in each of microbiology, heat and mass transfer, and biochemistry or bioprocess engineering.
*Department(s):* School of Engineering

**ENGG*6130 Physical Properties of Biomaterials U [0.50]**
Rheology and rheological properties. Contact stresses between bodies in compression. Mechanical damage. Aerodynamic and hydro-dynamic characteristics. Friction.
*Department(s):* School of Engineering

**ENGG*6150 Bio-Instrumentation U [0.50]**
*Restriction(s):* ENGG*3450 or equivalent.
*Department(s):* School of Engineering

**ENGG*6160 Advanced Food Engineering U [0.50]**
Application of heat and mass transfer, fluid flow, food properties, and food-processing constraints in the design and selection of food process equipment. Development of process specifications for the control of the flow of heat and moisture and the associated microbial, nutritional and organoleptic change in foods. Food system dynamics and process development.
*Department(s):* School of Engineering

**ENGG*6170 Special Topics in Food Engineering U [0.50]**
A course of directed study involving selected readings and analyses in developing knowledge areas of food engineering.
*Department(s):* School of Engineering

**ENGG*6180 Final Project in Biological Engineering U [1.00]**
A project course in which a problem of advanced design or analysis in the area of biological engineering is established, an investigation is performed and a final design or solution is presented.
*Restriction(s):* This course is open only to students in the biological MEng program.
*Department(s):* School of Engineering

**ENGG*6190 Special Topics in Biological Engineering U [0.50]**
A course of directed study involving selected readings and analyses in developing knowledge areas of biological engineering.
*Department(s):* School of Engineering

**ENGG*6290 Special Topics in Agricultural Engineering U [0.50]**
A course of directed study involving selected readings and analyses in developing knowledge areas of agricultural engineering.
*Department(s):* School of Engineering

**ENGG*6300 Research Methods in Bioengineering U [0.50]**
Research methodologies used in bioengineering are reviewed and assessed in the context of a diverse range of applications: biomechanics, control and instrumentation, ergonomics, diagnostic tools, biomaterials and food safety. The scientific method is discussed in terms of defining research problems, appropriate tests and hypotheses, experimental methods, data analysis and drawing conclusions. The objective is to guide students as they develop a coherent research proposal and deepen their understanding of the breadth of the discipline. (Offered in alternate years)
*Restriction(s):* Instructor consent required.
*Department(s):* School of Engineering

**ENGG*6440 Advanced Biomechanical Design U [0.50]**
Biomechanical Design from concept through prototyping and testing. This course will investigate and apply techniques used for biomechanical design including reverse engineering, solid modeling, geometric tolerancing, testing and rapid prototyping. Instructor's signature required.
*Department(s):* School of Engineering

Environmental Engineering

**ENGG*6610 Urban Stormwater Management U [0.50]**
Continuous stormwater management models and model structure. Catchment discretization and process disaggregation. Pollutant build-up, wash off and transport. Flow and pollutant routing in complex, looped, partially surcharged pipe/channel networks including pond storage, storage tanks, diversion structures, transverse and side weirs, pump stations, orifices, radial and leaf gates and transient receiving water conditions (including tides). Pollutant removal in sewer networks, storage facilities and treatment plants.
*Department(s):* School of Engineering

**ENGG*6620 Water Pollution Control Planning U [0.50]**
Methods of developing area-wide pollution control plans and sustainable use plans in Ontario and elsewhere. Quantitative and non-quantitative information is examined in the context of planning, using continuous models such as HSP-F. Field trips.
*Department(s):* School of Engineering

**ENGG*6630 Environmental Contaminants: Fate Mechanisms U [0.50]**
Analysis of fate mechanisms associated with environmental contaminants. Focus on substances which are generally considered to be hazardous to humans, or other animal life at low concentrations. Study of physicochemical properties and fate estimation on control and remediation strategies. Quantitative analysis of contaminant partitioning and mass flows, including cross-media transport and simultaneous action of contaminant fate mechanisms.
*Department(s):* School of Engineering

**ENGG*6640 Environmental Contaminants: Control Mechanisms U [0.50]**
Analysis of conventional and innovative technologies for toxic contaminants; technologies for contaminated municipal and industrial waste waters, including physical, chemical, and biological treatment processes for trace toxic contaminants in water and wastewater; control technologies for contaminated gas streams, including activated carbon absorption, biofiltration, bioscrubbing, wet scrubbing, thermal-oxidation methods, and process modifications to reduce emissions of toxic air contaminants; remediation technologies for contaminated soil, including external and in-situ physical, chemical and biological treatments; cross-media contaminant control issues; toxicity testing and evaluation; relevant regulatory programs.
*Department(s):* School of Engineering

**ENGG*6650 Advanced Air Quality Modelling U [0.50]**
Analysis of analytical and computational models used to predict the fate of airborne contaminants; role of air quality models for the solution of engineering-related problems; analysis of important boundary layer meteorology phenomena that influence the fate of air pollutants; conservation equations and mathematical solution techniques; model input requirements such as emissions inventories; Gaussian models; higher-order closure models; Eulerian photochemical grid models.
*Department(s):* School of Engineering

**ENGG*6660 Renewable Energy U [0.50]**
The engineering principles of renewable energy technologies including wind, solar, geothermal and biomass will be examined. Technology-specific design, economic and environmental constraints. Students will compare the relative merits of different energy technologies and gain a knowledge base for further study in the field.
*Restriction(s):* Engineering graduate students. Instructor consent required.
*Department(s):* School of Engineering

**ENGG*6670 Hazardous Waste Management U [0.50]**
This course will define the different types of hazardous wastes that currently exist and outline the pertinent legislation governing these wastes. Information will be presented on different ways to handle, treat and dispose of the hazardous waste, including separation, segregation, minimization, recycling and chemical, physical, biological, and thermal treatment. Also to be discussed are hazardous waste landfills and site remediation technologies. Specifics include design and operation of hazardous landfill sites, handling and treatment of leachate, comparison of pertinent soil remediation technologies. Case studies will be reviewed.
*Department(s):* School of Engineering

**ENGG*6680 Advanced Water and Wastewater Treatment U [0.50]**
This design course will discuss advanced technologies not traditionally covered during an undergraduate curriculum. An important consideration will be the reuse of water.
*Department(s):* School of Engineering

**ENGG*6690 Non-Point Source Pollution and Its Control U [0.50]**
*Department(s):* School of Engineering
ENGG*6790 Special Topics in Environmental Engineering [0.50]
A course of directed study involving selected readings and analyses in developing knowledge areas of environmental engineering.
Department(s): School of Engineering

ENGG*6950 Final Project in Environmental Engineering [1.00]
A project course in which a problem of advanced design or analysis in the area of environmental engineering is established, an investigation is performed and a final design or solution is presented.
Restriction(s): This course is only open to students in the environmental MEng program.
Department(s): School of Engineering

Engineering Systems and Computing

ENGG*6070 Medical Imaging [0.50]
Digital image processing techniques including filtering and restoration; physics of image formation for such modalities as radiography, MRI, ultrasound.
Prerequisite(s): ENGG*3390 or equivalent
Department(s): School of Engineering

ENGG*6100 Machine Vision [0.50]
Computer vision studies how computers can analyze and perceive the world using input from imaging devices. Topics covered include image pre-processing, segmentation, shape analysis, object recognition, image understanding, 3D vision, motion and stereo analysis, as well as case studies.
Department(s): School of Engineering

ENGG*6140 Optimization Techniques for Engineering [0.50]
This course serves as a graduate introduction into combinatorics and optimization. Performance is the main pillar of Engineering and the performance of most systems can be improved through intelligent use of optimization algorithms. Topics to be covered: Complexity theory, Linear/Integer Programming techniques, Constrained/Unconstrained optimization and Nonlinear programming, Heuristic Search Techniques such as Tabu Search, Genetic Algorithms, Simulated Annealing and GRASP.
Department(s): School of Engineering

ENGG*6450 Queueing Theory & Traffic Modeling in Data Networks [0.50]
Restriction(s): Engineering graduate students. Instructor consent required.
Department(s): School of Engineering

ENGG*6500 Introduction to Machine Learning [0.50]
The aim of this course is to provide students with an introduction to algorithms and techniques of machine learning particularly in engineering applications. The emphasis will be on the fundamentals and not specific approach or software tool. Class discussions will cover and compare all current major approaches and their applicability to various engineering problems, while assignments and project will provide hands-on experience with some of the tools.
Department(s): School of Engineering

ENGG*6510 Analog Integrated Circuit Design [0.50]
In this course, operating principles and design techniques of analog integrated circuits are introduced with emphasis on device and system modelling. These circuits include analog and switched-capacitor filters, data converters, amplifiers, oscillators, modulators, circuits for communications, sensor readout channels, and circuits for integrated memories.
Prerequisite(s): ENGG*3450 or equivalent.
Department(s): School of Engineering

ENGG*6520 VLSI Digital Systems Design [0.50]
This course will introduce the principles of VLSI MOSFET digital design from a circuit and system perspective. Advanced topics include: power issues related to each level of design abstraction; voltage and frequency scaling; power to speed trade-offs; ASIC digital design flow; Verilog integration, ASIC case studies.
Prerequisite(s): ENGG*3450 or equivalent.
Department(s): School of Engineering

ENGG*6530 Reconfigurable Computing [0.50]
This course serves as a graduate introduction into reconfigurable computing systems. It introduces students to the analyses, synthesis and design of embedded systems and implementing them using Field Programmable Gate Arrays. Topics include: Programmable Logic devices, Hardware Description Languages, Computer Aided Design Flow, Hardware Accelerators, Hardware/Software Co-design techniques, Run Time Reconfiguration, High Level Synthesis.
Prerequisite(s): ENGG*2410 or equivalent.
Department(s): School of Engineering

ENGG*6540 Advanced Robotics [0.50]
This course is intended for graduate students who have some knowledge and interest in robotics. The course covers modelling, design, planning control, sensors and programming of robotic systems. In addition to lectures, students will work on a term project in which a problem related to robotics systems will be studied. Instructors signature required.
Department(s): School of Engineering

ENGG*6550 Intelligent Real-Time Systems [0.50]
Soft real-time systems, hard real-time systems, embedded systems, time handling and synchronization, deadlines, preemption, interruption, RTS languages, RTS/ operating systems, system life-cycle, petri nets, task scheduling and allocation, fault-tolerance, resource management, RTS/search techniques, dealing with uncertainty.
Department(s): School of Engineering

ENGG*6560 Advanced Digital Signal Processing [0.50]
Discrete-time signals and systems, z transform, frequency analysis of signals and systems, fourier transform, fast fourier transform, design of digital filters, signal reconstruction, power spectrum estimation.
Department(s): School of Engineering

ENGG*6570 Advanced Soft Computing [0.50]
Neural dynamics and computation from a single neuron to a neural network architecture. Advanced neural networks and applications. Soft computing approaches to uncertainty representation, multi-agents and optimization.
Prerequisite(s): ENGG*4430 or equivalent
Department(s): School of Engineering

ENGG*6580 Advanced Control Systems [0.50]
This course will start with state space analysis of multi-input multi-output control systems. Then state space design will be presented. After that, nonlinear control systems and soft computing based intelligent control systems will be studied. Finally, hybrid control systems, H infinity control and uncertainty and robustness in control systems will be addressed.
Department(s): School of Engineering

ENGG*6590 Final Project in Engineering Systems and Computing [1.00]
A project course in which a problem of advanced design or analysis in the area of Engineering Systems and Computing is established by the student, an investigation is performed, and a report on the final design or solution selected is presented.
Restriction(s): This course is only open to students in the engineering systems and computing MEng program.
Department(s): School of Engineering

ENGG*6600 Special Topics in Engineering Systems and Computing [0.50]
A course of directed study involving selected readings and analyses in developing knowledge areas of Engineering Systems and Computing.
Department(s): School of Engineering

Water Resources Engineering

ENGG*6740 Ground Water Modelling [0.50]
Introduction to current groundwater issues, definition of terms, review of fundamental equations describing fluid and contaminant transport in saturated groundwater zones. Mathematical techniques (analytical, FE and FD) for the solution of the fundamental equations. Application of numerical groundwater models to a variety of situations. Case studies. Review of groundwater models used in industry.
Department(s): School of Engineering

ENGG*6800 Deterministic Hydrological Modelling [0.50]
Department(s): School of Engineering

ENGG*6810 Stochastic Hydrological Modelling [0.50]
Department(s): School of Engineering

ENGG*6820 Measurement of Water Quantity and Quality [0.50]
This course covers techniques used to measure rates of movement and amounts of water occurring as precipitation, soil water, ground water and streamflow. Available measurements of water quality are surveyed. Calculation procedures involved in the use of indirect indicators of water quantity and quality individually in combination are described.
Department(s): School of Engineering
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Department(s)</th>
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<tbody>
<tr>
<td>ENGG*6830</td>
<td>Design of Pressurized Flow Systems U [0.50]</td>
<td>Boundary resistance. Steady State and transient flow in gravity and pumped systems.</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*6840</td>
<td>Open Channel Hydraulics U [0.50]</td>
<td>Basic concepts, energy principle; momentum principle; flow resistance; non-uniform flow; channel controls and transitions; unsteady flow; flood routing.</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*6860</td>
<td>Stream and Wetland Restoration Design U [0.50]</td>
<td>Explores the multi-disciplinary principles of stream and wetland restoration and the tools and techniques for restoration design. Restoration design is approached from a water resources engineering perspective with emphasis on hydrological and hydraulic techniques. Numerous case studies are examined as a means to identify more successful design approaches.</td>
<td>School of Engineering</td>
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<td><strong>Prerequisite(s):</strong> ENGG*3650 or equivalent.</td>
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<tr>
<td>ENGG*6880</td>
<td>Soil Erosion and Fluvial Sedimentation U [0.50]</td>
<td>Students will be able to (i) describe processes related to soil erosion by water, (ii) describe processes related to fluvial sedimentation, (iii) evaluate and prescribe structural and non-structural control methods, and (iv) run at least one soil erosion/fluvial sedimentation computer model if the course is satisfactorily completed.</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*6900</td>
<td>Final Project in Water Resources Engineering U [1.00]</td>
<td>A project course in which an advanced design problem in the area of watershed engineering is established, a feasibility investigation performed and a final design presented.</td>
<td>School of Engineering</td>
</tr>
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<td><strong>Restriction(s):</strong> This course is open only to students in the water resources MEng program.</td>
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</tr>
<tr>
<td>ENGG*6910</td>
<td>Special Topics in Water Resources Engineering U [0.50]</td>
<td>A course of directed study involving selected readings and analyses in developing knowledge areas of water resources engineering.</td>
<td>School of Engineering</td>
</tr>
</tbody>
</table>
**English**

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BA, MA, PhD Western Ontario - Associate Professor

**MA Program**

The English MA program in the School of English and Theatre Studies is designed to provide students with an intensive introduction to graduate-level work in English studies, within a flexible program. Students can draw on the program’s strengths in the following fields: Studies in Canadian Literatures; Colonial, Postcolonial and Diasporic Studies; Early Modern Studies; Sexuality and Gender Studies; and Transnational Nineteenth-Century Studies. Students can also pursue a wide range of research topics in consultation with faculty members actively engaged with the literatures of different historical periods and geographical locations, and with current debates in such areas as critical theory, cultural studies, gender studies, and queer theory.

**Admission Requirements**

The normal requirement for admission to the English MA program is the equivalent of an Honours degree in English studies from a recognized institution with at least a high second-class standing (78% or higher) in the last two years of study. Students with degrees of excellent academic records in other disciplines will also be considered. Successful applicants will be admitted in the Fall Semester, the Program’s only entry point. Program offices should be consulted for admission deadlines. If the applicant's first degree was completed in a country where English is not the first language, English-language proficiency must be documented at the time of application.

**Degree Requirements**

- **Course-Work Option**: six courses (6 x 0.50 credit); plus ENGL*6803 Research Project.
- **Thesis Option**: four courses (4 x 0.50 credit); plus a thesis of 20,000 to 25,000 words (80-100 pages) (2.0 credit).

**Collaborative Programs**

The English program participates in the collaborative International Development Studies (IDS) program. Please consult the International Development Studies listing for a detailed description of the collaborative program including the special additional requirements for each of the participating departments.

**Courses**

**Note**

The content of the courses listed below will vary according to the research interests of the faculty involved in offering the course. Specific course descriptions for a particular offering of the course will be available from the Graduate Co-ordinator one year in advance of the course being offered.

**ENGL*6002 Topics in the History of Criticism U [0.50]**

This course deals with various aspects of the field of literary criticism, focusing on a specific problem or question each time it is offered. Topics may include the investigation of a specific critical debate - the debate between the Ancients and the Moderns, for instance - or the various ways in which a particular concept - such as didacticism or intentionality - has been treated or is being treated in literary studies.

**Department(s):** School of English and Theatre Studies

**ENGL*6003 Problems of Literary Analysis U [0.50]**

Variable in content and practical in orientation this course seeks to familiarize the student with particular critical techniques and approaches by applying specific examples of those approaches and methods to specific topics (e.g., cultural studies and renaissance literature, discourse analysis and the Victorian novel, computer-mediated analysis and the theatre of the absurd).

**Department(s):** School of English and Theatre Studies

**ENGL*6201 Topics in Medieval/Renaissance Literature U [0.50]**

A course to be offered at least once every academic year. This course in Canadian Literature may focus on cross-genre study or on single genres such as poetry, biography, the short story, literary memoir and/or autobiography, and poetic prose. The focus may be on such topics as the literary and general cultural production of a time-period, an age group (such as children's literature), or a specific region (such as Atlantic Canada, the Prairies, or the West Coast), or may bring together texts from two or more categories to allow for a comparative study. Other possible topics include: post-modernism and the creation of an ex-centric Canadian canon; multiculturalism and the transcultural aesthetics of Canadian writing; the construction and reinvention of a national identity and literature; and literary history, influence, reception and critique.

**Department(s):** School of English and Theatre Studies

**ENGL*6209 Topics in Colonial, Postcolonial and Diasporic Literature U [0.50]**

A course to be offered at least once every academic year. A comparative study of postcolonial literatures in English. Topics may include a focus on a single area, such as India, the Caribbean, Africa, Australia, or New Zealand or may focus on the comparative study of some of these literatures, considering the construction of Third World, diasporic, or settler-invader colonies, or writing and reading practices in colonial, neo-colonial, and postcolonial environments.

**Department(s):** School of English and Theatre Studies

**ENGL*6412 Topics in Medieval/Renaissance Literature U [0.50]**

An examination of the literature of Britain in the medieval and/or early modern periods. Topics may focus on a single author, a specific genre, or relationships between the literary and the cultural.

**Department(s):** School of English and Theatre Studies
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<tr>
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<tbody>
<tr>
<td>ENGL*6421</td>
<td>Topics in Eighteenth Century and Romantic Literature U</td>
<td>A examination of the literature of Britain between the 17th century and the latter part of the 18th century. Topics may focus on a single author, a specific genre, or relationships between the literary and the cultural.</td>
</tr>
<tr>
<td>ENGL*6431</td>
<td>Topics in Nineteenth Century Literature U</td>
<td>This course is a study of the literature of Britain, Canada, the United States, or another region from the late 18th century until the start of the First World War. Topics may focus on a single author, a specific genre, or a central critical question.</td>
</tr>
<tr>
<td>ENGL*6441</td>
<td>Topics in Modern British Literature U</td>
<td>A study of the literature of Britain in the twentieth century. This course includes a consideration of the interaction between literature and culture in the period - sometimes through the examination of a specific author, sometimes through the study of a particular genre or issue.</td>
</tr>
<tr>
<td>ENGL*6451</td>
<td>Topics in American Literature U</td>
<td>Topics may include a focus on a single region, such as the American West, on a single time period, such as the Civil War, on a specific genre, such as the novels of frontier women, or other issues in American literary studies.</td>
</tr>
<tr>
<td>ENGL*6611</td>
<td>Topics in Women's Writing U</td>
<td>In the past the course has dealt with Victorian women poets, with the place of women in the literature of the American West, and with other issues of interest to students of women's writing and the broader issues of feminist theory.</td>
</tr>
<tr>
<td>ENGL*6621</td>
<td>Topics in Children's Literature U</td>
<td>Past offerings have involved a focus on a specific author - such as Lucy Maud Montgomery - or on a specific kind of writing for or by children.</td>
</tr>
<tr>
<td>ENGL*6641</td>
<td>Topics in Scottish Literature U</td>
<td>Courses under this rubric are concerned with the various literatures produced by Scots both within and beyond the boundaries of Scotland. The course could involve the study of a specific genre, the investigation of a specific theme, or the examination of a particular author over the course of her/his career.</td>
</tr>
<tr>
<td>ENGL*6691</td>
<td>Interdisciplinary Studies U</td>
<td>Designed to provide the opportunity to explore alternative fields and modes of critical inquiry, this variable-content course will study the relationship between literary study and other forms of intellectual inquiry such as the relationship between literature and sociology, between critical theory and psychology, between literary history and historical fact.</td>
</tr>
<tr>
<td>ENGL*6801</td>
<td>Reading Course I U</td>
<td>An independent study course, the nature and content of which is agreed upon between the individual student and the person offering the course. Subject to the approval of the student's advisory committee and the graduate program committee.</td>
</tr>
<tr>
<td>ENGL*6802</td>
<td>Reading Course II U</td>
<td>An independent study course, the nature and content of which is agreed upon between the individual student and the person offering the course. Subject to the approval of the student's advisory committee and the graduate program committee.</td>
</tr>
<tr>
<td>ENGL*6803</td>
<td>Research Project U</td>
<td>An independent study course, the content of which is agreed upon between the individual student and the person offering the course. Subject to the approval of the student's advisory committee and the Graduate Program Committee. This course is designed to provide the student with the opportunity to conduct an extended research project that, while not as complex or as extensive as a thesis, still provides the student with training in research methodology.</td>
</tr>
<tr>
<td>ENGL*6811</td>
<td>Special Topics in English U</td>
<td>Depending on the research interests of the instructor, courses under this rubric explore topics in the study of literature that do not fall neatly under the rubrics above. In the past the course has dealt with literature and aging, and with issues in the field of popular culture.</td>
</tr>
</tbody>
</table>
Environmental Sciences

The School of Environmental Sciences offers programs of study leading to MSc, MES, PhD, and Graduate Diploma degrees. Graduate Studies in the Environmental Sciences programs are designed to train people to work independently and imaginatively with a high level of technical skill and scientific acumen. It is expected that the graduates of the SES program will provide leadership in research and training in academic, government, and industrial sectors of society and who will participate in the formulation and implementation of constructive national and international science policy.

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Jack T. Trevors
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Laura Van Eerd
MSc, PhD Guelph - Associate Professor

R. Paul Voroney
BSc Calgary, MSc, PhD Saskatchewan - Professor

Claudia Wagner-Riddle
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Jon S. Warland
BSc Cornell, MSc UBC, PhD Guelph - Associate Professor

MSc Program

The objective of the MSc program is to develop and train graduate students that possess a high level of knowledge about the field of environmental science, expertise in specific aspects of environmental science (their thesis research focus), training in laboratory and field techniques, and excellence in writing and oral communication. With these skills, MSc students will possess a strong foundation on which they can be highly successful in science-related positions in government, industry, and consulting, or carry out high quality research at the PhD level.

Admission Requirements

The School’s admission standard for the MSc program is the same as the University and requires a four-year, honours science degree with a minimum B- (70-72%) average during the final two years (4 semesters) of full time undergraduate study. Meeting the minimum requirement (B-) does not guarantee entrance; depending on other criteria (e.g., letters of reference, standardized test scores, academic background relevant to the area to which the applicant has applied, degree of work experience in related fields of study) students may be considered for admission with provisional status. Students on provisional status must obtain a “B” average (70%) in at least two graduate courses during their first two semesters of study to continue in the program. Provisional students will be funded at the same level as regular students.

Degree Requirements

The MSc thesis program requires:

• At least 1.5 graduate course credits, including one mandatory 0.50 credit course (Research Seminar in Environmental Sciences).

• Completion and defense of a thesis on research carried out under the direct supervision of a core faculty member.

The thesis and the oral defense of the thesis are evaluated on a pass/fail basis. An acceptable thesis consists of a defensible account of the student’s research. The project is expected to represent a well-defined research problem, or hypothesis, and should be planned such that the clarity of the underlying rationale, the appropriateness of the technical approach, the research, and the critical evaluation of the results could normally be completed and the thesis defended within six semesters.

MES Program

The MES (coursework Master’s) degree enables students to study the most recent theoretical and technical advances in the environmental sciences through multidisciplinary teaching and research. There are two options to the MES in Environmental Sciences: by coursework + research project and by coursework-only. The MES will promote critical thinking and enhance oral and written communication skills so that graduates can excel in industry, government and other sectors of civil society (e.g., environmental risk assessors/managers, political advisors on policy/law issues in government, senior positions in national and international agencies, etc.).

Admission Requirements

The School’s admission standard for the MES program is the same as the University and requires a four-year, honours science degree with a minimum B- (70-72%) average during the final two years (4 semesters) of full time undergraduate study. Meeting the minimum requirement (B-) does not guarantee entrance; depending on other criteria (e.g., letters of reference, standardized test scores, academic background relevant to the area to which the applicant has applied, degree of work experience in related fields of study) students may be considered for admission with provisional status. Students on provisional status must obtain a “B” average (70%) in at least two graduate courses during their first semester of study to continue in the program. Provisional students will be funded at the same level as regular students.
MES Degree Requirements

Coursework + Project Option
Candidates must complete a minimum of 4.0 credits

- ENVS*6500 [1.0] The Environmental Science Research Project
- ENVS*6501 F [0.5] Advanced Topics in Environmental Science
- ENVS*6502 W [0.5] Seminar in Environmental Science
- Two additional credits from Environmental Sciences courses

The research project may be completed at the University or as part of a placement with an approved non-academic agency. The project may include analysis of a data set (derived from lab, field, or computer simulation) related to the specialization chosen by the student including analyses and interpretations of relevant data (the student may or may not be involved in collecting the data), or major, critical literature review. The outcome of the research project will be a written report and a seminar presented to the department.

Coursework option
Candidates must complete a minimum of 4.0 credits

- ENVS*6501 F [0.5] Advanced Topics in Environmental Science
- ENVS*6502 W [0.5] Seminar in Environmental Science
- Three additional credits from Environmental Sciences courses

Students in either option may select courses from other departments on campus but are advised that access may be restricted and permission may be required by course instructors.

PhD Program

The objectives of the PhD program are to develop highly competent, independent, creative, and critical scientists. Doctoral students of the SES graduate program will provide leadership as scholars in academic institutions, as managers and officers in the industrial research and development sector, research and policy branches within the government sector and in other social institutions. Research in the PhD program is expected to be original and novel, contribute significantly to the relevant research field, and published in high-quality peer-reviewed journals.

The PhD program has three areas of specialization:

- **Earth and Atmospheric Sciences** – Research areas include: soil biology and soil physics, sedimentology, geobiology, soil chemistry, geomicrobiology, and air quality, soil and land resource management
- **Ecosystem Science and Biodiversity** – Research areas include: toxicology, pest management, management of agroecosystems, microbiology, forest systems, agroforestry, climate change biology, ecology, and insect systematics and taxonomy
- **Plant & Environmental Health** – Research areas include: plant biology, plant pathology, epidemiology, soil-plant interactions, biotechnology, molecular biology, forest systems, agroforestry, and climate change biology

Admission Requirements

Admission to the PhD program is generally restricted to students with a recognized MSc degree in a related field obtained with a minimum academic standing of "A-" (≥80%) in their postgraduate studies. Students who meet the minimum University requirement (73-76%) but not the School requirement (≥80%) may be considered depending on other criteria (e.g., letters of reference, standardized test scores, academic background relevant to the area to which the applicant has applied, degree of work experience in related field of study) for admission with provisional status. Students on provisional status must obtain an "A-" (≥80%) average in at least two graduate courses during their first two semesters of study to continue in the program. Provisional students will be funded at the same level as regular students. In exceptional cases, students may enter the PhD program directly from a BSc (Hons) if they have the minimum requirements as defined by the Office of Studies, University of Guelph.

Degree Requirements

The PhD program requires:

- Completion of one mandatory 0.50 credit course (Research Seminar in Environmental Sciences).
- Successful completion of a qualifying exam within five semesters of first registration in the program
- Successful defense of a thesis describing original research, carried out under the direct supervision of a core faculty member.

In the PhD program, the qualifying exam, thesis and the oral defense of the thesis are evaluated on a pass/fail basis. An acceptable PhD thesis consists of an authoritative report of the student’s research. The project is expected to represent a well-defined research problem, or hypothesis, and should be planned such that the research could normally be completed and the thesis defended in nine semesters (12 semesters for those students transferring from the MSc program). The research described in the thesis must represent a significant contribution to knowledge in that field. Emphasis is therefore placed on the quality of the presentation, maturity in scholarship, breadth and depth of the work, and critical judgement. Successful completion of the PhD thesis occurs when the research is judged to be sufficiently meritorious to warrant publication in reputable, peer-reviewed journals in its field. PhD students are normally expected to have published, or have “in-press”, one or more papers in peer-reviewed journals prior to the defense. In cases involving intellectual property, it is recognized that publication may not always be immediately possible. In such cases, a Pass will require that the committee is satisfied that, in their opinion, the work is of sufficient quality and originality that it would meet the standards for peer-reviewed publications.

Graduate Diploma Program

The objective of the Graduate Diploma is to provide highly focused training, education, and practical experience in Environmental Sciences. The Graduate Diploma is well-suited to recent undergraduate students, graduate students, and professionals seeking enhanced practical knowledge and experience associated with the application of current technologies and methods.

Admission Requirements

The minimum requirement for admission to the Graduate Diploma in Environmental Sciences is a baccalaureate, in an honours program or the equivalent, from a recognized university or college. The applicant must have achieved an average standing of at least second-class honours (B+ standing) in the work of the last four semesters or the last two undergraduate years (full-time equivalent). The program directors may waive some requirements for students with substantive work experience. Students will apply to the Department’s Graduate Admissions Committee through the normal University application process.

Diploma Requirements

The Graduate Diploma requires:

- Completion of 2.0 credits (four 0.5 credit courses):
  - ENVS*6503 [0.50] Biogeochemistry of Wetlands
  - ENVS*6504 [0.50] Classification and Assessment of Aquatic Systems
  - ENVS*6505 [0.50] Soil Survey and Interpretation
  - ENVS*6506 [0.50] Forest Ecosystem Patterns and Processes

Collaborative Programs

Toxicology MSc/PhD

The School of Environmental Sciences participates in the MSc/PhD program in Toxicology. The faculty members' research and teaching expertise includes aspects of toxicology; they may serve as advisors for MSc and PhD students.

Please consult the Toxicology listing for a detailed description of the MSc/PhD collaborative program and faculty associated with this program.

International Development Studies MSc

The School of Environmental Sciences participates in the MSc program in International Development Studies.

Please consult the International Development Studies listing for a detailed description of this program.

Courses

| ENVS*6000 Physical Environment of Crops and Forests F [0.50] |
|-----------------------------------------------------------------
| Recent literature on temperature, humidity, radiation, wind, gases and particles in crop and forest environments; evapotranspiration and photosynthesis of plant communities; modification of microclimates; applied micrometeorology. |
| Offering(s): Offered in even-numbered years. |
| Department(s): School of Environmental Sciences |

| ENVS*6040 Molecular Basis of Plant-Microbe Interactions F [0.50] |
|-----------------------------------------------------------------
| A lecture and seminar course on recent advances in the study of plant-microbe interactions. Topics included are the biochemical, physiological and genetic aspects of plant defences and the interaction of plants with pathogenic and mutualistic bacteria, fungi and viruses. Offered in conjunction with PBIO*4000. Extra work is required of graduate students. |
| Restriction(s): Credit may be obtained for only one of ENVS*6040 or PBIO*4000. |
| Department(s): School of Environmental Sciences |

March 9, 2015
ENVS*6050 Micrometeorology W [0.50]
Exchanges of mass, momentum and energy between the surface and the atmosphere will be studied in the context of larger-scale meteorology. Diffusion and turbulence in and above plant canopies will be examined from theoretical and practical perspectives. Topics include time-series analysis, micrometeorological measurement theory, and basic principles of atmospheric science.
Offering(s): Offered in even-numbered years.
Department(s): School of Environmental Sciences

ENVS*6060 Meteorological Instrumentation W [0.50]
Theoretical and practical aspects of electronic circuits, sensors, and equipment used in meteorological research.
Prerequisite(s): ENVS*4120 or equivalent
Department(s): School of Environmental Sciences

ENVS*6190 Environmental Microbial Technology U [0.50]
Current topics in selected areas of environmental microbial technology. An emphasis will be placed on the physiology and genetics of microorganisms useful in environmental biotechnology. The course involves extensive use of current journal articles.
Restriction(s): Undergraduate degree in microbiology or related discipline.
Department(s): School of Environmental Sciences

ENVS*6241 Special Topics in Atmospheric Science F,U [0.25]
The content is determined by the interests of the students and the availability of instructors. Topics may include aspects of statistics for climatology, animal biometeorology, air pollution meteorology, and hydrometeorology.
Department(s): School of Environmental Sciences

ENVS*6242 Special Topics in Atmospheric Science F,W,S [0.50]
Students will explore topics within atmospheric science such as climatology, animal biometeorology, air pollution meteorology, and hydrometeorology. Normally, an independent course of study will be developed with a faculty advisor and one or more students in the semester prior to enrollment. Occasionally, the course will be offered as a lecture/seminar in a particular area, to be advertised in the semester prior to offering. Typically, students will produce a major paper or scientific report.
Restriction(s): Instructor consent required.
Department(s): School of Environmental Sciences

ENVS*6250 Soil Genesis and Classification F [0.50]
A discussion of world soil regions for students not specializing in soil genesis.
Department(s): School of Environmental Sciences

ENVS*6280 Soil Physics W [0.50]
The soil as a physical system with special regard to soil water movement and the diffusion and dispersion of chemical substances. Numerical techniques and computer solutions will be developed.
Department(s): School of Environmental Sciences

ENVS*6340 Colloquium in Insect Systematics W [0.25]
Weekly discussions and seminars dealing with current topics in systematic entomology.
Offering(s): Offered in odd-numbered years.
Department(s): School of Environmental Sciences

ENVS*6350 Soil Organic Matter and Biochemistry F [0.50]
(1) Soil organic matter characterization, (2) dynamics of soil organic matter, (0.5) nutrient cycling.
Offering(s): Offered in odd-numbered years.
Department(s): School of Environmental Sciences

ENVS*6360 Soil and Water Chemistry F [0.50]
Thermodynamics of soil solutions; solution-solid phase equilibria; reaction kinetics; computer modelling of solute-mineral interactions.
Department(s): School of Environmental Sciences

ENVS*6380 Advanced Soil Chemistry W [0.50]
The mathematical development of solute speciation models for aqueous solutions, surface complexation models for inorganic soil constituents and discrete and continuous functional group models for humic materials.
Department(s): School of Environmental Sciences

ENVS*6400 Soil Nitrogen Fertility and Crop Production W [0.50]
Emphasis will be placed on soil N transformations and processes, and N sources for crops; field experimentation methods; environmental issues.
Department(s): School of Environmental Sciences

ENVS*6440 Field Sampling Strategies and Geostatistics W [0.50]
Concepts and practical aspects of collecting, synthesizing and interpreting data from spatially and temporally variable and/or correlated fields. Hands-on experience in describing spatial structure of large data sets (supplied by student or instructor) using available software.
Offering(s): Offered in even-numbered years.
Department(s): School of Environmental Sciences

ENVS*6451 Special Topics in Environmental Biology F,W,S [0.25]
This course provides graduate students, either individually or in groups, with the opportunity to pursue topics in the major areas of departmental specialization such as plant protection, entomology, and environmental management. This course may be offered in any of lecture, reading/seminar, or individual project formats.
Department(s): School of Environmental Sciences

ENVS*6452 Special Topics in Ecosystem Science and Biodiversity F,W,S [0.50]
Students will explore topics within ecosystem science such as terrestrial ecology, forest science, aquatic systems and environmental biology. Normally, an independent course of study will be developed with a faculty advisor and one or more students in the semester prior to enrollment. Occasionally, the course will be offered as a lecture/seminar in a particular area, to be advertised in the semester prior to offering. Typically, students will produce a major paper or scientific report.
Restriction(s): Instructor consent required.
Department(s): School of Environmental Sciences

ENVS*6500 Environmental Sciences Research Project U [1.00]
A concise, critical review of an area of study related to the field chosen by the student including analyses and interpretation of relevant data. The project will be written in the form of a scientific paper and presented to the department as a seminar.
Restriction(s): Available only to students registered in the Environmental Sciences: MES program.
Department(s): School of Environmental Sciences

ENVS*6501 Advanced Topics in Environmental Science F [0.50]
Using a case-study approach with material drawn from current and historical issues, students will develop an advanced understanding of current issues in the environmental sciences, including the underlying science basis, how the issues were managed, and the effectiveness of associated policies.
Restriction(s): Instructor consent required. Preference will be given to students in the MES program.
Department(s): School of Environmental Sciences

ENVS*6502 Seminar in Environmental Sciences W [0.50]
This course will provide an interactive and critical forum for students to participate in an advanced discussion and debate on current environmental issues, and to learn about the practical skill set(s) required by various employment sectors in solving these issues.
Restriction(s): Instructor consent required. Preference will be given to students in the MES program.
Department(s): School of Environmental Sciences

ENVS*6503 Biogeochemistry of Wetlands S [0.50]
Wetlands have been called Nature’s kidneys, and are a vital part of Ontario’s environmental and economic sustainability. Wetland soil and water are critical substrates for maintaining healthy ecosystems and controlling contaminant flowers. In this course, you will learn sampling and analysis techniques for conducting surveys and assessments of these crucial ecosystems. Basic chemistry (1st year university) is used as the foundation for exploring important biogeochemical cycles of organic matter.
Department(s): School of Environmental Sciences

ENVS*6504 Classification and Assessment of Aquatic Systems S [0.50]
A two-week course covering concepts and techniques related to the physiographical, hydrological, and biological characterization of freshwater aquatic systems. The course will involve periodic excursions to regional water bodies in southern Ontario for the purpose of demonstrating sample techniques and conducting hydrological assessments.
Department(s): School of Environmental Sciences

ENVS*6505 Soil Survey and Interpretation S [0.50]
A two-week course covering concepts and techniques related to the characterization of soil in the landscape. Focus will be given to soilscape encountered in southern Ontario, and involves a multi-day excursion to examine the distribution of soils in this region.
Department(s): School of Environmental Sciences
**ENVS*6500 Forest Ecosystem Patterns and Processes S [0.50]**

A two-week course covering concepts and techniques related to the ecological characterization of forests. Focus will be on southern and mid-central Ontario forests and will involve periodic excursions to various locations for the purpose of demonstrating theoretical principles, sampling techniques, in-field measurements, and collecting samples for in-lab assessment and metric determination.

*Department(s):* School of Environmental Sciences

**ENVS*6520 Pollination Biology F [0.50]**

Pollination biology is discussed from both entomological and botanical viewpoints, stressing fundamental and applied aspects. (Offered in the Fall semester or by arrangement with the professor).

*Department(s):* School of Environmental Sciences

**ENVS*6540 Integrated Pest Management - Insects W [0.50]**

Concepts associated with integrated pest management of insect pests of various plant hosts will be introduced to students in an interactive lecture and laboratory format. Experiential learning and skill development, associated with economic entomology, will also be emphasized.

*Offering(s):* Offered in even-numbered years.

*Restriction(s):* Credit may be obtained for only one of ENVS*6540 or ENVS*6581.

*Department(s):* School of Environmental Sciences

**ENVS*6550 Bioactivity and Metabolism of Pesticides W [0.50]**

The basis of pesticide bioactivity will be examined, with emphasis on mode of action, structure-activity relationships and analytical methods. Students will participate in seminars and prepare a research paper and/or conduct a laboratory research project in consultation with the instructor(s). Students in this course are expected to attend the lectures for ENVS*4240.

*Department(s):* School of Environmental Sciences

**ENVS*6560 Forest Ecosystem Dynamics F [0.50]**

An exploration of energy flow and distribution in forest ecosystems. Both components will be examined in the context of biomass and productivity, perturbations and resilience. Some aspects of modelling will be covered. (Offered in odd-numbered years)

*Department(s):* School of Environmental Sciences

**ENVS*6581 Special Topics in Soil Science U [0.25]**

Students will discuss issues that are relevant to the current research of faculty or visiting faculty. Generally presented as a combination of lectures, student seminars and written projects.

*Department(s):* School of Environmental Sciences

**ENVS*6582 Special Topics in Soil Science F,W,S [0.50]**

Students will explore topics within soil science such as soil physics, pedology, soil chemistry and microbiology. Normally, an independent course of study will be developed with a faculty advisor and one or more students in the semester prior to enrollment. Occasionally, the course will be offered as a lecture/seminar in a particular area, to be advertised in the semester prior to offering. Typically, students will produce a major paper or scientific report.

*Restriction(s):* Instructor consent required.

*Department(s):* School of Environmental Sciences

**ENVS*6600 Glacial Sedimentary Environments U [0.50]**

Students will learn about the processes and deposits of glacial environments as well as the use of sedimentary records to reconstruct past glacial environments. Case studies from modern to ancient glacial sedimentary environments will be used. Field trip included. (Offered only as needed)

*Department(s):* School of Environmental Sciences

**ENVS*6710 Advanced Sedimentology U [0.50]**

Topics covered through case studies of sedimentary deposits and environments include facies analysis, large scale controls, and novel techniques in sedimentology. Topics may also include specific sedimentary environments or specific sedimentary deposits such as turbidites, cross-bedded strata or seismites depending on student interest. (Offered only as needed)

*Department(s):* School of Environmental Sciences

**ENVS*6730 Special Topics in Environmental Earth Science F,W,S [0.50]**

Students will explore topics within environmental earth science such as glacial geology, environmental geophysics and hydrogeology. Normally, an independent course of study will be developed with a faculty advisor and one or more students in the semester prior to enrollment. Occasionally, the course will be offered as a lecture/seminar in a particular area, to be advertised in the semester prior to offering. Typically, students will produce a major paper or scientific report.

*Restriction(s):* Instructor consent required.

*Department(s):* School of Environmental Sciences

**ENVS*6881 Special Topics in Land Resources Management U [0.25]**

Students will discuss issues that are relevant to the current research of faculty or visiting faculty. Generally presented as a combination of lectures, student seminars and written projects.

*Department(s):* School of Environmental Sciences

**ENVS*6882 Special Topics in Plant and Environmental Health F,W,S [0.50]**

Students will explore topics within plant and environmental health such as integrated pest management, apiculture and environmental microbiology. Normally, an independent course of study will be developed with a faculty advisor and one or more students in the semester prior to enrollment. Occasionally, the course will be offered as a lecture/seminar in a particular area, to be advertised in the semester prior to offering. Typically, students will produce a major paper or scientific report.

*Restriction(s):* Instructor consent required.

*Department(s):* School of Environmental Sciences

**ENVS*6900 Research Seminar in Environmental Sciences F-W [0.50]**

This course provides information and training in scientific presentations. Students will prepare a written essay based on their research and make an oral presentation of the proposed studies. Students are expected to take this course in their second or third semester of study.

*Department(s):* School of Environmental Sciences
European Studies

Exploring European Identities: 3 to 4 consecutive semesters in length, program requirements to be completed mainly at Guelph, with the option of a semester abroad (in France, Germany, Italy or Spain).

Admission Requirements

Admission requirements and procedure as well as program requirements for the two streams differ, and are listed separately below.

Exploring European Identities

Candidates for admission must hold a BA in an honours program or equivalent from a recognized university or college. The applicant must have achieved a grade average of at least B+ in the work of his/her last four semesters or last two undergraduate years (full-time equivalent). A reading competence in a European language in addition to English is recommended.

Crossways in Cultural Narratives

Candidates for admission must have a Bachelor’s Degree in an honours program or equivalent in the field of Arts, Languages or Social Sciences; particularly a Modern Languages Degree (e.g. language, literature, thought and cultural studies programs of a university or college). The applicant must have achieved a grade average of at least B+ or equivalent, or be among the top 5-10 students of their year. Applicants must also possess a near-native, degree-level command of TWO of the following European Languages: English, French, Italian, Portuguese, and Spanish – together with a basic knowledge of, or a willingness to acquire, a THIRD European language.

Applications should be made through the Mundus Masters consortium.

Degree Requirements

Exploring European Identities

A minimum of 4.00 credits is required for completion of the M.A., to consist of the following:

1. A minimum of six semester courses, each worth 0.5 credits, including:
   - a) Core courses: Team-taught courses on European Identities (EURO*6000) and Research Methods (EURO*6010) and involves a compulsory mobility component, whereby the student attends 3 different universities in 3 different member-states of the Consortium.

2. Crossways in Cultural Narratives

   Candidates for admission must have a Bachelor’s Degree in an honours program or equivalent in the field of Arts, Languages or Social Sciences; particularly a Modern Languages Degree (e.g. language, literature, thought and cultural studies programs of a university or college). The applicant must have achieved a grade average of at least B+ or equivalent, or be among the top 5-10 students of their year. Applicants must also possess a near-native, degree-level command of TWO of the following European Languages: English, French, Italian, Portuguese, and Spanish – together with a basic knowledge of, or a willingness to acquire, a THIRD European language.

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   - a) Core courses: Team-taught courses on European Identities (EURO*6000) and Research Methods (EURO*6010), b) Electives: 2.0 credits to be chosen from a list of restricted electives.
   - 2.0 credits to include Team-taught courses on European Identities (EUR O*6100), worth 1.0 credit of a minimum average for graduation is 70%

Crossways in Cultural Narratives

Candidates for admission must have a Bachelor’s Degree in an honours program or equivalent in the field of Arts, Languages or Social Sciences; particularly a Modern Languages Degree (e.g. language, literature, thought and cultural studies programs of a university or college). The applicant must have achieved a grade average of at least B+ or equivalent, or be among the top 5-10 students of their year. Applicants must also possess a near-native, degree-level command of TWO of the following European Languages: English, French, Italian, Portuguese, and Spanish – together with a basic knowledge of, or a willingness to acquire, a THIRD European language.

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   - a) Core courses: Team-taught courses on European Identities (EURO*6000) and Research Methods (EURO*6010), b) Electives: 2.0 credits to be chosen from a list of restricted electives.

2. Crossways in Cultural Narratives

   Candidates for admission must have a Bachelor’s Degree in an honours program or equivalent in the field of Arts, Languages or Social Sciences; particularly a Modern Languages Degree (e.g. language, literature, thought and cultural studies programs of a university or college). The applicant must have achieved a grade average of at least B+ or equivalent, or be among the top 5-10 students of their year. Applicants must also possess a near-native, degree-level command of TWO of the following European Languages: English, French, Italian, Portuguese, and Spanish – together with a basic knowledge of, or a willingness to acquire, a THIRD European language.

   Applications should be made through the Mundus Masters consortium.

Degree Requirements

Exploring European Identities

A minimum of 4.00 credits is required for completion of the M.A., to consist of the following:

1. A minimum of six semester courses, each worth 0.5 credits, including:
   - a) Core courses: Team-taught courses on European Identities (EURO*6000) and Research Methods (EURO*6010), b) Electives: 2.0 credits to be chosen from a list of restricted electives.

2. Crossways in Cultural Narratives

   Candidates for admission must have a Bachelor’s Degree in an honours program or equivalent in the field of Arts, Languages or Social Sciences; particularly a Modern Languages Degree (e.g. language, literature, thought and cultural studies programs of a university or college). The applicant must have achieved a grade average of at least B+ or equivalent, or be among the top 5-10 students of their year. Applicants must also possess a near-native, degree-level command of TWO of the following European Languages: English, French, Italian, Portuguese, and Spanish – together with a basic knowledge of, or a willingness to acquire, a THIRD European language.

   Applications should be made through the Mundus Masters consortium.

Degree Requirements

Exploring European Identities

A minimum of 4.00 credits is required for completion of the M.A., to consist of the following:

1. A minimum of six semester courses, each worth 0.5 credits, including:
   - a) Core courses: Team-taught courses on European Identities (EURO*6000) and Research Methods (EURO*6010), b) Electives: 2.0 credits to be chosen from a list of restricted electives.
Crossways in Cultural Narratives
A total of 6.00 credits (120 ECTS minimum) must be obtained: 4.00 for coursework, 1.75 for a thesis of 20,000 words (0.25 or 0.50 credits for the thesis proposal depending on whether students opt for an internship or not, 1.50 for the thesis). Students may opt for an internship worth 0.25 credits.

In compliance with the compulsory mobility component, students are required to obtain 2.00 credits (40 ECTS) from each of 3 universities chosen from the 8 member institutions:

• University of Perpignan Via Domitia, France
• University of Bergamo, Italy
• University of Guelph, Canada
• New University of Lisbon, Portugal
• Adam Mickiewicz University, Poland
• University of Santiago de Compostela, Spain
• University of Saint Andrews, United Kingdom
• University of Sheffield, United Kingdom

The required mobility pattern is as follows: Semester 1 – University A, Semesters 2 & 3 – University B (known as the home university), Semester 4 – University C.

For further details of the program and for downloadable application, visit the Crossways website at

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
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<tbody>
<tr>
<td>ECON*6370</td>
<td>Economic Development in Historical Perspective</td>
<td>0.50</td>
</tr>
<tr>
<td>GEOG*6400</td>
<td>Urbanization and Development</td>
<td>0.50</td>
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<tr>
<td>HIST*6300</td>
<td>Topics in Modern Europe I</td>
<td>0.50</td>
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<tr>
<td>HIST*6310</td>
<td>Topics in Modern Europe II</td>
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<tr>
<td>HIST*6380</td>
<td>Topics in Early Modern European History</td>
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<tr>
<td>PHIL*6140</td>
<td>Contemporary European Philosophy I</td>
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<tr>
<td>PHIL*6150</td>
<td>Contemporary European Philosophy II</td>
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<td>PHIL*6200</td>
<td>Problems of Contemporary Philosophy</td>
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<td>UNIV*6500</td>
<td>International Study Option</td>
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</tr>
<tr>
<td>PHIL*6900</td>
<td>Crossways in Cultural Narratives</td>
<td>0.50</td>
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</tbody>
</table>

All are reading courses for special interests.

EURO*6000 Research Methods F [0.50]
This course will: a) introduce students to the field and research methods of European Studies, b) familiarize them with field-relevant research skills and methodologies.

Department(s): School of Languages and Literatures

EURO*6010 European Identities W [0.50]
This core course examines historical and contemporary ideas of the 'nation' and of 'Europe' and their relationships to identity, from an interdisciplinary perspective. Using core concepts that span various disciplines, the course investigates the construction and implications of national, minority, European and EU identities.

Department(s): School of Languages and Literatures

EURO*6020 Myth, Fairy Tales and European Identities U [0.50]
An exploration of how myths and fairy tales have been refashioned in European literature, music and art to express political, social or psychological concerns. Examples will be chosen from different national cultures and epochs. Content will vary according to the interests of the instructor(s).

Department(s): School of Languages and Literatures

EURO*6030 Women and the Arts in Europe: Seeking Expression U [0.50]
This course examines women's participation in the arts in Europe. Content will vary according to the interests of the instructor(s). Possible approaches: an examination of women's relationships to European cultural institutions, or the extent of women's participation in central pan-European artistic movements.

Department(s): School of Languages and Literatures

EURO*6040 Europe and the Discourse of Civilization U [0.50]
This course explores the genealogy of the idea of 'civilization' with respect to Europe as it emerges from the writings of medieval, renaissance, early modern and modern art historians, and its role in contemporary political discourse. Literature and music may also be included.

Department(s): School of Languages and Literatures

EURO*6050 European Integration and the EU U [0.50]
This course examines the contributions of international relations, comparative politics and/or governance/public policy to the study of European integration and the EU. Students will learn about the major concepts and theories of these sub-disciplines of political science to analyze the development, institutions, policy processes, policies and politics of the EU.

Department(s): School of Languages and Literatures

EURO*6060 Social/Political Philosophy and European Studies

EURO*6070 Topics in Comparative European Culture I U [0.50]
An examination of a topic, period, or region in any aspect of European culture. The content of the course will vary according to the topic and the professor teaching the course at any given time. It will also differ from the content of Topics in Comparative European Culture II.

Department(s): School of Languages and Literatures

EURO*6072 Topics in Comparative European Culture II U [0.50]
An examination of a topic, period, or region in any aspect of European culture. The content of the course will vary according to the topic and the professor teaching the course at any given time. It will also differ from the content of Topics in Comparative European Culture I.

Department(s): School of Languages and Literatures

EURO*6080 Directed Reading Course F,W,S [0.50]
An independent reading project carried out by the student under the supervision of a European Studies graduate faculty member.

Department(s): School of Languages and Literatures

EURO*6100 Research Project U [1.00]
This research project will result in a major paper of about 12,000 words. The student chooses a topic with guidance of a faculty member. Oral examination of this work is required. The topic must be approved by the Graduate Committee.

Department(s): School of Languages and Literatures
Family Relations and Applied Nutrition

The Department of Family Relations and Applied Nutrition offers MSc and PhD level graduate study in three fields:

- Applied Human Nutrition (MSc, PhD)
- Family Relations and Human Development (MSc, PhD)
- Couple and Family Therapy (MSc)

An accredited Master of Applied Nutrition (MAN) professional degree program is also offered. Current and prospective graduate students are also directed to the department website. The inter-disciplinary faculty in the department have expertise in psychology, sociology, sexuality, adult development, education, social work, culture, family therapy, nutrition and physical activity. The overarching theme of the work in the department is enhancing lives through science and practice. The faculty share a common interest in expanding and applying knowledge about family relations and human development, especially in relation to the social, emotional, psychological, nutritional, and economic well-being of families across the life cycle. Graduate programs with an emphasis on nutrition and metabolism are available in the Department of Human Health and Nutritional Sciences; those with an emphasis on animal nutrition are available in the Department of Animal and Poultry Science.

Canadian Police Information Check

Various ministries within the Government of Ontario require that current criminal reference checks be completed for all students, volunteers and successful candidates for employment who care for, or provide service to, children or vulnerable adults. Students enrolled in practica or field placement courses will be required to submit to the agency with which they are placed, personal information about any criminal convictions and pending criminal charges. The cost of acquiring this criminal reference check from the student's local police department (Canadian Police Information Check) will be the responsibility of each student. Applicants to the MSc in the field of Couple and Family Therapy must submit the original results of this check to the Department of Family Relations and Applied Nutrition prior to beginning in September.

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Tricia van Rhijn
BASc, MSc, PhD Guelph - Assistant Professor

MSc Program

Applied Human Nutrition

The MSc program in the field of Applied Human Nutrition incorporates both physiological and behavioural aspects of human nutrition and spans all age groups in its focus on the role of nutrition in human health and well-being. Faculty have specific interests in clinical and community nutrition, physical activity, nutrition assessment, education, health services research, inter-professional practice and epidemiology. This field of study provides a strong foundation in research and nutrition methodology through required courses and thesis work. The MSc in Applied Human Nutrition normally requires two years of full-time study.

Family Relations and Human Development

The MSc program in the field of Family Relations and Human Development takes an interdisciplinary approach to the study of family dynamics and individual development across the lifespan. This field of study emphasizes a balance between theory, empirical research and practice in graduate training. Students have many options for building an individualized program of study combining coursework and thesis research. Building on core theory and methodology courses, students choose from professional and applied courses as well as courses on specialized topics. The area of study has particular strengths in the following areas: child and adolescent development, parent-child and family relations, human sexuality, culture, adult development and gerontology, well-being, evidence-based practice, and social policy. The MSc in Family Relations and Human Development normally requires two years of full-time study.

Couple and Family Therapy

The MSc program in the field of Couple and Family Therapy is a program of study in theory, research, and practice, accredited by the Commission on Accreditation for Marriage and Family Therapy Education of the American Association for Marriage and Family Therapy. The curriculum is designed to produce sophisticated therapists and scholars by integrating contemporary theory, research competence, and systemic approaches to therapy in the understanding and treatment of couples, families, and individuals. This integrated course of study is coupled with high standards of professional and ethical conduct, attention to broader social issues that impact couples and families, and an emphasis on issues of diversity, power, and privilege. Applicants to this field have two options (1) thesis, and (2) non-thesis - by which to complete the degree. The thesis option is recommended for those students intending to pursue PhD studies at the University of Guelph or elsewhere. The MSc in Couple and Family Therapy requires two years of full-time study.

Admission Requirements

General admission requirements for these fields of study include an honours degree or equivalent with an average at least 75% in the last two years of study (or 20 credits).
**Family Relations and Human Development**

For all students in the MSc program in the field of Family Relations and Human Development, a total of 3.75 credits will be chosen in consultation with the student's advisor and advisory committee.

Core courses include:
- FRAN*6000 [0.50] Research Methods
- FRAN*6010 [0.50] Applied Statistics
- FRAN*6020 [0.50] Qualitative Methods
- FRAN*6340 [0.50] Interdisciplinary Perspectives in Family Relations and Human Development
- FRAN*6330 [0.25] Research Seminar

In addition, students must complete a research thesis and are required to take a minimum of three (3) additional elective graduate courses (1.5 credits) related to their program of study.

**Couple and Family Therapy**

The intensive curriculum in Couple and Family Therapy has been designed to enable students to achieve an integration of theory, practice, and research. Clinical training in the MSc in CFT is guided by a systemic perspective, with emphasis on narrative, solution oriented, emotionally-focused and dialogic approaches. Attention to issues of gender, race, class, ethnicity, sexual identity, and culture as well as experiences of oppression and abuse are infused through all aspects of the curriculum.

Students are expected to develop competence in research. Students may choose to write a thesis, by conducting a research study, or they may choose the major research paper (non-thesis) option, and write a critical paper on a selected clinical topic. The thesis option is recommended for those students intending to pursue PhD studies at the University of Guelph or elsewhere. Thesis students will take additional courses to support their thesis research project (see the courses in the list below). Students completing the degree by the non-thesis option, take FRAN*6350, Major Paper.

Clinical training consists of four continuous practica (FRAN*6090) within the on-site Couple and Family Therapy Centre, plus an externship in a community agency (FRAN*6095). Each onsite practicum requires roughly 300 hours of student engagement (direct and indirect client service, supervision, and class time) over the semester. The externship is 350-400 hours over the semester and requires students to travel up to 100 km to an agency where they will complete the remaining hours required for completion of the program. Prior to graduation the CFT student must accumulate 500 hours of direct therapy work with clients, with at least 250 hours (of the 500 hours) working with couples and/or families. Each practicum student receives a minimum of one hour of individual supervision for every five hours of client in-session contact. In addition, each student participates in a weekly supervision group with a student to supervisor ratio of no more than 8:1. Supervision modalities include live supervision, live observation, video/audio-observation, and case consultation. All program faculty are Clinical Members and Approved Supervisors or Supervisor Candidates of the American Association for Marriage and Family Therapy (AAMFT).

For all students in the MSc in the field of Couple and Family Therapy, a minimum of 9.25 graduate credits are required, including the following:

- FRAN*6070 [0.50] Sexual Issues and Clinical Interventions Across the Life Span
- FRAN*6080 [0.50] Special Topics in Couple and Family Therapy
- FRAN*6090 [0.50] Practicum in Couple and Family Therapy*
- FRAN*6095 [0.50] Externship in Couple and Family Therapy
- FRAN*6100 [0.50] Clinical Issues in Couple and Family Therapy*
- FRAN*6120 [0.50] Theories and Methods of Family Therapy I
- FRAN*6130 [0.50] Theories and Methods of Family Therapy II
- FRAN*6140 [0.50] Professional Issues
- FRAN*6160 [0.50] Introduction to Systemic Practice in Couple and Family Therapy
- FRAN*6180 [0.50] Research Issues in Couple and Family Therapy

**Note**

* Students take FRAN*6090 and FRAN*6100 four times throughout their course of study. As such, each course totals 2.0 credits.

In addition to the above required courses, students take one restricted elective (0.50 credits) in the area of human or lifespan development. Course options for this restricted elective may include:

- FRAN*6200 [0.50] Special Topics in Family Relations and Human Development
- FRAN*6310 [0.50] Family Relationships Across the Life Span
- FRAN*6320 [0.50] Human Sexuality Across the Life Span
- FRAN*6340 [0.50] Interdisciplinary Perspectives in Family Relations and Human Development
- FRAN*6370 [0.50] Social Development During Childhood and Adolescence
- FRAN*6410 [0.50] Developmental Assessment and Intervention in Childhood and Adolescence
Note

* The special topic of FRAN*6200 must meet the COAMFTE criteria for individual development and family relations.

In addition, for Quantitative thesis students: Three additional courses are required:

- FRAN*6330 [0.25] Research Seminar
- FRAN*6000 [0.50] Research Methods
- FRAN*6010 [0.50] Applied Statistics

For Qualitative thesis students: Two additional courses are required:

- FRAN*6330 [0.25] Research Seminar
- FRAN*6010 [0.50] Applied Statistics

For non-thesis students: One additional course is required:

- FRAN*6350 [1.00] Major Research Paper

Upon completion of the requirements for the emphasis in Couple and Family Therapy, the student will receive an MSc. The transcript will specify Family Relations and Human Development: Couple and Family Therapy.

MAN Program

The MAN program comprises one year (3 semesters) of graduate course work and competency-based practice. The program is designed to meet the professional practice requirements for becoming a registered dietitian and to foster practice-based research skills development.

Students take graduate courses in the three broad areas of competency required for practice: foodservice management, clinical/assessment and community nutrition. These courses focus on the latest research in these fields and provide strong theoretical underpinnings for professional practice. Students increase their knowledge of the field while enhancing their skills in three areas: the research process, critical appraisal and communication. Assignments in the courses apply theories to practice in real-life situations.

Grades will complete the entry-level competencies of Dietitians of Canada (DC). Completion of the competencies will qualify a graduate to write the Canadian Dietetic Registration Examination (CDRE) to become a member of the College of Dietitians of Ontario (CDO), or another provincial dietetic regulatory body. The program is accredited by Dietitians of Canada as a didactic internship. The course work and practicum options permit the pursuit of interests in the various areas of dietetic practice, while meeting the required entry-level dietetic competencies. Students are charged a practicum fee for each semester of the program, in addition to the University academic and non-academic fees.

Admission Requirements

Students applying to the Master of Applied Nutrition Program must have an honours degree within the previous three years from a dietetic program accredited by Dietitians of Canada. Applicants should have a minimum average of at least 75% in the last two years of their undergraduate program. Credit in the following courses is required prior to beginning the program: 1) a one-semester course in applied statistics within the last five years (minimum grade of 75%); and 2) a one-semester course in research methods within the last five years (minimum grade of 75%). These requirements may be in progress at the time of application.

All applications will be reviewed by a committee of Applied Human Nutrition (AHN) graduate faculty. The AHN faculty will interview the most qualified applicants, rank the candidates and forward recommendations to the Assistant VP of Graduate Studies. Program offices should be consulted for admission deadlines.

Degree Requirements

For all students in the MAN program, a minimum of 6.5 graduate credits are required, including the following required courses:

- FRAN*6510 [0.50] Nutrition in the Community
- FRAN*6610 [0.50] Advances in Clinical Nutrition/Assessment I
- FRAN*6710 [1.50] Practicum in Applied Human Nutrition I
- FRAN*6720 [1.50] Practicum in Applied Human Nutrition II
- FRAN*6730 [1.50] Practicum in Applied Human Nutrition III
- FRAN*6740 [0.50] Foodservice Management in Healthcare
- FRAN*6750 [0.50] Final Project in Applied Human Nutrition

Graduates who have completed all required competencies successfully can apply to write the Canadian Dietetic Registration Examination (CDRE) and apply for membership in the College of Dietitians of Ontario (CDO).

PhD Program

Applied Human Nutrition

The PhD program in the field of Applied Human Nutrition is a course of study with a strong research focus involving biological, epidemiological and/or social-science perspectives, typically completed within four years (12 semesters). Each student works closely with an advisory committee in developing an individualized program of study that provides depth and addresses the student’s specific research and professional goals.

Family Relations and Human Development

The PhD program in the field of Family Relations and Human Development is a course of study with a strong research focus, typically completed within four years (12 semesters). Each student works closely with an advisory committee to develop an individualized course of study that provides depth and addresses the student's specific research and professional goals. Building on core theory and methodology courses, students choose from professional and applied courses as well as courses on specialized topics. The PhD in FRHD has particular strengths in the following areas: child and adolescent development, parent-child and family relations, human sexuality, culture and acculturation, adult development and gerontology, evidence-based practice, well-being, and social policy.

Admission Requirements

Applied Human Nutrition

Students applying to the PhD program in the field of Applied Human Nutrition should have an MSc degree (or in progress) in human nutrition or a closely related field. Credit in the following courses is required prior to beginning the program: 1) a one-semester course in applied statistics within the last five years (minimum grade of 75%); 2) a one-semester course in research methods within the last five years (minimum grade of 75%); 3) a one-semester course in biochemistry; 4) a one-semester course in human physiology (at or beyond the second-year level); 5) two one-semester courses in human development/sociology/psychology/communications; and 6) one 300-level and three 400-level one-semester courses in human nutrition. A master's thesis is normally required for admission. These requirements may be in progress at the time of application.

Family Relations and Human Development

Students applying to the PhD program in the field of Family Relations and Human Development should have an MSc degree (or in progress) in Family Relations and Human Development or a closely related degree program (e.g., human development, gerontology, psychology, sociology, couple and family therapy, social work). Credit in the following courses is required prior to beginning the program: 1) a one-semester course in applied statistics within the last five years (minimum grade of 75%); and, 2) a one-semester course in research methods within the last five years (minimum grade of 75%). A master's thesis is normally required for admission.

Students enrolled in the MSc program in the fields of Applied Human Nutrition or Family Relations and Human Development are not automatically considered for the respective PhD program; a formal application is required for those wishing admission. All applications are evaluated with reference to academic, research, and professional experience with particular emphasis on research background and potential.

Degree Requirements

Applied Human Nutrition

PhD students in Applied Human Nutrition are required to take a minimum of 3.75 credits that build a foundation for their research and/or practice:

- FRAN*6000 [0.50] Research Methods
- FRAN*6010 [0.50] Applied Statistics
- FRAN*6020 [0.50] Qualitative Methods
- FRAN*6440 [0.50] Applied Factor Analysis & Structural Equation Modelling
- FRAN*6510 [0.50] Nutrition in the Community
- FRAN*6610 [0.50] Advances in Clinical Nutrition/Assessment I
- FRAN*6550 [0.25] Research Seminar

These required courses and any additional course work will be chosen in consultation with the student's advisor and committee and will depend upon the availability of offerings in the co-operating departments and schools.

Family Relations and Human Development

PhD students in Family Relations and Human Development are required to take a minimum of 3.25 credits that build a foundation for their research and/or practice:

- FRAN*6000 [0.50] Research Methods
- FRAN*6010 [0.50] Applied Statistics
- FRAN*6020 [0.50] Qualitative Methods
- FRAN*6440 [0.50] Applied Factor Analysis & Structural Equation Modelling
- FRAN*6340 [0.50] Interdisciplinary Perspectives in Family Relations and Human Development
- FRAN*6280 [0.50] Theorizing in Family Relations and Human Development
- FRAN*6330 [0.25] Research Seminar

Most students take additional elective graduate courses related to their program of study. The student's selection of elective courses is primarily determined by research specialization. Each of the emphases indicates some broad areas of research that reflect current faculty interests and is intended to help students define an area of research and study.
Courses

Applied Human Nutrition

FRAN*6510 Nutrition in the Community W [0.50]
Concepts and knowledge of nutrition as applied in community and public health nutrition. Examination of current programs in applied nutrition.
Restriction(s): Instructor consent required. Consent required for non-FRAN students.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6550 Research Seminar U [0.25]
Research literature in applied nutrition. Registration for this course occurs in semester 5 for MSc students and semester 7 for PhD students. Students attend weekly seminars in each of the Fall and Winter semesters of their program of study.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6560 Special Topics in Applied Human Nutrition U [0.50]
Contemporary research and special topics in applied human nutrition. Course content is unique to each offering.
Restriction(s): Instructor consent required. Consent required for non-FRAN graduate students.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6610 Advances in Clinical Nutrition/Assessment I F [0.50]
An advanced overview of nutritional assessment and clinical nutrition with emphasis on issues relevant to community based and non-acute care settings. Nutrition assessment methods will be discussed in depth along with emerging issues. Emphasis on clinical nutrition will be integration of theory and practice.
Restriction(s): Instructor consent required. Consent required for non-FRAN students.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6710 Practicum in Applied Human Nutrition I F [1.50]
This course provides a practicum of 3 days per week with a dietetic-related agency or organization to develop and perform dietetic competencies (internship experience). In weekly seminars, students discuss and reflect on theory and dietetic practice issues.
Restriction(s): For MAN students only.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6720 Practicum in Applied Human Nutrition II W [1.50]
This course provides a practicum of 3 days per week with a dietetic-related agency or organization to develop and perform dietetic competencies (internship experience). In weekly seminars, students discuss and reflect on theory and dietetic practice issues.
Prerequisite(s): FRAN*6710
Restriction(s): For MAN students only.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6730 Practicum in Applied Human Nutrition III S [1.50]
This course provides a practicum of 3 days per week with a dietetic-related agency or organization to develop and perform dietetic competencies (internship experience). In weekly seminars, students discuss and reflect on theory and dietetic practice issues.
Prerequisite(s): FRAN*6720
Restriction(s): For MAN students only.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6740 Foodservice Management in Healthcare W [0.50]
Students will critically assess and integrate foodservice management literature and theories to address the multifactorial issues in foodservice operations in healthcare. Case studies presented by expert guests and operational projects will support student synthesis and evaluation of the literature.
Restriction(s): Instructor consent required. Consent required for non-FRAN students.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6750 Final Project in Applied Human Nutrition S,F,W [0.50]
This supervised project includes a written report and oral presentation of an applied research project or a proposal for a research project, consisting of a literature review, purpose, methodology, and analysis plan. Students register in and work on the project for 3 consecutive semesters.
Restriction(s): For MAN students only.
Department(s): Department of Family Relations and Applied Nutrition

Family Relations and Human Development

FRAN*6000 Research Methods F [0.50]
This course includes critical appraisal of the research literature. Research ethics, subject selection, measurement issues, survey design, experimental and quasi-experimental designs, cross-sectional and longitudinal designs, scale development, questionnaire development and sampling strategies are discussed.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6010 Applied Statistics F [0.50]
Students will learn conceptual and practical applications of statistical analyses with emphasis on hypothesis formation, data screening, test selection, inferential statistics, univariate and multivariate analysis of variance/covariance (including repeated measures designs), simple and multiple regression, logistic regression, regression diagnostics, model building and path analytic techniques.
Co-requisite(s): FRAN*6000
Restriction(s): Instructor consent required. Consent required for non-FRAN students.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6020 Qualitative Methods W [0.50]
This course teaches students how to use qualitative methods as a mode of inquiry for understanding issues in human development, nutrition and family relationships. The emphasis is on project design, data collection techniques, analysis strategies and procedures for final write-up.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6070 Sexual Issues and Clinical Interventions Across the Life Span S [0.50]
This course examines sexual issues and clinical interventions from a life span perspective. Focusing upon theory, research and clinical interventions it explores the relationship between issues in sexual development and sexual functioning. This course is offered in a one-week intensive format in coordination with the Guelph Sexuality Conference.
Restriction(s): Instructor consent required.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6200 Special Topics in Family Relations and Human Development U [0.50]
Contemporary research in family relations and human development. Research topics vary.
Restriction(s): Instructor consent required. Consent required for non-FRAN graduate students.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6210 Program Evaluation U [0.50]
An examination of the theoretical principles and practical applications of evaluation issues and strategies. Special attention is given to services for children and families across the life span. (Offered in alternate years.)
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6221 Evidence-Based Practice and Knowledge Translation U [0.50]
The principles of evidence-based practice are examined using various examples of psychosocial, behavioural and health interventions. The levels of evidence, criteria for efficacy and effectiveness, and the importance and limitations of evidence-based practice will be evaluated. The process of moving knowledge derived from high quality evidence into practice will be appraised throughout the course. Students will have the opportunity to build knowledge in their own areas of interest.
Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6260 Practicum in Family Relations and Human Development U [0.50]
Supervised practicum experience in a variety of agencies or services. Interested students are encouraged to discuss this option with their faculty advisor. Placements are arranged on an individual basis subject to the requirements of students' programs of study and must be negotiated with faculty in advance of registration.
Restriction(s): Available to FRAN graduate students only.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6270 Issues in Family-Related Social Policy U [0.50]
This course investigates definitions of social policy, comparative family-related social policy, selected issues in Canadian family policy and frameworks for analysis of social policy. Issues in policy-related research are also explored.
Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6280 Theorizing in Family Relations and Human Development U [0.50]
An examination of the meaning of science and theory in relation to the study of families and human development. Included is a discussion of the major social science paradigms including positivism, critical theory, social constructionism and post-modernity. This course is designed for doctoral students.
Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6310 Family Relationships Across the Life Span U [0.50]
Considers theory and research on family and social relationships across the life span. Examples may include: parent-child, sibling, grandparent, couples, etc.
Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition
Note

The following courses are taken primarily by students in the Couple and Family Therapy emphasis. A limited number of spaces are available in some courses for students outside the Couple and Family Therapy area.

FRAN*6320 Human Sexuality Across the Life Span U [0.50]
This course covers research, theoretical and substantive issues relevant to studying human sexuality across the life span. Topics include: child and adolescent sexuality, sexual identity, sexuality in adulthood and old age, sexual assault, international research and sex education.

Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6330 Research Seminar U [0.25]
Research literature in Family Relations and Human Development. Registration for this course occurs in semester 5 for MSc students and semester 7 for PhD students. Thesis students attend weekly seminars in each of the Fall and Winter semesters of their program of study.

Restriction(s): Available to FRAN graduate students only.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6340 Interdisciplinary Perspectives in Family Relations and Human Development U [0.50]
This course acquaints students with the diverse disciplinary perspectives used in the study of family relations and human development. Substantive research issues provide a forum for integrating the separate perspectives and understanding the reciprocal relationship between individual and family growth and development.

Department(s): Department of Family Relations and Applied Nutrition

FRAN*6370 Social Development During Childhood and Adolescence U [0.50]
A detailed study of factors important to social development and competence from infancy through adolescence.

Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6410 Developmental Assessment and Intervention in Childhood and Adolescence U [0.50]
An examination of psychological difficulties encountered in childhood and adolescence. Special attention will be given to theoretical models used to explain childhood difficulties, categorization systems, assessment techniques, methods of intervention, as well as ethical issues specific to working with children and adolescence.

Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6440 Applied Factor Analysis & Structural Equation Modelling U [0.50]
This course introduces students to exploratory factor analysis, confirmatory factor analysis, and structural equation modeling. Topics include: model selection and validation, multiple group models, measurement equivalence/invariance and latent mean analyses. This course is data-driven and students will learn through hands-on analytic experiences accompanied by in-class lectures and readings.

Offering(s): Offered in alternate years.
Prerequisite(s): FRAN*6000, FRAN*6010
Restriction(s): Instructor consent required. Consent required for non-FRAN students.
Department(s): Department of Family Relations and Applied Nutrition

Couple and Family Therapy

FRAN*6080 Special Topics in Couple and Family Therapy U [0.50]
This graduate seminar will feature research and practice issues in selected areas pertinent to the field of Couple and Family Therapy. Selected topics may vary from offering to offering.

Department(s): Department of Family Relations and Applied Nutrition

FRAN*6090 Practicum in Couple and Family Therapy* U [0.50]
This course features supervised clinical practice in couple and family therapy. It involves regular clinical work with couples, families, and individuals. Students meet with faculty each week for up to six hours of supervision. Supervision over the semester will involve both group and individual/dyadic meetings.

Restriction(s): Available only to students in the Couple and Family Therapy program
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6095 Externship in Couple and Family Therapy S [0.50]
This is an advanced clinical practicum in Couple and Family Therapy. Students are placed in a community agency where they accumulate 10-15 hours per week (over 3 days) of direct clinical contact time. All clinical work is supervised by a clinical supervisor on site. Travel to the community agency is usually required.

Prerequisite(s): FRAN*6090
Restriction(s): Available only to students in the Couple and Family Therapy field of study
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6100 Clinical Issues in Couple and Family Therapy* U [0.50]
This course is taken four times in the two year program of study. Each offering features selected clinical issues; examination of each issue will include the socio-cultural context, theoretical location, and conceptual and practical implications for couple and family therapy.

Restriction(s): Available only to students in the Couple and Family Therapy field of study
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6120 Theories and Methods of Family Therapy I W [0.50]
This course will offer an historical perspective on the development of the field of couple and family therapy beginning with family systems theory, through intergenerational models, to current constructionist approaches. Intervention methods consistent with these conceptual frameworks are examined.

Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6130 Theories and Methods of Family Therapy II F [0.50]
This course explores clinical theory and methods associated with structural, strategic and solution focused models of couple and family therapy. Feminist perspectives and approaches are used to examine power and gender dynamics in therapy.

Offering(s): Offered in alternate years.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6140 Professional Issues U [0.50]
An exploration of ethics in couple and family therapy; legal issues in the practice of family therapy; and professional issues regarding identity, licensure and practice.

Department(s): Department of Family Relations and Applied Nutrition

FRAN*6160 Introduction to Systemic Practice in Couple and Family Therapy F [0.50]
An exploration of family process to understand diversity in family structures and functioning from a systemic conceptual framework. Applied activities in the associated tutorial section focus on developing basic communication, observational, and therapy skills. Student participation in small learning groups supports skill development and integration of theory and practice.

Restriction(s): Available only to students in the Couple and Family Therapy field of study
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6180 Research Issues in Couple and Family Therapy F [0.50]
The focus of this course is on research in Couple & Family Therapy, including issues related to evidence-based practice, therapeutic outcome, and therapeutic process. A selected review of quantitative and qualitative research methods and exemplary research is included.

Offering(s): Offered in alternate years.
Restriction(s): Available to FRAN graduate students only.
Department(s): Department of Family Relations and Applied Nutrition

FRAN*6350 Major Research Paper U [1.00]
The major research paper is an option open only to MSc students within the Couple and Family Therapy area. Students must demonstrate their ability to accurately synthesize and critically evaluate the literature in a specific area of interest. Detailed guidelines are provided.

Restriction(s): Available only to students in the Couple and Family Therapy field of study.
Department(s): Department of Family Relations and Applied Nutrition

* Each of FRAN*6090 and FRAN*6100 are taken four consecutive semesters
Food, Agricultural and Resource Economics

The graduate program in Food, Agricultural and Resource Economics offers opportunities for master of science (MSc) and doctor of philosophy (PhD) studies in agricultural economics. The MSc and PhD are research-oriented degrees which require both course work and a thesis.

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MSc Program

The MSc program in Food, Agricultural and Resource Economics focuses on two major areas of emphasis:

- **Food and agricultural economics**
- **Natural resource and environmental economics**

The aim of the MSc program is to develop in students a fundamental understanding of economic principles and their application in identifying and solving relevant problems related to food, agriculture, and natural resources. The program also strives to develop appropriate analytical, methodological, and communication skills to enable students to analyze agriculture and resource problems effectively and explain their findings.

Admission Requirements

All students entering the Master of Science program must have achieved the University required minimum 70% (B-) average or equivalent. In addition, they are expected to have already taken, the following basic courses:

- Intermediate level micro- and macro-economic theory (ECON*2310 and ECON*2410 or equivalent)
- Calculus and matrix algebra with applications to economics (ECON*2770 or equivalent)
- Intermediate level statistics (ECON*3740 or equivalent).

The Graduate Program Committee examines each application before the student is proposed to the School of Graduate Studies for admission into the program. Potential students are strongly encouraged to take an undergraduate course in advanced microeconomic theory as preparation for the course work in the MSc.

Thesis-based MSc Degree Requirements

In order to satisfy the degree requirements of the thesis-based MSc, students will complete successfully six taught courses, a seminar course, and write and defend an original MSc thesis. The minimum course work requirements (assuming all undergraduate background requirements have been met) are:

- **FARE*6910** [0.50] The Methodologies of Economics
- **FARE*69380** [0.50] Applied Microeconomics for Agricultural Economists
- **FARE*69910** [0.50] Applied Policy Analysis I

PhD Program

The PhD program in Food, Agricultural and Resource Economics focuses on two major areas of emphasis:

- **Food and agricultural economics**
- **Natural resource and environmental economics**

Across these areas there is a focus on both developed and developing countries. Students in the PhD program focus on an area of specialization relevant to their thesis research, plus complete courses in microeconomic theory and economic research methods. All students must complete and defend a thesis in their chosen area of specialization.

Admission Requirements

Minimum University of Guelph admission requirements for a Doctoral program include: 1) a satisfactory baccalaureate; and 2) at the very minimum high second-class honours ('B' standing) in a recognized Master's degree. Students entering the PhD program are expected to have satisfied the requirements, or their equivalents, of the department's MSc degree in Food, Agricultural and Resource Economics. All applicants are required to submit valid GRE (General exam only) scores directly to the department prior to the departmental application deadline.

In cases where a student's master's degree is not equivalent to that offered by the department, the student may initially be accepted into the MSc program and may then apply for transfer to the PhD program at some time during the first three semesters. Applications for transfer must be supported by the Graduate Program Committee and approved by the Board of Graduate Studies. The student does not have to complete all the requirements of the MSc before transferring to the PhD program, but must achieve high academic standing.

Degree Requirements

Students enrolled in the PhD program must successfully complete a program of at least ten taught courses that prepare them for the various elements of the qualification examination and thesis research, as outlined below. However, students that are able to demonstrate a satisfactory level of competence in any of these requirements may have these course requirements adjusted accordingly, subsequent to evaluation and the decision of the Graduate Program Committee.

Microeconomic Theory:

- **ECON*6000** [0.50] Microeconomic Theory I
- **ECON*6010** [0.50] Microeconomic Theory II

Economic Research Methods:

- **ECON*6140** [0.50] Econometrics I
- **ECON*6160** [0.50] Econometrics II
- **FARE*6100** [0.50] The Methodologies of Economics
- **FARE*6970** [0.50] Applied Quantitative Methods for Agricultural Economists

Food, Agricultural and Resource Economics

- **FARE*6920** [0.50] Applied Policy Analysis II
- **FARE*6940** [0.50] Advanced Topics in Agricultural Economics
- **FARE*6960** [0.50] Natural Resource Economics II

Plus ONE from the following:

- **FARE*6940** [0.50] Food Firms, Consumers and Markets II
- **FARE*6960** [0.50] Natural Resource Economics II

Plus ONE other graduate course approved by the student’s advisory committee.

Qualifying Examination

It should be noted that successful completion of the above courses is not necessarily sufficient for qualification to PhD candidacy.
Students are expected to complete successfully the qualifying examination in microeconomic theory that aims to assess a student's understanding of key theoretical concepts. Students are allowed two attempts at this qualifying examination. Students are expected to write the first attempt at this exam in the Summer semester of their first year and (i.e. their third semester in the program), if necessary, the second attempt in the Fall semester of their second year (i.e. their fourth semester in the program). Students that fail the examination at the second attempt will not be permitted to continue.

Collaborative Programs

International Development Studies MA/MSc/PhD

The Department of Food, Agricultural and Resource Economics participates in the International Development Studies (IDS) program. Please consult the International Development Studies listing for a detailed description of the MA/MSc/PhD collaborative programs including the special additional requirements for each of the participating departments.

Courses

Production Economics

FARE*6380 Applied Microeconomics for Agricultural Economists F [0.50]

The objective of this course is to foster a deeper understanding of standard microeconomic concepts and their application to a wide variety of topics in food, agricultural, and resource economics. Emphasis is placed on what tool(s) to use in a wide variety of circumstances to address real life problems. Topics will include decisions by firms and consumers, market equilibrium, and production decisions.

Prerequisite(s): ECON*2770 or equivalent, ECON*2310 or equivalent, ECON*3740 or equivalent

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6970 Applied Quantitative Methods for Agricultural Economists F [0.50]

This course exposes students to the empirical tools agricultural economists use when conducting research. Emphasis is placed on what tool(s) to use in a variety of circumstances. Topics covered will include advanced econometric techniques, optimization and simulation modelling. Students will also be exposed to the different quantitative software packages used in empirical research.

Prerequisite(s): ECON*3740 or equivalent and ECON*2770 or equivalent

Department(s): Department of Food, Agricultural and Resource Economics

Agricultural Policy and Trade

FARE*6680 Food Security and the Economics of Agri Food Systems in Developing Countries F [0.50]

The aim of this course is to understand the nature of food security in developing countries and relations with the economic performance of the agri food system. Towards this aim, the course focuses on both the agrifood system’s role in the supply of nutritious food and its importance as a source of livelihood and as a driver of overall processes of economic development.

Prerequisite(s): ECON*1050 or equivalent, ECON*1100 or equivalent

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6910 Applied Policy Analysis I W [0.50]

An overview of domestic and international agrifood policies and an introduction to the concepts and methods used to evaluate domestic trade policies.

Prerequisite(s): FARE*6380

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6920 Applied Policy Analysis II U [0.50]

A presentation and evaluation of advanced quantitative agrifood policy models and selected special topics related to domestic and trade policy evaluation.

Prerequisite(s): AGEC*6910 or FARE*6910 or equivalent

Co-requisite(s): ECON*3710

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6980 Agricultural Trade Relations W [0.50]

An examination of the institutional, theoretical and empirical aspects of international agrifood trade.

Prerequisite(s): FARE*6380

Department(s): Department of Food, Agricultural and Resource Economics

Economics of Food Markets

FARE*6930 Food Farms, Consumers and Market I F [0.50]

This course examines the application of microeconomic theory to food markets. Topics covered include: optimizing behaviour by economic agents, the certainty equivalent profit model and decision making under risk, optimal capital replacement models and their application to food system economics, consumer behaviour with respect to food products and behaviour with respect to food products and behaviour of marketing intermediaries and food processors. New developments in the economic theory of the form are surveyed.

Offering(s): Offered in alternate years.

Prerequisite(s): ECON*2310 or equivalent, ECON*3740 or equivalent

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6940 Food Farms, Consumers and Markets II U [0.50]

This course builds on Food Farms, Consumers and Markets I by extending the breadth and depth of student's understanding and scope of economic analysis. Advanced techniques in producer and consumer theory, as well as advance market analysis techniques are presented and utilized. Understanding of the research process and advanced methods is emphasized throughout.

Prerequisite(s): FARE*6930

Department(s): Department of Food, Agricultural and Resource Economics

Natural Resource Economics

FARE*6950 Natural Resource Economics I W [0.50]

Natural Resources I introduces conventional theoretical modeling approaches to renewable resources, e.g. fisheries & forestry. Seminal theoretical literature is discussed. Emphasis is placed on setting up economic models, deriving and interpreting general results. Applied methods include dynamic optimization and regression analysis. Additional topics include Land Economics and the property rights approach.

Prerequisite(s): FARE*6380

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6960 Natural Resource Economics II U [0.50]

Natural Resources II reviews & extends conventional theoretical modeling approaches to renewable resources, e.g. fisheries & forestry. Seminal literature is reviewed and contemp. theoretical work and empirical papers discussed. Emphasis on extending economic models addressing natural resource issues - uncertainty, externalities & policy instruments, and derive reduced-form versions of forestry & fishery for empirical estim. & analysis. Primary method of math analysis involves dyn. opt. techniques. Detailed math derivations & proofs expected. Also- extinction, climate change, carb sequest.

Prerequisite(s): AGEC*6950 or FARE*6950

Department(s): Department of Food, Agricultural and Resource Economics

Other Courses

FARE*6100 The Methodologies of Economics W [0.50]

Alternative views on the methodology of economics are reviewed and assessed. The process of problem identification in the development of a research project proposal is investigated.

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6140 Major Paper in Food, Agricultural and Resource Economics U [1.00]

The major paper is an option only available to MSc students registered in the course-based option master program. An original research project related to the specialization of choice in food, agricultural and resource economics will be undertaken. The project will include preparation of a written paper and an oral presentation of the findings to the faculty.

Restriction(s): Restricted to students in the course-based MSc program in FARE

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6400 Advanced Topics in Agricultural Economics U [0.50]

The application of economic theory and various contemporary tools of economic analysis to solving production problems in the agricultural sector of the economy.

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6720 Readings in Agricultural Economics F,S,W [0.50]

A reading course on selected topics of special interest. May be offered to individual students or to groups of students in any semester.

Department(s): Department of Food, Agricultural and Resource Economics

FARE*6800 Seminar in Agricultural Economics U [0.00]

Students in the MSc program must give two presentations at the annual MSc research symposium; one in their first year outlining their research plan, and one in their second year on their thesis research results.

Department(s): Department of Food, Agricultural and Resource Economics
Food Safety and Quality Assurance

The interdepartmental program is the focal point for graduate teaching and research in food safety and quality assurance. The MSc program in food safety and quality assurance is intended to prepare food scientists, food engineers, veterinarians and others with appropriate scientific backgrounds for participation in food safety monitoring and maintenance in the food industry and in government. Students wishing to undertake graduate studies at the MSc level with emphasis on food safety and quality assurance will enter the program through a participating department. The participating academic units are Biomedical Sciences, Marketing and Consumer Studies, Environmental Biology, Food Science, Pathobiology, Population Medicine, and Engineering.

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Rickey Y. Yada
Professor, Food Science

MSc Program

Admission Requirements

The program is most suitable for those with an undergraduate science background or for those currently employed in the food area in government regulatory work or in the processing industry who desire upgrading of skills and knowledge. Applicants for admission to this program must meet the university minimum admission requirement of a baccalaureate in an honours program (or the equivalent) or a DVM from a recognized university or college with an average standing of at least second-class honours (‘B-’ average). Applicants will be expected to have completed undergraduate courses that prepare them for participation in the core graduate courses and electives of the program. Undergraduate upgrading may be necessary to ensure sufficient background in topics such as microbiology, toxicology, statistics, and analytical methods.

Degree Requirements

Completion of the MSc FSQA program requires a minimum of eight courses (or 4.5 credits) acceptable for graduate credit. This includes the seminar course which has a value of 0.5 credit. All students must complete:

FSQA*6000 Food Safety and Quality Assurance Seminar S,F,W [0.50]

FSQA*6500 Food Safety and Quality Assurance Research Project S,F,W [1.00]

This project is equal to 1.0 credit and counts as one course of the eight required courses.

FSQA*6600 Principles of Food Safety and Quality Assurance W [0.50]

FSQA*6150 Food Quality Assurance Management W [0.50]

At least four additional courses, in consultation with the student's advisory committee.

Suitable courses are listed below. Other courses, not listed here, also may be considered.

Up to two senior undergraduate courses can be taken. The courses selected will depend upon the student's background, specialty, interest and area of project research. The normal duration of the program will be three to four full-time semesters.

Graduate Diploma

Admission Requirements

The program is most suitable for those with an undergraduate science background or for those currently employed in the food area in government regulatory work or in the processing industry who desire upgrading of skills and knowledge. Applicants for admission to this program must meet the university minimum admission requirement of a baccalaureate in an honours program (or the equivalent) or a DVM from a recognized university or college with an average standing of at least second-class honours (‘B-’ average). Applicants will be expected to have completed undergraduate courses that prepare them for participation in the core graduate courses and electives of the program. Undergraduate upgrading may be necessary to ensure sufficient background in topics such as microbiology, toxicology, statistics, and analytical methods.

Diploma Requirements

All students must complete the following five courses:

FSQA*6100 Food Law and Policy F [0.50]

FSQA*6150 Food Quality Assurance Management W [0.50]

FSQA*6200 Food Safety Systems Management W [0.50]

FSQA*6600 Principles of Food Safety and Quality Assurance W [0.50]

POMP*6350 Safety of Foods of Animal Origins W [0.50]

Courses

FSQA*6000 Food Safety and Quality Assurance Seminar S,F,W [0.50]

Provides experiential training in forms of communication that are likely to be required in professional or academic careers in food science and technology.

Restriction(s): This course is open only to students in the MSc FSQA program.

Department(s): Department of Food Science

FSQA*6100 Food Law and Policy F [0.50]

The fundamentals of food policy development and Canadian and international food law are learned and practiced through online presentations, independent study and online interactions with other students and industry professionals.

Offering(s): Offered through Distance Education format only.

Department(s): Department of Food Science

FSQA*6150 Food Quality Assurance Management W [0.50]

Examination and review of principles and concept of quality assurance and their application to consumer products and services. Topics include applied aspects of total-quality management principles.

Offering(s): Offered through Distance Education format only.

Department(s): Department of Food Science

FSQA*6200 Food Safety Systems Management W [0.50]

Food safety systems are studied in four modules. (1) A brief review of plant hygiene and HACCP principles. Students with insufficient background will do supplemental study in these areas; (2) HACCP implementation and verification; (3) HACCP-based food safety programs in Canada; and (4) International Food Safety Management Systems.

Offering(s): Offered through Distance Education format only.

Department(s): Department of Food Science

FSQA*6500 Food Safety and Quality Assurance Research Project S,F,W [1.00]

An original research project related to food safety and quality assurance which includes the preparation of a written report suitable for publication and an oral presentation of the findings to the graduate faculty.

Department(s): Department of Food Science
FSQA*6600 Principles of Food Safety and Quality Assurance S,F [0.50]
An integrated approach to factors affecting food safety and quality including microbial and chemical contamination is provided. Major food-borne disease outbreaks are studied as examples. Modern methods of quality management to minimize contamination of processed foods is discussed.
Offering(s): Offered through Distance Education format only.
Department(s): Department of Food Science

Other Graduate Courses Suitable for Credit in this Program

Biomedical Sciences
BIOM*6440 [0.50] Biomedical Toxicology

Food Science
FOOD*6190 [0.50] Advances in Food Science
FOOD*6710 [0.25] Special Topics in Food Chemistry
FOOD*6720 [0.25] Special Topics in Food Microbiology
FOOD*6730 [0.25] Special Topics in Food Physics
FOOD*6740 [0.25] Special Topics in Food Processing
FOOD*6750 [0.25] Special Topics in Food for Health
FOOD*6760 [0.25] Special Topics in Food Quality

Human Health and Nutritional Sciences
HHNS*6400 [0.50] Functional Foods and Nutraceuticals
HHNS*6410 [1.00] Applied Functional Foods and Nutraceuticals

Pathobiology
PABI*6000 [0.50] Bacterial Pathogenesis
PABI*6550 [0.50] Epidemiology of Zoonoses

Population Medicine
POPM*6200 [0.50] Epidemiology I
POPM*6210 [0.50] Epidemiology II
POPM*6350 [0.50] Safety of Foods of Animal Origins

Plant Agriculture
PLNT*6110 [0.50] Fruit and Vegetable Technology

Undergraduate Courses Suitable for Credit in this Program

Food Science
FOOD*3030 [0.50] Food Chemistry I
FOOD*4120 [0.50] Food Analysis
FOOD*4090 [0.50] Functional Foods and Nutraceuticals

Human Health and Nutritional Sciences
NUTR*4510 [0.50] Toxicological Aspects of Nutrition

Population Medicine
POPM*4040 [0.50] Epidemiology of Food-Borne Diseases
Food Science

Food Science is the study of scientific and technological principles applied to the processing, preservation, packaging, distribution, handling, storage and evaluation of food products. It is an applied science, drawing heavily upon the principles of chemistry, engineering and microbiology. Research-based MSc and PhD thesis programs have existed in the Department of Food Science since its creation from the Department of Dairy Science in 1967. The Food Science program at Guelph is the only one of its kind in Ontario and over the years has trained a large percentage of the Food Scientists currently employed in the Ontario food industry. In 1992, a course-based MSc in Food Safety and Quality Assurance was developed by Food Science with several other departments at the University of Guelph. In 2010, a Graduate Diploma in Food Safety and Quality Assurance was introduced. The diploma is available only online. For more details please consult the Graduate Studies web site or the Food Science website.

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Graduate Faculty

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Mansel W. Griffiths
BSc North-East London Polytechnic, PhD Leicester - Professor and Ontario Milk Marketing Board Industrial Research Chair in Dairy Microbiology, Director Canadian Research Institute for Food Safety

Arthur R. Hill
BSc (Agr), MSc, PhD Guelph - Professor and Chair

Robert W.J. Lencki
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Loong-Tak Lim
BSc Acadia, PhD Guelph - Associate Professor

Alejandro G. Marangoni
McGill, PhD Guelph - Professor, Canada Research Chair

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BSc, PhD Guelph - Professor and Graduate Coordinator

Donald Mercer
BSc, PhD Waterloo - Associate Professor, Kemptville College

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BSc, MSc Shinshu, PhD Tokyo - Associate Professor and Egg Marketing Board Industrial Research Chair in Egg Material Science

Peter Purslow
BSc, PhD Reading - Professor

Loong-Tak Lim
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Keith Warriner
BSc Nottingham, PhD Aberystwyth - Professor

Rickey Y. Yada
BSc (Agr), MSc, PhD British Columbia - Professor, Canada Research Chair

MSc Program

Thesis Master's Program Objectives

The objective of this program is to provide graduates with general scientific knowledge as well as a more in-depth understanding of particular aspects of Food Science. This objective is accomplished through course work and departmental research seminars. Extensive laboratory and technical training is obtained by performing experiments under the supervision of a professor and advisory committee. A mandatory communication course also teaches effective oral and written communication. All these training aspects culminate through the writing of the MSc thesis. With this background, MSc graduates will be qualified to obtain positions with responsibility in government and the research, development and production sectors of the food and beverage industry.

Admission Requirements

To be considered for admission, applicants should hold an honours baccalaureate degree with at least a B’ average during the last two years of study. Supportive letters of reference are essential and should outline the applicant’s strengths and weaknesses. Students whose first language is not English require a TOEFL score of at least 550 (paper-based), 213 (computer-based), or 99 (internet-based). To assist in identifying a suitable thesis advisor, applicants should submit a short statement of research interests. Admission into the department is contingent on the student obtaining a scholarship or Graduate Research Assistantship. Students may be admitted into the Fall, Winter or Summer semesters.

Degree Requirements

MSc students are required to register in at least three graduate courses, plus seminar (a minimum of 2.0 credits) and prepare an acceptable thesis. A graduate degree program form signed by the student and approved by the student’s advisory committee will be submitted during the first semester for approval of the departmental graduate studies committee. The student must maintain a minimum B’ average to remain in the program. Each student is required to take a compulsory seminar course which provides training in technical communications. The thesis research is planned by the student in consultation with the advisor and approved by the advisory committee during the first semester of the program. The program is completed by the successful defense of the thesis.

PhD Program

Objectives

The objective of this program is to develop highly competent scientists who will provide leadership in academic institutions, or as managers in Food Science research and development institutes in industry or government. Creativity and the ability to perform independent research is fostered by requiring PhD students to submit a written research proposal and defend it orally. Having obtained research skills during their MSc studies, PhD students are expected to conduct autonomous research. The preparation of a PhD thesis and scientific publications ensures that graduates have attained prowess in research and communication.

Admission Requirements

The usual requirement for admission into the PhD program is a research-based MSc degree with a minimum ‘B’ average and supportive letters of reference. Students whose first language is not English require a TOEFL score of at least 550 (paper-based), 213 (computer-based), or 99 (internet-based). To assist in identifying a suitable thesis advisor, applicants should submit a short statement of research interests. Admission into the department is contingent on the student obtaining a scholarship or GRA. It is also possible for a student to transfer from the MSc program without completing a master’s thesis if the student has an excellent academic record and shows a strong aptitude for research which can be expanded to the doctoral level. Students may be admitted into the Fall, Winter or Summer semesters.

Degree Requirements

The major emphasis in the PhD program is research and the preparation of an acceptable thesis. There are no specific course requirements except for a course which is designed to ensure that the PhD candidates have adequate background knowledge in Food Science (food chemistry, food microbiology and food processing/engineering), as well as adequate written and oral communication skills. It is usual however for most students, in consultation with their advisory committee, to select prescribed studies and additional courses in preparation for the qualifying examination and thesis research. The qualifying examination is in two parts: (1) submission of research proposal; and (2) oral examination that evaluates the student’s ability to communicate effectively the scientific principles and put the proposed research to submit a written evaluation of the student’s performance to date in research and the student’s potential as a researcher. The PhD program is completed by the submission and successful defense of an acceptable thesis.

Courses

Note

Course content for “Special Topics” will vary according to the research interests of the faculty involved in offering the course. Specific course descriptions are posted on the Department of Food Science website.
### General

**FOOD*6190 Advances in Food Science U [0.50]**
Topics of current research interest and importance are examined. A project supervised by a faculty member is undertaken, the topic of which is chosen after considering the interests of the student.

*Department(s):* Department of Food Science

**FOOD*6300 Food Science Communication U [0.50]**
This course provides experiential training in forms of communication that are likely to be required in professional or academic careers in food science and technology.

*Restriction(s):* This course is only open to students in the MSc Food or PhD Food programs.

*Department(s):* Department of Food Science

**FOOD*6710 Special Topics in Food Chemistry U [0.25]**
This is a modular course in which several faculty members lecture and/or lead discussions in current topics in food chemistry. Students will complete an independent review in the area of food chemistry, participate in discussions, complete case studies, and present talks related to food chemistry.

*Department(s):* Department of Food Science

**FOOD*6720 Special Topics in Food Microbiology U [0.25]**
This is a modular course in which several faculty members lecture and/or lead discussions in current topics in food microbiology. Students will complete an independent review in the area of food microbiology, participate in discussions, complete case studies, and present talks related to food microbiology.

*Department(s):* Department of Food Science

**FOOD*6730 Special Topics in Food Physics U [0.25]**
This is a modular course in which several faculty members lecture and/or lead discussions in current topics in food physics. Students will complete an independent review in the area of food physics, participate in discussions, complete case studies, and present talks related to food physics.

*Department(s):* Department of Food Science

**FOOD*6740 Special Topics in Food Processing U [0.25]**
This is a modular course in which several faculty members lecture and/or lead discussions in current topics in food processing. Students will complete an independent review in the area of food processing, participate in discussions, complete case studies, and present talks related to conventional and emerging methodologies for the processing of foods.

*Department(s):* Department of Food Science

**FOOD*6750 Special Topics in Food for Health U [0.25]**
This is a modular course in which several faculty members lecture and/or lead discussions in current topics in food for health. Students will complete an independent review in the area of food and health, participate in discussions, complete case studies, and present talks related to the impact of food for health.

*Department(s):* Department of Food Science

**FOOD*6760 Special Topics in Food Quality U [0.25]**
This is a modular course in which several faculty members lecture and/or lead discussions in current topics in food quality. Students will complete an independent review in the area of food quality, participate in discussions, complete case studies, and present talks related to quality of foods.

*Department(s):* Department of Food Science

### Other Graduate Courses:

- HHNS*6410 Applied Functional Foods and Nutraceuticals
- PLNT*6110 Fruit and Vegetable Technology
French

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Graduate Faculty

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Margot Irvine
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Stéphanie Nutting
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Joubert Satyre
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Alain Thomas
BA York, MA, PhD Toronto - Professor

Clive Thomson
BA Trinity College, MA, PhD Toronto - Professor and Director of SOLAL

MA Program

The French MA program is designed for students who wish to pursue careers in post-secondary teaching, research, administration, federal and provincial government service, national and international organisations, and other areas in which advanced bilingual and multicultural skills are required. This program highlights the converging and diverging historical and linguistic forces at play in cultural environments that share French as a common language.

Fields of Study

Research and teaching fall within two main fields: I) Language in context II) Politics and aesthetics of Francophone literatures. Students may take a range of courses in Quebec, continental French, African and Caribbean literatures, as well as in intermediality, literary translation, sociolinguistics and the pedagogy of French as a second language.

Special Feature

This program offers an experiential service-learning practicum which takes place outside the classroom. Students choose from a list of volunteer activities approved by the School of Languages and Literatures. This practicum normally takes place in a Francophone milieu and is the equivalent of one academic course (0.5 credit).

Admission Requirements

The normal requirement for admission to the French MA program is the equivalent of an Honours degree in French studies from a recognized post-secondary institution with an overall average of B+ or equivalent. Applicants who do not have an Honours BA in French from a Canadian university may be required to take a short competence test and/or qualifying undergraduate courses prior to beginning graduate study. Students enter the program in September with full-time status.

Degree Regulations

Students are required to take a minimum of six semester courses (3.0 credits), with the service-learning placement counting as one of these courses. They are also required to write a 50 page mémoire (mini-thesis). Courses must be approved by the Graduate Coordinator and will normally be completed in four semesters on a full-time basis. The minimum average required for graduation from the program is a B or equivalent. All work is written in French. A successful defence of the mémoire (mini-thesis) is also required.

Required courses:

FREN*6000 [0.50] Research Methods Seminar
FREN*6042 [0.50] Topics in FSL Pedagogy

Courses

The content of the courses listed below will vary according to the research interests of the faculty involved in offering the course. Specific course descriptions for a particular offering of the course will be available from the Graduate Co-ordinator in advance of the course being offered.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN*6000</td>
<td>Research Methods Seminar</td>
<td>0.50</td>
</tr>
<tr>
<td>FREN*6042</td>
<td>Topics in FSL Pedagogy</td>
<td>0.50</td>
</tr>
</tbody>
</table>

IX. Graduate Programs, French
Geography

The Department of Geography offers programs of study leading to the degrees of MA, MSc and PhD in Geography, and MA/MSc and PhD in Collaborative International Development Studies. Details regarding faculty, areas of research, current research opportunities and application procedures are provided on the Department's web site http://www.uoguelph.ca/geography/

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BA Mount Allison, MA Western, PhD Simon Fraser - Assistant Professor

John A. Smithers
BA Western Ontario, MA, PhD Guelph - Professor and Chair

Wanhong Yang
BSc Hubei, MSc Chinese Academy of Sciences, PhD Illinois - Associate Professor

Degree Requirements

Applicants must submit a statement of their research interests with their application. It is essential that applicants contact potential advisors in the department prior to submission of an application. Students are admitted in September. Program offices should be consulted for admission deadlines.

Degree Requirements

Students may undertake an MA or an MSc program in geography by thesis or by research project (the non-thesis option). Students taking the thesis option are required to complete an acceptable thesis and the Research Methods courses (GEOG*6090 and GEOG*6091). In addition, students must take three courses (1.5 credits), from the Department of Geography.

For the MA degree, students must complete two courses identified as social science courses. For the MSc degree, students must complete two courses identified as natural science courses.

Students taking the non-thesis option must complete the Research Methods courses (GEOG*6090 and GEOG*6091) and the Research Project course. In addition, five other courses (2.5 credits) are required, at least four of which must be from the Department of Geography. MA students must complete three courses identified as social science courses. MSc students must complete three courses identified as natural science courses.

PhD Program

The objective of the PhD program is to offer opportunities for advanced research within one or more of the three fields in the graduate program: socio-economic spaces and change, environmental management and governance, and biophysical systems and processes. Doctoral students conduct research relating to these areas at various geographic scales, from the local to the global.

Degree Requirements

All students in the PhD program are required to complete the Geographic Scholarship and Research course during the first two semesters of study. The advisory committee may prescribe additional courses to help the student prepare for the qualifying examination and thesis research. All students in the PhD program must complete a qualifying examination and submit a satisfactory research proposal by the end of the fourth semester of study.

The qualifying examination has written and oral components and evaluates the student's knowledge of the broader scholarly field as well as the specific theoretical and empirical content of the intended research area. Submission and defence of an acceptable thesis on an approved topic completes the requirements of the PhD.
### Socio-Economic Spaces and Changes

**GEOG*6400 Urbanization and Development U [0.50]**
Analysis of the evolution of urban form and pattern in the developing world within the context of the global urban system. Examines national urban systems and implications for dispersed development and rural change.

*Offering(s):* Offered in alternate years.
*Department(s):* Department of Geography

**GEOG*6450 Development Geography U [0.50]**
Group identities at various scales in relation to concepts of territory and territoriality, and their changing impact on the world's political map.

*Offering(s):* Offered in alternate years.
*Department(s):* Department of Geography

### General

**GEOG*6060 Special Topics in Geography S,F,W [0.50]**
A course on some specific topic not covered by the regular graduate courses for which there are both available faculty and sufficient interest among students.

*Restriction(s):* Instructor consent required.
*Department(s):* Department of Geography

**GEOG*6090 Geographical Research Methods I F [0.50]**
A review of philosophies and research methods in geography. The development and presentation of a context paper for the thesis or research project.

*Department(s):* Department of Geography

**GEOG*6091 Geographical Research Methods II W [0.50]**
A review of philosophies and research methods in geography. The development and presentation of a research proposal for the thesis or research project.

*Prerequisite(s):* GEOG*6090
*Department(s):* Department of Geography

**GEOG*6100 Geographic Scholarship and Research F-W [0.50]**
A review of geographic scholarship including conceptual, theoretical and methodological issues in resource assessment, biophysical resources and rural socio-economic resources.

*Offering(s):* The course extends over two semesters (Fall and Winter).
*Department(s):* Department of Geography

**GEOG*6180 Research Project in Geography S,F,W [1.00]**
The preparation and presentation of a report on the research project approved in GEOG*6090.

*Restriction(s):* Instructor consent required.
*Department(s):* Department of Geography
History - Tri-University Program

The Departments of History of the University of Guelph, the University of Waterloo and Wilfrid Laurier offer a joint program leading to the MA and PhD degrees. The Tri-University Graduate Program in History includes members from all three departments covering a wide range of research interests. It is a semi-autonomous program responsible directly to the three graduate schools. It looks after admissions, arranges courses of instruction, names students' advisory committees, and monitors student progress generally. Students in the Tri-University Graduate Program in History register either at Guelph, Waterloo or Wilfrid Laurier (depending on where their advisor is located) but undertake their course work jointly at all three universities. Students in the program are governed by the general regulations of the university in which they are registered and their degree is granted by that university.

The department at Guelph also participates in the Centre for Scottish Studies, in the work of the International Development Studies, and the Historical Data Research Unit. Students are encouraged to begin their studies in the Fall or Winter semesters. Program offices should be consulted for submission deadlines.

Administrative Staff - Tri-University Program

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Note
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Kris E. Inwood *
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Linda L. Mahood *
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Stuart G. McCook *
BA Toronto, MS Rensselaer PI, MA, PhD Princeton - Associate Professor and Associate Dean (Graduate Studies and Research)

Alan McDougall *
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Jacqueline Murray *
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Susan Nance *
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Karen Racine *
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Graduate Faculty from Wilfrid Laurier University

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PhD (Guelph)

Gavin Brockett
PhD Chicago

Tarah Brookfield
PhD (York)

Blaine Chiasson
PhD Toronto

Cynthia Comacchio
PhD Guelph

Adam Crerar
PhD Toronto

Darryl Dee
PhD Emory

Peter Farrugia
DPhil (Oxon)

Judith Fletcher
PhD (Bryn Mawr)

Leonard G. Friesen
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Jeff Grischow
PhD Queen's

Erich Haberer
PhD Toronto

Christina Han
PhD Toronto

Robert Kristofferson
PhD York

John Laband
PhD Natal

Amy Milne-Smith
PhD Toronto

David Monod
PhD Toronto

Darren Mulloy
PhD East Anglia

Susan Neylan
PhD UBC

Chris Nighman
PhD Toronto

Eva Plach
PhD Toronto

Roger Sarty
PhD Toronto

Michael D. Sibalis
PhD Concordia

David Smith
PhD Harvard

2014-2015 Graduate Calendar

March 9, 2015
Admission Requirements

An applicant must have a recognized honours degree in history, or its equivalent, with at least a high second class or upper 'B' average. Applicants are required to include with their application a separate statement describing their proposed area of study and, where possible, the suggested thesis topic.

Degree Requirements

Students normally obtain the MA degree by satisfactorily completing six courses (at least 3.0 credits) and submitting a major paper on an approved topic (10,000 to 12,000 words). Alternatively, the student may qualify for the MA degree by completing four courses (at least 2.0 credits) and submitting a satisfactory thesis on an approved topic (25,000 words). They may also qualify for an MA by completing 8 courses (at least 4 credits) three of which must require a research paper. It is recommended but not required that students take HIST*6000 and HIST*6020. The remaining courses are subject to the approval of the Department of History. A reading knowledge of French is highly recommended and a student's advisory committee may require a second language for research purposes. MA students generally register for up to three courses per semester, or two if they hold a graduate teaching assistantship.

Graduate students are encouraged to consider including, as part of their program, appropriate graduate course offerings from other departments.

Interdepartmental Programs

Scottish Studies Interdepartmental Group

The Department of History participates in the activities of the Centre for Scottish Studies. Those faculty members whose research and teaching expertise includes aspects of Scottish studies may serve as advisors and examiners of MA students specializing in Scottish studies areas and who are registered in the Department of History.

PhD Program

The Tri-University History doctoral program is committed to the pursuit of excellence in graduate research and teaching. Students enter the doctoral program for a variety of reasons, but all are motivated by a strong desire to pursue the most advanced education for history teaching and research. In the first year of the program, students normally complete their three PhD fields. As PhD field preparation provides a wide intellectual basis for scholarship and teaching, the fields are designed in such a way as to encourage reading complementary to a student's proposed area of doctoral research. Field seminar discussions are intended to develop skills in critical analysis and historical synthesis. Through the process of completing required research papers and a doctoral thesis, students acquire the capacity to conduct independent research and to produce written work of a sufficient standard to be acceptable for scholarly publication.

As students are required to demonstrate competence in one major field and two minor fields, in first year they register in a major field seminar and two minor field seminars. One minor field must be in an area of study distinct from the major field and one minor field may be in another discipline. The distinction between a major field and an area of concentration is the depth and required range of reading rather than geographical or chronological span.

The PhD fields, written major field examination, and oral qualifying examination must be completed by the end of the fourth semester. No extensions will be permitted, except in cases where approval has been given by the Tri-University Program co-ordinating committee. Continuation in the program requires at least a B+ average, based on all courses taken in the program to that point (with their proportionate weighting).

All students have an advisory committee that meets regularly. Following successful completion of the qualifying process, the student must complete, under the supervision of a Tri-University Doctoral Program in History faculty member, an original research project on an advanced topic. Students present a thesis proposal and colloquium which are appraised by their advisory committees. A thesis embodying the results of that research is presented and defended before an examining committee. The Tri-University Doctoral Program generally limits thesis preparation to eight fields of study - Canadian history; Scottish history; early modern European history; medieval European history; cold war era history and world history.

Admission Requirements

Applications are considered by the Tri-University co-ordinating committee. Only students who are graduates of accredited universities and colleges are eligible for admission. Direct admission following a BA degree is permissible for outstanding applicants, but normally students will be admitted after they have obtained an MA in which they have received at least a high second class or upper 'B' standing. Since not all applicants can be admitted, close attention is paid to samples of applicants' written work, to applicants' transcripts and past records as a whole, and to their statements of research interests. Applicants from outside Canada whose previous education cannot be assessed readily may be required to demonstrate their knowledge by other means, such as the Graduate Record Examination. Non-Canadian applicants whose first language is not French or English are required to submit evidence of proficiency in the English language or pass the Test of English as a Foreign Language (TOEFL). A net score of 600 is required. Registration at one university for three degrees (BA, MA, PhD) is discouraged.
Degree Requirements

1. Professional Development Seminar (HIST*7000). All doctoral students attend the professional development seminar in their first year of the program. The seminar is designed to prepare students for success as a PhD student and for their future careers. A pass/fail grade will be assigned for the seminar.

2. Language requirement. If no specific language is required for the student’s research (as authorized by the student’s advisory committee), the second language will be French. The determination of the second language will be made by the student’s advisory committee during the first semester of the student’s registration in the program. The language exam will be offered every Fall and Winter semester and it is expected that a student will successfully complete the test of reading comprehension no later than the 6th semester following admission into the program.

3. PhD fields. Each student is required to demonstrate competency in one major and two minor areas. In the minor fields, competency is demonstrated by successful completion of two minor field seminars. In the major field, students must successfully complete a major field seminar and the qualifying written and oral examinations (HIST*7040 and HIST*7010). See the Tri-University History doctoral handbook.

4. Colloquium (HIST*7080). The colloquium is a public presentation of a chapter, significant portion, or summary of the student’s thesis within three semesters of the completion of the thesis proposal. Grades will be SAT/UNS.

5. Thesis proposal (HIST*7070). The thesis proposal is a written (The expected length is approximately 3,000 words, excluding notes and the bibliography) and oral demonstration for dissertation research. The proposal will include a statement of the overall thesis of the dissertation, a description/discussion of the major research question(s), a review of the principal primary/archival sources being used, a chapter or topic outline, and a clear explanation of the originality of the thesis. Grades will be SAT/UNS.

6. PhD thesis (HIST*7990). All students must complete, under the supervision of a tri-university doctoral program faculty member, an original research project on an advanced topic. Each student will be required to write and successfully defend a thesis of such cogency and originality as will represent a significant contribution to knowledge. The thesis will normally be between 50,000 and 90,000 words in length. University of Guelph regulations and procedures govern this process (see Degree Regulations).

Courses - MA

Note
For the courses offered in a particular year, see the listing published by the Office of Registrarial Services.

Canadian History

HIST*6230 Canada: Culture and Society U [0.50]
A course that examines the current historiography of selected aspects of Canadian history. Topics will vary with the expertise of individual instructors.
Department(s): Department of History

HIST*6231 Canada: Culture and Society Research U [0.50]
Continuation of HIST*6230 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6230 Canada: Community and Identity U [0.50]
A course that examines the current historiography of selected aspects of Canadian history. Topics will vary with the expertise of individual instructors.
Department(s): Department of History

HIST*6281 Canada: Community and Identity Research U [0.50]
Continuation of HIST*6280 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6290 Topics in North American History U [0.50]
Depending on the expertise of the instructor, this course may concentrate on either the United States or Canada, or it may select an historical theme or themes common to the larger continent.
Department(s): Department of History

HIST*6291 North American Research U [0.50]
Continuation of HIST*6290 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

Scottish History

HIST*6150 Scottish Archival Research U [0.50]
This course will comprise of classroom teaching, practical instruction and work-placement within the Scottish Collection of the University of Guelph's Archives. It will introduce students to basic skills in the digitization of sources and teach competence in conservation, record creation and archival research.
Restriction(s): Student numbers are limited by the number of placements available in the University Archives.
Department(s): Department of History

HIST*6190 Topics in Scottish History I U [0.50]
This course will introduce students to selected aspects of medieval and early modern Scottish history and historiography, including the use of source materials, and practical training involving manuscripts in the University Archives.
Department(s): Department of History

HIST*6191 Scottish History I Research U [0.50]
Continuation of HIST*6190 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6200 Topics in Scottish History II U [0.50]
This course will introduce students to selected aspects of modern Scottish history and historiography, including the use of source materials, and provide practical training involving manuscripts in the University Archives.
Department(s): Department of History

HIST*6201 Scottish History II Research U [0.50]
Continuation of HIST*6200 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

European History

HIST*6140 Topics in British History Since 1688 U [0.50]
Although topics vary with the expertise of individual instructors, this course encompasses the British Isles.
Department(s): Department of History

HIST*6141 British History Research U [0.50]
Continuation of HIST*6140 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6300 Topics in Modern Europe I U [0.50]
This seminar course will focus on selected aspects of the political and social history of Europe between 1789 and 1989. Topics to be examined will vary according to the expertise of the faculty and the interest of the students.
Department(s): Department of History

HIST*6301 Modern Europe I Research U [0.50]
Continuation of HIST*6300 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6310 Topics in Modern Europe II U [0.50]
This seminar course will focus on selected aspects of the political and social history of Europe between 1789 and 1989. Topics to be examined will vary according to the expertise of the faculty and the interest of the students.
Department(s): Department of History

HIST*6311 Modern Europe II Research U [0.50]
Continuation of HIST*6310 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6380 Topics in Early Modern European History U [0.50]
This seminar course examines current issues in early modern European history as selected by instructor(s). Participants review current research and historiography, discuss the principal debates, and develop their own perspectives through encounter with primary source materials.
Department(s): Department of History

HIST*6381 Early Modern European Research U [0.50]
Continuation of HIST*6380 in which students prepare an in-depth research paper based on primary sources.
Department(s): Department of History
World History

HIST*6500 Topics in Global History U [0.50]
This is a topical course, that explores the history of processes that take place on a worldwide scale. These may include social, cultural, economic, or environmental processes.
Department(s): Department of History

HIST*6501 Global History Research U [0.50]
Continuation of HIST*6500 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6520 Topics in Latin American History U [0.50]
In-depth study of a particular event or process in Latin American history. Topics may include: religions, women, race and ethnicity, environment issues, intellectual history, or have a regional or temporal focus.
Department(s): Department of History

HIST*6521 Latin American Research U [0.50]
Continuation of HIST*6520 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6540 Topics in South Asian History U [0.50]
Topics in South Asian History will examine the history and historiography of imperialism and nationalism in India from 1757 to 1947.
Department(s): Department of History

HIST*6541 South Asian History Research U [0.50]
Continuation of HIST*6540 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

Thematic

HIST*6000 Historiography I F [0.50]
This course will introduce students to some of the essential components of the historical process as exemplified by the literature produced prior to 1914. It will also assess history as a cognitive discipline in contemporary society. While the scope of the course will extend from ancient times to the eve of World War I, emphasis will be placed on 19th-century historiography.
Department(s): Department of History

HIST*6020 Historiography II W [0.50]
An examination of major examples of recent historical methodology, including works in cultural and social history. The student is also expected to develop and present a thesis proposal.
Department(s): Department of History

HIST*6040 Special Reading Course U [0.50]
Students selecting this course should speak to individual instructors to arrive at appropriate topics.
Department(s): Department of History

HIST*6350 History of the Family U [0.50]
This course will cover a broad range of historical developments within the family, all concentrating on the interaction between the family (or elements within it) and outside authority (both formal and informal).
Department(s): Department of History

HIST*6351 Family History Research U [0.50]
Continuation of HIST*6350 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6360 History of Sexuality and Gender U [0.50]
This course will provide a thematic approach to the foundations of Western attitudes towards sexuality and gender, especially as they developed in premodern Europe. The complex interweaving of medicine, Christian law and theology, and popular practices and beliefs will be explored.
Department(s): Department of History

HIST*6361 Sexuality History Research U [0.50]
Continuation of HIST*6360 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6370 Topics in Cultural History U [0.50]
History 6370 investigates the practices of cultural history and the utility of the cultural history paradigm in the investigation of topics including politics and power, religion, war, empire, gender, class, ‘race’, ethnicity, the environment, and consumption.
Department(s): Department of History

HIST*6371 Cultural History Research U [0.50]
Continuation of HIST*6370 in which students prepare an indepth research paper based on primary sources.
Department(s): Department of History

HIST*6400 Major Paper U [1.00]
This is to be a major piece of research, based on the extensive use of primary sources. An oral examination of this work is required.
Department(s): Department of History

HIST*6450 Quantitative Evidence and Historical Methods U [0.50]
An overview of the use for historical research of quantitative evidence and methodologies.
Department(s): Department of History

Courses - PhD

HIST*7000 Professional Development Seminar U [0.00]
All doctoral students attend the professional development seminar in their first year of the program. The seminar is designed to prepare students for success as a PhD student for their future careers.
Department(s): Department of History

HIST*7010 Qualifying Examination U [0.50]
This oral examination is designed to assess 1) the student’s knowledge of the subject matter and ability to integrate the material read and 2) the student’s ability and promise in research.
Department(s): Department of History

HIST*7030 Language Requirement U [0.00]
A written demonstration of the student’s knowledge of written French (or other appropriate second language).
Department(s): Department of History

HIST*7040 Major Field U [0.50]
The examination written following completion of the major field seminar and before the oral qualifying examination.
Department(s): Department of History

HIST*7070 Thesis Proposal U [0.00]
A written (up to 2,000 words, including citations) and oral demonstration of the proposed dissertation. The proposal will include a statement of the overall thesis of the dissertation, a description/discussion of the major research question(s), a review of the principal primary/archival sources being used, a chapter or topic outline, and a clear explanation of the originality of the thesis. Graded SAT/UNS.
Restriction(s): For PhD students only.
Department(s): Department of History

HIST*7080 Colloquium U [0.00]
The colloquium is a public presentation of original research, normally a chapter, significant portion, or summary of the student’s thesis. Graded SAT/UNS.
Restriction(s): For PhD students only.
Department(s): Department of History

The following courses are designed to study the central issues, ideas and historiography of the designated major field, within certain geographical and temporal limits. All seminar courses extend over two semesters. Students must register for the courses in each semester.

HIST*7100 Canadian History Major Seminar U [1.00]
Department(s): Department of History

HIST*7120 Scottish History Major Seminar U [1.00]
Department(s): Department of History

HIST*7140 Early Modern European History Major Seminar U [1.00]
Department(s): Department of History

HIST*7150 Modern European History Major Seminar U [1.00]
Department(s): Department of History

HIST*7170 Race, Slavery, and Imperialism Major Seminar U [1.00]
Department(s): Department of History

March 9, 2015
The requirements for an MA student taking a 7000-level course are substantially different from those for a PhD student. Therefore a PhD student who has previously taken any of these 7000-level courses may, with the permission of the department, repeat any of those 7000-level for credit in the Tri-University Doctoral Program.
Human Health and Nutritional Sciences

The Human Health and Nutritional Sciences Graduate Program offers MSc degrees by thesis, MSc degrees by course work and project, and PhD degrees. The three areas of emphasis are listed below. See the department website for additional information.

- Biomechanics
- Nutrition, Exercise and Metabolism
- Nutritional and Nutraceutical Sciences

Interdepartmental programs are available for students wishing to specialize in Bioinformatics, or Biophysics. Collaborative programs are available for students wishing to specialize in Neuroscience or Toxicology.

Administrative Staff

Chair
Lawrence L. Spriet (354 Animal Science/Nutrition Bldg., Ext. 53745) lspriet@uoguelph.ca

Associate Chair
James B. Kirkland (335 Animal Science/Nutrition Bldg., Ext. 56693) jkirklan@uoguelph.ca

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Assistant Graduate Co-ordinator for MSc by Coursework and Project Program
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CBS Graduate Admissions Secretary
Karen White (3479 Science Complex, Ext. 52730) cbshhnsgrad@uoguelph.ca

Graduate Faculty

Marica Bakovic
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William J. Betterg
BS, PhD Missouri - Associate Professor

Stephen Brown
BHK, MHK Windsor, PhD Waterloo - Assistant Professor

Alison M. Duncan
BASc Guelph, MSc Toronto, PhD Minnesota - Professor

David J. Dyck
BSc, MSc, PhD Guelph - Professor

Graham P. Holloway
BA McMaster, MSc Waterloo, PhD Guelph - Associate Professor

Lorraine C. Jadeski
BSc Guelph, MSc Waterloo, PhD Western - Associate Professor

James B. Kirkland
BSc, PhD Guelph - Associate Professor

David W.L. Ma
BSc, PhD Alberta - Associate Professor

Kelly A. Meckling
BSc Calgary, PhD Toronto - Professor

Coral L. Murrant
BSc, PhD Guelph - Associate Professor

David M. Mutch
BSc Queen's, PhD Lausanne - Associate Professor

Genevieve Newton
Doctor of Chiropractic Nat'l U of Health Sciences (Chicago), MSc, PhD Guelph - Assistant Professor

Kerry Ritchie
BSc, PhD Guelph - Assistant Professor

Lindsay E. Robinson
BSc Acadia, PhD Alberta - Associate Professor

Jeremy Simpson
BSc, Guelph, PhD Queen's - Assistant Professor

Lawrence L. Spriet
BSc Waterloo, MSc York, PhD McMaster - Professor and Chair

John Z. Srbely
BSc Toronto, DC Canadian Memorial Chiropractic College, PhD Guelph - Assistant Professor

Lori A. Vallis
BSc, MA Ottawa, PhD Waterloo - Associate Professor

Amanda Wright
BSc, PhD Guelph - Associate Professor

David Wright
BPE Calgary, MSc Arizona State, PhD Ball State - Associate Professor

John L. Zettel
BS Waterloo, MSc, PhD Toronto - Assistant Professor

MSc Program

The focus of the graduate programs in the Department of Human Health and Nutritional Sciences is on physical activity and diet as powerful lifestyle determinants of human health. The interaction between genetics and environmental factors determines human health and lifestyle is a major component of our environment.

Our graduate programs offer advanced experiential learning experiences in the broad areas of nutritional and nutraceutical sciences, general and exercise physiology and biomechanics within the focus of lifestyle, genetics and human health. Within these broad fields, the Department of Human Health and Nutritional Sciences addresses the issues at the level of the individual, not community or populations. The research efforts are focused on understanding the basic underlying biological aspects of health, which are further applied to understanding aging, neurological/sensory disorders and osteoarthritis, and chronic diseases such as cancer, cardiovascular disease, obesity, and type II diabetes.

The Department offers programs of study leading to an MSc by thesis and an MSc by coursework and project. Within the MSc thesis program students must complete a minimum of 1.5 graduate credits and defend an acceptable thesis which comprises an account of the student's research. Within the MSc coursework program students must complete a minimum of 4.0 graduate credits which include credits for research experience.

Admission Requirements

To be considered, applicants must meet the requirements of a four-year honours science degree with a minimum 75% average during the final two years or 4 semesters of undergraduate study. Applicants should have completed a course in statistics. Each applicant must obtain the support of a faculty member willing to serve as his/her advisor. Admission may be granted in September, January or May. Completed applications should be uploaded at least one full semester (four months) before the expected date of admission. Applications from international students should be uploaded at least eight months prior to the expected date of admission.

All components of the application, including transcript(s), graduate certificate(s), grading scale(s), language test results, assessment forms, a statement of interest and the name of the faculty advisor must be uploaded no later than two months after an application is submitted through the OUAC portal. Applications that are incomplete after this time period will be closed.

Admission Process

Graduate student applications to programs in the College of Biological Science are handled by the Office of the Associate Dean, Research (ADR). Before submitting an application, applicants are strongly encouraged to view the "Before you Apply" and "Admission Process" webpages on the ADR Future Student's site.

Complete application submission instructions may also be found on the Office of Graduate Studies webpage or in the Graduate Calendar.

Degree Requirements

MSc by Thesis

Students must complete and defend an acceptable thesis which comprises a scientifically defensible account of the student's research on a particular, well-defined research problem or hypothesis. Such research should begin with the practical expectation that it could be completed and the thesis defended in not more than 5 semesters. Paramount to the notion of acceptability of the thesis is its quality with respect to problem identification, the approach used to address the problem, and the evaluation of the results.

In addition they must successfully complete courses totalling not fewer than 1.5 graduate credits. The graduate credits of course work will consist of:

a) at least one of:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credit Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHNS*6200</td>
<td>[1.00]</td>
<td>Research Methods in Biomechanics</td>
</tr>
<tr>
<td>HHNS*6700</td>
<td>[0.50]</td>
<td>Nutrition, Exercise and Metabolism</td>
</tr>
<tr>
<td>HHNS*6040</td>
<td>[0.50]</td>
<td>Research Fronts in Nutritional and Nutraceutical Sciences</td>
</tr>
</tbody>
</table>

b) at least 1.0 credits of electives as determined with the Advisory Committee

MSc by Course Work and Project

Students must complete at least 4.0 graduate credits as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHNS*6610</td>
<td>[0.50]</td>
<td>Seminar in Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>HHNS*6320</td>
<td>[0.50]</td>
<td>Advances in Human Health and Nutritional Sciences Research</td>
</tr>
<tr>
<td>HHNS*6910</td>
<td>[0.50]</td>
<td>Basic Research Techniques and Processes</td>
</tr>
<tr>
<td>HHNS*6920</td>
<td>[0.50]</td>
<td>Applied Research Techniques and Processes</td>
</tr>
<tr>
<td>HHNS*6930</td>
<td>[0.50]</td>
<td>Research Project</td>
</tr>
</tbody>
</table>

March 9, 2015
**PhD Program**

The focus of the graduate programs in the Department of Human Health and Nutritional Sciences is on physical activity and diet as powerful lifestyle determinants of human health. The interaction between genetics and environmental factors determines human health and lifestyle is a major component of our environment.

Our graduate programs offer advanced experiential learning experiences in the broad areas of nutritional and nutraceutical sciences, general and exercise physiology and biomechanics within the focus of lifestyle, genetics and human health. Within these broad fields, the Department of Human Health and Nutritional Sciences addresses the issues at the level of the individual, not community or populations. The research efforts are focused on understanding the basic underlying biological aspects of health, which are further applied to understanding aging, neurological/sensory disorders and osteoarthritis, and chronic diseases such as cancer, cardiovascular disease, obesity, and type II diabetes.

**Admission Requirements**

Applicants must have a recognized Master's degree in a related field obtained with a minimum academic standing of 80% in their postgraduate studies, and the endorsement of a potential thesis advisor. Applicants should have completed a course in statistics. Under exceptional circumstances admission directly to a PhD program with an appropriate honours degree alone, or transfer from MSc to PhD program without completing the MSc thesis requirements, is also possible.

Admission may be granted in September, January or May. Completed applications should be uploaded at least one full semester (four months) before the expected date of admission. Applications from international students should be uploaded at least eight months prior to the expected date of admission.

Each applicant must obtain the support of a faculty member willing to serve as his/her advisor.

All components of the application, including transcript(s), graduate certificate(s), grading scale(s), language test results, assessment forms, a statement of interest and the name of the faculty advisor must be uploaded no later than two months after an application is submitted through the OUAC portal. Applications that are incomplete after this time period will be closed.

**Admission Process**

Graduate student applications to programs in the College of Biological Science are handled by the Office of the Associate Dean, Research (ADR). Before submitting an application, applicants are strongly encouraged to view the "Before you Apply" and "Admission Process" webpages on the ADR Future Student's site.

Complete application instructions may also be found on the Office of Graduate Studies webpage or in the Graduate Calendar.

**Degree Requirements**

The major part of a student's time will be devoted to research in fulfillment of the dissertation requirement. Course work would be established through discussion with the student's Advisory Committee.

PhD students will become candidates for the PhD degree upon completion of a qualifying examination, which must be conducted not later than the fifth semester of the PhD program. The examination will be primarily research focused.

**Thesis Requirements**

Submission and defence of an acceptable dissertation complete the requirements for a PhD. An acceptable dissertation comprises a report of the candidate's research on a particular and well-defined research problem or hypothesis. It should represent a significant contribution to knowledge in that field. Emphasis is placed on the quality of the work judged by the expression of mature scholarship and critical judgment in the dissertation. Dissertation approval implies that it could be published in reputable, refereed journals in its field.

**Courses**

**HHNS*6000 Students Promoting Awareness of Research Knowledge S,F,W [0.25]**

This course will explore research communication through practical experience. The course will be part of the SPARK program in which students write, edit and coordinate a variety of news publications that highlight University of Guelph research activities for a wide range of audiences.

**Restrictions:** Limited to HHNS MSc course work and project students only. Instructor consent required.

**Department(s):** Department of Human Health and Nutritional Sciences

**HHNS*6010 Seminar in Human Health and Nutritional Sciences S [0.50]**

Students will develop their scientific communication skills by translating a specific body of knowledge on a chosen topic into a seminar. The class will also explore scientific process-oriented concepts and issues such as effective scientific communication and dissemination of results.

**Restriction(s):** Limited to HHNS MSc course work and project students only.

**Department(s):** Department of Human Health and Nutritional Sciences

**HHNS*6040 Research Fronts in Nutritional and Nutraceutical Sciences F [0.50]**

Building on an information base in nutrition, biochemistry and physiology, the course comprises selected research topics pertaining to the importance of nutrition as a determinant of health throughout the life span. Distinction will be drawn between the metabolic basis of nutrient essentiality and the health protectant effects of nutraceuticals.

**Department(s):** Department of Human Health and Nutritional Sciences

**HHNS*6130 Advanced Skeletal Muscle Metabolism in Humans W [0.50]**

This course examines how the energy provision pathways in human skeletal muscle and associated organs meet the energy demands of the muscle cell during a variety of metabolically demanding situations.

**Department(s):** Department of Human Health and Nutritional Sciences
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Restrictions</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHNS*6910</td>
<td>Basic Research Techniques and Processes</td>
<td>0.50</td>
<td>Working with a faculty advisor, students will gain experience in basic aspects of scientific research. This will be accomplished through experience of one or more components of the scientific method in a laboratory setting. Objective outcomes will be evaluated and will include documentation of the experience in a written report.</td>
<td>Restricted to HHNS MSc. course work and project students. Instructor consent required.</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>HHNS*6920</td>
<td>Applied Research Techniques and Processes</td>
<td>0.50</td>
<td>Under the supervision of a faculty advisor, students will gain practical experience in discipline-specific aspects of research. This will be accomplished through experience in a pre-arranged practicum in an applied setting. Objective outcomes will be evaluated and will include documentation of the experience in a written report.</td>
<td>Restricted to HHNS MSc. course work and project students. Instructor consent required.</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>HHNS*6930</td>
<td>Research Project</td>
<td>0.50</td>
<td>Under the supervision of a faculty advisor and building on knowledge gained from Basic or Applied Research Techniques and Processes, students will carry out a specific research project to its completion. Results will be documented in a written report and communicated through a scientific poster.</td>
<td>HHNS<em>6910 or HHNS</em>6920 Restricted to HHNS MSc. course work and project students. Instructor consent required.</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
</tbody>
</table>
### Integrative Biology

The Department of Integrative Biology is comprised of faculty members in three overlapping areas of emphasis: Ecology, Evolutionary Biology and Comparative Physiology. Research is focused on a wide variety of organisms (from microbes to plants to animals) at multiple levels of organization (from molecules and cells through to entire ecosystems). Basic research is being used as a foundation to address some of the most important regional and global issues.

The Integrative Biology Graduate Program offers MSc and PhD degrees. The three areas of emphasis are listed below. See the department website for additional information.

- **Ecology (ECO)**
- **Evolutionary Biology (EVO)**
- **Comparative Physiology (PHY)**

Faculty in Integrative Biology also participate in the interdepartmental programs in Bioinformatics, Biophysics and in the collaborative programs Neuroscience and Toxicology.

### Administrative Staff

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair</td>
<td>Moira Ferguson (2480 Science Complex, Ext. 53598) <a href="mailto:mmfergus@uoguelph.ca">mmfergus@uoguelph.ca</a></td>
</tr>
<tr>
<td>Graduate Coordinator</td>
<td>Karl Cottenie (2470 Science Complex, Ext. 52554) <a href="mailto:cottenie@uoguelph.ca">cottenie@uoguelph.ca</a></td>
</tr>
<tr>
<td>CBS Graduate Secretary</td>
<td>Mary Roberts-Payne (2484 Science Complex, Ext. 56094) <a href="mailto:cbsgrad@uoguelph.ca">cbsgrad@uoguelph.ca</a></td>
</tr>
<tr>
<td>CBS Graduate Admissions Secretary</td>
<td>Karen White (3479 Science Complex, Ext. 52730) <a href="mailto:cbsgrad@uoguelph.ca">cbsgrad@uoguelph.ca</a></td>
</tr>
</tbody>
</table>

### Graduate Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree, Institution</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Josef D. Ackerman</td>
<td>BSc Toronto, MA SUNY, PhD Cornell</td>
<td>Professor</td>
</tr>
<tr>
<td>Sarah J. Adamowicz</td>
<td>BSc Dalhousie, MSc Guelph, PhD Imperial College</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>James S. Ballantyne</td>
<td>BSc, MSc Guelph, PhD British Columbia</td>
<td>Professor</td>
</tr>
<tr>
<td>Nicholas J. Bernier</td>
<td>BSc McGill, Diploma in Aquaculture Malaspina College</td>
<td>Professor</td>
</tr>
<tr>
<td>Elizabeth G. Boulding</td>
<td>BSc British Columbia, MSc Alberta, PhD Washington</td>
<td>Professor</td>
</tr>
<tr>
<td>Christina M. Caruso</td>
<td>BA Oberlin College, PhD Illinois</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Karl A. Cottenie</td>
<td>MSc, MS, PhD Katholieke</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Stephen S. Crawford</td>
<td>BSc Guelph, MSc Queen's, PhD Guelph</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Teresa J.D. Crease</td>
<td>BSc, MSc Windsor, PhD Washington</td>
<td>Professor and Graduate Co-ordinator</td>
</tr>
<tr>
<td>Roy G. Danzmann</td>
<td>BSc, MSc Guelph, PhD Montana</td>
<td>Professor</td>
</tr>
<tr>
<td>Moira M. Ferguson</td>
<td>BSc, MSc Guelph, PhD Montana</td>
<td>Professor and Chair of Integrative Biology</td>
</tr>
<tr>
<td>John M. Fryxell</td>
<td>BSc, PhD British Columbia</td>
<td>Professor</td>
</tr>
<tr>
<td>Jinzhong Fu</td>
<td>BSc Nankai, MSc Chinese Academy of Sciences, PhD Toronto</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Douglas S. Fudge</td>
<td>BA, MAT Cornell, MSc Guelph, PhD British Columbia</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Todd E. Gillis</td>
<td>BSc, MSc Guelph, PhD Simon Fraser</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Ryan Gregory</td>
<td>BSc McMaster, PhD Guelph</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Cortland K. Griswold</td>
<td>BSc Wisconsin, MSc Toronto, PhD British Columbia</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Mehrdad Hajibabaei</td>
<td>BSc Tehran Azad, PhD Ottawa</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Robert Hanner</td>
<td>BSc Eastern Michigan, PhD Oregon</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Paul D.N. Hebert</td>
<td>BSc Queen's, PhD Cambridge, FRSC</td>
<td>Professor</td>
</tr>
</tbody>
</table>

### MSc Program

The Integrative Biology Graduate Program offers MSc degrees in each of three major areas of emphasis (fields): ecology, evolutionary biology and comparative physiology. The three areas of interest focus on (but are not restricted to) experimental approaches in field and laboratory settings and a strong linkage between theoretical and applied investigations. The department encourages students to pursue interdisciplinary research and, where appropriate, utilize faculty expertise from across campus on their advisory committees.

### Admissions Requirements

To be considered, applicants must meet the requirements of a four-year honours science degree with a minimum ‘B’ (75%) average during the final two years (4 semesters) of undergraduate study. Each applicant must obtain the support of a faculty member willing to serve as his/her thesis advisor.

Admission may be granted in September, January or May. Completed applications should be uploaded at least one full semester (four months) before the expected date of admission. Applications from international students should be uploaded at least eight months prior to the expected date of admission. All components of the application, including transcript(s), graduate certificate(s), grading scale(s), language test results, assessment forms, a statement of interest and the name of the faculty advisor must be uploaded no later than two months after an application is submitted through the OUAC portal. Applications that are incomplete after this time period will be closed.

### Admission Process

Graduate student applications to programs in the College of Biological Science are handled by the Office of the Associate Dean, Research (ADR). Before submitting an application, applicants are strongly encouraged to view the "Before you Apply" and "Admission Process" webpage on the ADR Future Student's site.

Complete application submission instructions may also be found on the Office of Graduate Studies webpage or in the Graduate Calendar.

### Degree Requirements

Students must complete and defend an acceptable thesis. In addition, they must successfully complete courses totaling not fewer than 1.5 credits. These credits must include the mandatory course IBIO*6630, Scientific Communication (0.50 credit).
An acceptable MSc thesis comprises a scientifically defensible account of the student's research on a particular, well-defined research problem or hypothesis. Such research should begin with the practical expectation that it could be completed and the thesis defended in not more than six semesters. Paramount to the notion of acceptability of the thesis is its quality with respect to the underlying rationale (problem identification), the approach used to address the problem, and the evaluation of the results. Final acceptance of the MSc thesis need not imply that the work is sufficiently meritorious to warrant publication in scholarly media, though the majority of MSc research in the department is published.

The Department endorses the idea that graduate students in the Integrative Biology program should benefit from exposure to recent developments both within and between the major areas of emphasis. To that end, students may enrol in any of the graduate-level, offered courses entitled "Advances in...". A selection of subjects is given in each of the course descriptions below. Details of course content, format and evaluation will be available in the Office of the Chair of the Department one semester prior to the semester in which the course is offered.

In addition, the Department offers two "Topics in Advanced Integrative Biology" courses to provide students with the opportunity to study with individual faculty on specific topics in the faculty member's area of expertise. These courses may be taken by groups as either reading/seminar courses, or on an individual research-project basis. Students should approach individual faculty members to request supervision on individual research project courses. In addition, faculty members may be petitioned by students to offer, or may advertise, "Topics in Advanced Integrative Biology” courses at least one semester prior to the semester in which the course is to be offered.

The Department also offers Special Topics courses that combine a senior-level undergraduate course in ecology, evolutionary biology, or comparative physiology with an additional component—typically a major paper or research project. These courses are coordinated by a single faculty member who should be consulted for more information.

### PhD Program

The Integrative Biology Graduate Program offers PhD degrees for studies in each of the three major areas of emphasis (fields): ecology, evolutionary biology, and comparative physiology. The 3 areas of emphasis focus on (but are not restricted to), experimental approaches in field and laboratory settings and a strong linkage between theoretical and applied investigations. The Department encourages students to pursue interdisciplinary research and, where appropriate, utilize faculty expertise from across campus on their advisory committees.

#### Admissions Requirements

The admission and degree requirements of the PhD program are essentially those of the university. Most applicants will have a recognized Master's degree in a related field obtained with minimum academic standing of 'A-' (80%) in their postgraduate studies, and the endorsement of a potential thesis advisor. Under exceptional circumstances admission directly to a PhD program with an appropriate honours degree alone, or transfer from MSc to PhD program without completing the MSc thesis requirements, is also possible. Applicants should be uploaded at least one full semester (four months) prior to the expected date of admission. Applications from international students should be uploaded at least eight months prior to the expected date of admission.

Each applicant must obtain the support of a faculty member willing to serve as his/her thesis advisor. All components of the application, including transcript(s), graduate certificate(s), grading scale(s), language test results, assessment forms, a statement of interest and the name of the faculty advisor must be uploaded no later than two months after an application is submitted through the OUAC portal. Applications that are incomplete after this time period will be closed.

#### Admissions Process

Graduate student applications to programs in the College of Biological Science are handled by the Office of the Associate Dean Research (ADR). Before submitting an application, applicants are strongly encouraged to view the "Before you Apply" "Admission Process" webpage on the ADR Future Student's site.

Complete application instructions may also be found on the Office of Graduate Studies webpage or in the Graduate Calendar.

### Degree Requirements

The Integrative Biology program expects that the major part of the student's time will be devoted to research in fulfillment of the thesis requirement. For that reason, the Department does not require that PhD students with an MSc degree take any courses. Students entering directly into the PhD program are required to take 1.0 course credits, which must include IBIO*6630, Scientific Communication (0.50 credit) in their first or second semester. Furthermore, advisory committees may, from time to time, require that a student take some prescribed or additional courses. Regardless, PhD students are expected to contribute and participate actively in the full academic life of the department, including regular attendance at departmental and inter-departmental seminars, and to provide leadership and counseling to undergraduate and MSc students.

PhD students will become candidates for the PhD degree upon successful completion of a qualifying examination with oral and written components, which should be conducted not later than the third semester of the PhD program. The exam evaluates students' knowledge in the general area of the intended research. Submission and defense of an acceptable thesis complete the requirements for a PhD. An acceptable thesis comprises a report of the candidate's research on a particular and well-defined research problem or hypothesis. It should represent a significant contribution to knowledge in that field. Emphasis is placed on the quality of the work as judged by the expression of mature scholarship, critical judgment, and satisfactory literary style in the thesis. Thesis approval implies that the research is judged sufficiently meritorious to warrant publication in reputable, refereed journals in its field.

#### Courses

**Ecology**

- **IBIO*6000 Advances in Ecology and Behaviour U [0.50]**
  - This is a modular course in which several faculty lecture and/or lead discussion groups in tutorials about advances in their broad areas, or related areas, of ecology and behaviour. Topics may include animal communication, optimal foraging, life-history evolution, mating systems, population dynamics, niche theory and food-web dynamics. The course includes lectures and seminars in which the students participate. Offered annually.
  - **Department(s):** Department of Integrative Biology

- **IBIO*6040 Special Topics in Ecology U [0.50]**
  - Students will explore aspects of ecology not otherwise covered in existing graduate courses. A program of study will be developed with a faculty advisor according to the student's requirements. Research papers, laboratory work and/or written and oral presentations may be required.
  - **Department(s):** Department of Integrative Biology

**Evolutionary Biology**

- **IBIO*6020 Advances in Evolutionary Biology U [0.50]**
  - This modular course reviews books and/or other publications in the field of evolutionary biology, providing knowledge of progress in this area of biology. Topics may include epigenetics, phylogeography, developmental basis of evolutionary change, and molecular evolution. The course includes lectures and seminars in which the students participate. Offered annually.
  - **Department(s):** Department of Integrative Biology

- **IBIO*6060 Special Topics in Evolution U [0.50]**
  - Students will explore aspects of evolution not otherwise covered in existing graduate courses. A program of study will be developed with a faculty advisor according to the student's requirements. Research papers, laboratory work and/or written and oral presentations may be required.
  - **Department(s):** Department of Integrative Biology

**Comparative Physiology**

- **IBIO*6010 Advances in Physiology U [0.50]**
  - A modular course format in which several faculty members lecture and/or lead discussion groups in tutorials on advances in their areas, or related areas, of physiology. Topics may include metabolic adaptation to extreme environments, behavioural and molecular endocrinology, and exercise and muscle physiology. The course includes lectures and seminars in which the students participate. Offered annually.
  - **Department(s):** Department of Integrative Biology

- **IBIO*6090 Special Topics in Physiology U [0.50]**
  - Students will explore aspects of physiology not otherwise covered in existing graduate courses. A program of study will be developed with a faculty advisor according to the student's requirements. Research papers, laboratory work and/or written and oral presentations may be required.
  - **Department(s):** Department of Integrative Biology

**General**

- **IBIO*6070 Topics in Advanced Integrative Biology I U [0.50]**
  - This course provides graduate students, either individually or in groups, with the opportunity to pursue topics in specialized fields of integrative biology under the guidance of graduate faculty. Course topics will normally be advertised by faculty one semester prior to their offering. Courses may be offered in any of lecture, reading/seminar, or individual project formats. A minimum enrolment may be required for some course offerings.
  - **Department(s):** Department of Integrative Biology
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Description</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBIO*6080</td>
<td>Topics in Advanced Integrative Biology II U [0.50]</td>
<td>This course provides graduate students, either individually or in groups, with the opportunity to pursue topics in specialized fields of integrative biology under the guidance of graduate faculty. Course topics will normally be advertised by faculty one semester prior to their offering. Courses may be offered in any of lecture, reading/seminar, or individual project formats. A minimum enrolment may be required for some course offerings.</td>
<td>Department of Integrative Biology</td>
</tr>
<tr>
<td>IBIO*6630</td>
<td>Scientific Communication U [0.50]</td>
<td>This course involves development and refinement of the skills of scientific communication, with emphasis on writing skills, in the context of developing a thesis proposal. This course is mandatory for MSc AND DIRECT ENTRY PhD students in the Department of Integrative Biology.</td>
<td>Department of Integrative Biology</td>
</tr>
</tbody>
</table>
## International Development Studies

The International Development Studies (IDS) program provides a focal point for graduate teaching and research in the area of international development. The program combines training in a particular discipline with exposure to a broad range of social science perspectives. Faculty expertise encompasses various aspects of development in Asia, Africa, Eastern and Western Europe and the Americas.

### Administrative Staff

**Director**  
Sally Humphries (646 MacKinnon, Ext. 53542)  
shumphri@uoguelph.ca

**Graduate Coordinator**  
Craig Johnson (514 MacKinnon, Ext. 53531)  
cjohnso6@uoguelph.ca

**Graduate Secretary**  
Catherine Badham (046 MacKinnon, Ext. 53461)  
ids@uoguelph.ca

**From Capacity Development and Extension**

**Graduate Coordinator**  
Al Lauzon (145 Landscape Architecture, Ext. 53379)

**Graduate Secretary**  
Sue Hall (100 Landscape Architecture, Ext. 56780)

**From Economics**

**Graduate Coordinator**  
Ross McKittrick (730 MacKinnon, Ext. 53051)

**Graduate Secretary**  
Sandra Brown (723 MacKinnon, Ext. 56341)

**From Engineering**

**Associate Director, Graduate Studies**  
Doug Joy (Thornbrough, Ext. 53048)

**Graduate Secretary**  
Laurie Gallinger (1405 Thornbrough, Ext. 56187)

**From English**

**Graduate Coordinator**  
Julie Cairnie (MCKN 438, Ext. 53248)

**Graduate Secretary**  
Olga Petrik (427 MacKinnon, Ext. 56315)

**From Food, Agricultural and Resource Economics**

**Graduate Coordinator**  
John Cranfield (320 MacLachlan, Ext. 53708)

**Graduate Secretary**  
Kathryn Selves (311 MacLachlan, Ext. 52771)

**From Geography**

**Graduate Coordinator (until July 1, 2014)**  
Ben Bradshaw (120 Hutt, Ext. 58460)

**Graduate Coordinator (effective July 1, 2014)**  
Wanhong Yang (352 Hutt, Ext. 53090)

**Graduate Secretary**  
Nance Grieve (123a Hutt, Ext. 56721)

**From History**

**Graduate Coordinator**  
Sofie Lachapelle (2016 MacKinnon, Ext. 53214)

**Graduate Secretary**  
Michael Boterman (2010 MacKinnon, Ext. 56847)

**From Latin American and Caribbean Studies**

**Graduate Coordinator**  
Gordana Yovanovich (277 MacKinnon, Ext. 53180)

**Graduate Secretary**  
Joanne Scheuer (267 MacKinnon, Ext. 53884)

**From Philosophy**

**Graduate Coordinator**  
Peter Eardley (336 MacKinnon, Ext. 53211)

**Graduate Secretary**  
Janet Thackray (348 MacKinnon, Ext. 56265)

**From Political Science**

**Graduate Coordinator**  
Tamara Small (533 MacKinnon, Ext. 53469)

**Graduate Secretary**  
Renee Tavascia (533 MacKinnon, Ext. 53469)

### From Sociology and Anthropology

**Sociology Graduate Coordinator**  
Vivian Shalla (608 MacKinnon, Ext. 52195)

**Public Issues in Anthropology Graduate Coordinator**  
Satsuki Kawano (603 MacKinnon, Ext. 53912)

**Graduate Secretary**  
Shelagh Daly (624 MacKinnon, Ext. 53895)

### Collaborative Master's Program

Students wishing to pursue a Master's degree with the designation "International Development Studies" must enter the collaborative IDS program through a participating department.

### Admission Requirements

Students must meet both departmental and collaborative IDS requirements. They must demonstrate familiarity with conceptual frameworks employed in the social sciences. More detailed information is available on the IDS Graduate website.

### Degree Requirements

Students complete IDS core requirements and requirements designated for IDS students by the relevant department. Following are requirements for select departments; consult the IDS Graduate website for other departments. One IDS core course may be waived if a student has taken a comparable course at the senior undergraduate level.

#### IDS Master's Core Courses*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDEV*6100</td>
<td>International Development Seminar</td>
<td>0.50</td>
</tr>
</tbody>
</table>

One of:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC*6460</td>
<td>Gender and Development</td>
<td>0.50</td>
</tr>
<tr>
<td>ANTH*6460</td>
<td>Gender and Development</td>
<td>0.50</td>
</tr>
<tr>
<td>CDE*6420</td>
<td>Communication for Social and Environmental Change</td>
<td>0.50</td>
</tr>
<tr>
<td>SOC*6420</td>
<td>Global Agro-Food Systems, Communities and Rural Change</td>
<td>0.50</td>
</tr>
<tr>
<td>ANTH*6420</td>
<td>Global Agro-Food Systems, Communities and Rural Change</td>
<td>0.50</td>
</tr>
<tr>
<td>SOC*6480</td>
<td>Work, Gender and Change in a Global Context</td>
<td>0.50</td>
</tr>
<tr>
<td>ANTH*6480</td>
<td>Work, Gender and Change in a Global Context</td>
<td>0.50</td>
</tr>
<tr>
<td>SOC*6270</td>
<td>Diversity and Social Equality</td>
<td>0.50</td>
</tr>
<tr>
<td>ANTH*6270</td>
<td>Diversity and Social Equality</td>
<td>0.50</td>
</tr>
<tr>
<td>SOC*6500</td>
<td>Social Movements in Latin America</td>
<td>0.50</td>
</tr>
<tr>
<td>GEOG*6340</td>
<td>Human-Environment Relations</td>
<td>0.50</td>
</tr>
<tr>
<td>GEOG*6400</td>
<td>Urbanization and Development</td>
<td>0.50</td>
</tr>
<tr>
<td>GEOG*6450</td>
<td>Development Geography</td>
<td>0.50</td>
</tr>
<tr>
<td>EDRD*6050</td>
<td>Farming Systems Analysis and Development</td>
<td>0.50</td>
</tr>
<tr>
<td>RPD*6291</td>
<td>Rural Development Administration</td>
<td>0.50</td>
</tr>
<tr>
<td>ECON*6370</td>
<td>Economic Development in Historical Perspective</td>
<td>0.50</td>
</tr>
<tr>
<td>FARE*6600</td>
<td>Food Security and the Economics of Agri Food Systems in Developing Countries</td>
<td>0.50</td>
</tr>
<tr>
<td>ECON*6350</td>
<td>Economic Development</td>
<td>0.50</td>
</tr>
<tr>
<td>POLS*6750</td>
<td>Development in Practice</td>
<td>0.50</td>
</tr>
<tr>
<td>POLS*6730</td>
<td>The Politics of Development and Underdevelopment</td>
<td>0.50</td>
</tr>
</tbody>
</table>

### Note

*This does not apply to students in Anthropology, Engineering, Food, Agricultural and Resource Economics, Latin American and Caribbean Studies, Political Science and Rural Planning and Development. Please see specific departmental requirements sections below for required courses (both IDS and departmental or program).

### Optional IDS Courses

Students in the collaborative program may undertake any course offered by a collaborating department with the permission of the instructor. There are also two optional interdisciplinary courses available:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDEV*6000</td>
<td>Regional Context</td>
<td>0.50</td>
</tr>
<tr>
<td>IDEV*6500</td>
<td>Fieldwork in International Development Studies</td>
<td>0.50</td>
</tr>
</tbody>
</table>
Departmental or Program Requirements

Programs not listed below are designed by special arrangements. All departmental requirements are subject to change. Students should confirm the departmental course requirements with the respective Graduate Coordinator.

Public Issues in Anthropology (MA)

IDS Requirements:
IDEV*6100 [0.50] International Development Studies Seminar
One of:
ANTH*6800 [0.50] Anthropological Theory
ANTH*6410 [0.50] Qualitative Research Methods
ANTH*6000 [0.50] Public Issues Anthropology
Either a Thesis and one additional course or
ANTH*6660 [1.00] Major Paper
and three additional courses

Economic Development and Extension (MSc)

IDS Requirements:
IDEV*6100 [0.50] International Development Studies Seminar
One of:
ECON*6370 [0.50] Economic Development in Historical Perspective
FARE*6600 [0.50] Food Security and the Economics of Agri Food Systems in Developing Countries
ECON*6350 [0.50] Economic Development
One of:
POLS*6750 [0.50] Development in Practice
POLS*6730 [0.50] The Politics of Development and Underdevelopment

Departmental Requirements:
Six courses from the list of required graduate courses in Engineering (to be selected in consultation with advisor)
Plus one of:
ENG*6950 [1.00] Final Project in Environmental Engineering
ENG*6900 [1.00] Final Project in Water Resources Engineering

Engineering (MAsc in Environmental Engineering or Water Resources Engineering)

IDS Core Courses Required:
IDEV*6100 [0.50] International Development Studies Seminar
One of:
SOC*6460 [0.50] Gender and Development
ANTH*6460 [0.50] Gender and Development
CDE*6420 [0.50] Communication for Social and Environmental Change
SOC*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change
ANTH*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change
SOC*6480 [0.50] Work, Gender and Change in a Global Context
ANTH*6480 [0.50] Work, Gender and Change in a Global Context
SOC*6270 [0.50] Diversity and Social Equality
ANTH*6270 [0.50] Diversity and Social Equality
SOC*6500 [0.50] Social Movements in Latin America
One of:
SOC*6480 [0.50] Work, Gender and Change in a Global Context
ANTH*6480 [0.50] Work, Gender and Change in a Global Context
SOC*6270 [0.50] Diversity and Social Equality
ANTH*6270 [0.50] Diversity and Social Equality
SOC*6500 [0.50] Social Movements in Latin America
One of:
POLS*6750 [0.50] Development in Practice
POLS*6730 [0.50] The Politics of Development and Underdevelopment

Departmental Requirements:
Three courses from the list of required graduate courses in Engineering (to be selected in consultation with advisor)
Thesis

English (MA)

Four English courses and a thesis
OR
Six English courses and
ENGL*6803 [1.00] Research Project

Food, Agricultural and Resource Economics (MSc)

IDS Requirements
IDEV*6100 [0.50] International Development Studies Seminar
One of:
SOC*6460 [0.50] Gender and Development
ANTH*6460 [0.50] Gender and Development
CDE*6420 [0.50] Communication for Social and Environmental Change
SOC*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change
ANTH*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change
SOC*6480 [0.50] Work, Gender and Change in a Global Context
ANTH*6480 [0.50] Work, Gender and Change in a Global Context
SOC*6270 [0.50] Diversity and Social Equality
ANTH*6270 [0.50] Diversity and Social Equality
SOC*6500 [0.50] Social Movements in Latin America
One of:
SOC*6480 [0.50] Work, Gender and Change in a Global Context
ANTH*6480 [0.50] Work, Gender and Change in a Global Context
SOC*6270 [0.50] Diversity and Social Equality
ANTH*6270 [0.50] Diversity and Social Equality
SOC*6500 [0.50] Social Movements in Latin America
One of:
POLS*6750 [0.50] Development in Practice
POLS*6730 [0.50] The Politics of Development and Underdevelopment

Departmental Requirements

2014-2015 Graduate Calendar
March 9, 2015
<table>
<thead>
<tr>
<th>Course-based MSc:</th>
</tr>
</thead>
<tbody>
<tr>
<td>FARE*6380 [0.50] Applied Microeconomics for Agricultural Economists</td>
</tr>
<tr>
<td>FARE*6970 [0.50] Applied Quantitative Methods for Agricultural Economists</td>
</tr>
<tr>
<td>FARE*6910 [0.50] Applied Policy Analysis I</td>
</tr>
<tr>
<td>FARE*6100 [0.50] The Methodologies of Economics</td>
</tr>
<tr>
<td>FARE*6600 [0.50] Food Security and the Economics of Agri Food Systems in Developing Countries</td>
</tr>
<tr>
<td>FARE*6800 [0.00] Seminar in Agricultural Economics</td>
</tr>
<tr>
<td>One additional course</td>
</tr>
</tbody>
</table>

**Note**

* NB: a departmental course from the policy area may substitute for the Politics course in the IDS core.

<table>
<thead>
<tr>
<th>Geography (MA or MSc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG*6090 [0.50] Geographical Research Methods I</td>
</tr>
<tr>
<td>GEOG*6091 [0.50] Geographical Research Methods II</td>
</tr>
<tr>
<td>One other Geography course (which can be taken from the IDS core)</td>
</tr>
<tr>
<td>Either a thesis OR</td>
</tr>
<tr>
<td>GEOG*6180 [1.00] Research Project in Geography</td>
</tr>
<tr>
<td>plus one other Geography course not taken as part of the IDS core</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>History (MA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST*6020 [0.50] Historiography II</td>
</tr>
<tr>
<td>Two additional History courses</td>
</tr>
<tr>
<td>OR (only one if the IDS core includes):</td>
</tr>
<tr>
<td>ECON*6370 [0.50] Economic Development in Historical Perspective</td>
</tr>
<tr>
<td>One of:</td>
</tr>
<tr>
<td>Thesis</td>
</tr>
<tr>
<td>HIST*6400 [1.00] Major Paper</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latin American and Caribbean Studies (MA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LACS*6010 [0.50] Latin American Identity &amp; Culture I</td>
</tr>
<tr>
<td>LACS*6020 [0.50] Latin American Identity &amp; Culture II</td>
</tr>
<tr>
<td>LACS*6030 [0.50] Globalization &amp; Insecurity in the Americas</td>
</tr>
<tr>
<td>One of:</td>
</tr>
<tr>
<td>LACS*6000 [0.50] Research Methods Seminar</td>
</tr>
<tr>
<td>POLS*6940 [0.50] Qualitative Research Design and Methods</td>
</tr>
<tr>
<td>SOC*6130 [0.50] Quantitative Research Methods</td>
</tr>
<tr>
<td>Plus:</td>
</tr>
<tr>
<td>IDEV*6100 [0.50] International Development Studies Seminar</td>
</tr>
<tr>
<td>ECON*6370 [0.50] Economic Development in Historical Perspective</td>
</tr>
<tr>
<td>(or its equivalent)</td>
</tr>
<tr>
<td>SOC*6500 [0.50] Social Movements in Latin America</td>
</tr>
<tr>
<td>(or its equivalent)</td>
</tr>
<tr>
<td>Plus:</td>
</tr>
<tr>
<td>LACS*6100 [1.00] Research Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Philosophy (MA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL*6950 [0.50] MA Seminar</td>
</tr>
<tr>
<td>Additional philosophy courses in consultation with the department</td>
</tr>
<tr>
<td>Either a thesis or research paper (in conjunction with)</td>
</tr>
<tr>
<td>PHIL*6990 [1.00] Guided Research Project</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Political Science (MA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDEV*6100 [0.50] International Development Studies Seminar</td>
</tr>
<tr>
<td>One of</td>
</tr>
<tr>
<td>SOC*6460 [0.50] Gender and Development</td>
</tr>
<tr>
<td>ANTH*6460 [0.50] Gender and Development</td>
</tr>
<tr>
<td>CDE*6420 [0.50] Communication for Social and Environmental Change</td>
</tr>
<tr>
<td>SOC*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change</td>
</tr>
<tr>
<td>ANTH*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change</td>
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<tr>
<td>SOC*6480 [0.50] Work, Gender and Change in a Global Context</td>
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<td>ANTH*6480 [0.50] Work, Gender and Change in a Global Context</td>
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<tr>
<td>SOC*6270 [0.50] Diversity and Social Equality</td>
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</tr>
<tr>
<td>SOC*6500 [0.50] Social Movements in Latin America</td>
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<tr>
<td>One of:</td>
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<tr>
<td>GEOG*6340 [0.50] Human-Environment Relations</td>
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<td>GEOG*6450 [0.50] Development Geography</td>
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<tr>
<td>EDRD*6050 [0.50] Farming Systems Analysis and Development</td>
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<tr>
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<tr>
<td>ECON*6370 [0.50] Economic Development in Historical Perspective</td>
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<tr>
<td>FARE*6600 [0.50] Food Security and the Economics of Agri Food Systems in Developing Countries</td>
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**Departmental Requirements**

<table>
<thead>
<tr>
<th>Political Science (MA)</th>
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<tr>
<td>IDEV*6100 [0.50] International Development Studies Seminar</td>
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<tr>
<td>SOC*6460 [0.50] Gender and Development</td>
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<td>ANTH*6460 [0.50] Gender and Development</td>
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<tr>
<td>CDE*6420 [0.50] Communication for Social and Environmental Change</td>
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<tr>
<td>SOC*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change</td>
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<td>ANTH*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change</td>
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<tr>
<td>SOC*6480 [0.50] Work, Gender and Change in a Global Context</td>
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<td>SOC*6270 [0.50] Diversity and Social Equality</td>
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**IDS Requirements:**

<table>
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<tr>
<td>SOC*6460 [0.50] Gender and Development</td>
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**Departmental Requirements**

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<tr>
<td>One of</td>
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<tr>
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**Sociology (MA)**

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<tr>
<td>SOC*6070 [0.50] Sociological Theory</td>
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<td>SOC*6700 [0.00] Pro-seminar</td>
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<tr>
<td>One of:</td>
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<tr>
<td>SOC*6130 [0.50] Quantitative Research Methods</td>
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</table>
Collaborative PhD Program

The collaborative PhD program in International Development Studies (IDS) provides an opportunity for advanced students to engage with interdisciplinary development theories and to conduct research on international development issues based on approaches of selected academic disciplines. The PhD program in IDS is undertaken jointly with a discipline-based degree. Students enter IDS through a collaborating department with a PhD program. At present these include Sociology; Political Science; Population Medicine; Geography; Food, Agricultural and Resource Economics; Economics; History; Engineering; Environmental Biology and Land Resource Science.

Based on the experience of faculty advisors in key collaborating departments, the program focuses on issues such as international political economy, food security, environmental dynamics and governance, gender inequality, rural development, long-term economic change, and other interdisciplinary cutting-edge topics in international development.

Admission Requirements

To be considered for admission, an applicant must have a recognized Bachelor's degree and a Master's degree in a relevant discipline or related interdisciplinary field. Applicants to the collaborative IDS program must meet the specific departmental admission requirements, which vary from one department to another. For information on the admission requirements and application deadlines of your selected department, please contact the relevant department directly.

In addition to the specific departmental admission requirements, applicants are expected to have a strong background in the social sciences a demonstrable track record of experience in the course-based study of development issues, development research and/or development practice and a stated research interest relating to international development.

Degree Requirements

Students complete requirements for the departmental degree as well as the IDS components which consist of two core courses, including an interdisciplinary course on theories and debates in development and a course on development research and practice. While the students have to successfully complete these courses to remain in the collaborative IDS program, they do not have to pass a separate qualifying examination in addition to the departmental qualifying exam. Furthermore, the expectation is that the IDS students' PhD research will bridge two or more disciplines in a way that relates to the field of IDS.

For further information regarding course offering, please contact the IDS Graduate Secretary.

IDS PhD Core Courses

IDEV*6800 [0.50] Theories and Debates in Development
IDEV*6850 [0.50] Development Research and Practice

Departmental PhD Requirements

Departmental requirements are assigned in collaboration with the student's home department. See respective departmental web pages.

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Restrictions</th>
<th>Department(s)</th>
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<tr>
<td>IDEV*6000</td>
<td>Regional Context U [0.50]</td>
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<tr>
<td>IDEV*6100</td>
<td>International Development Studies Seminar U [0.50]</td>
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<tr>
<td>IDEV*6500</td>
<td>Fieldwork in International Development Studies U [0.50]</td>
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<td>Dean's Office, College of Social and Applied Human Sciences</td>
</tr>
<tr>
<td>IDEV*6800</td>
<td>Theories and Debates in Development F [0.50]</td>
<td></td>
<td>Restricted to students in doctoral IDEV programs or instructor's consent.</td>
<td>Dean's Office, College of Social and Applied Human Sciences</td>
</tr>
</tbody>
</table>
Landscape Architecture

The Landscape Architecture program offers courses of study leading to the Master of Landscape Architecture (MLA) degree.

Administrative Staff

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Cecelia Paine
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Nathan H. Perkins
BLA, MLA Illinois, PhD Wisconsin, FASLA - Associate Professor

MLA Program

The MLA program is designed for students with a previous degree in a field unrelated to landscape architecture; for students who hold other professional degrees in architecture, planning and engineering; and for students who have received a BLA degree and are interested in advanced education in a particular area of landscape architecture. The MLA program emphasizes research, analysis, planning, design and management of landscapes ranging in scale from individual sites to entire communities and regions. The MLA program is accredited by the Canadian Society of Landscape Architects. This accreditation is also recognized by the American Society of Landscape Architects.

Admission Requirements

Admission to the MLA program is not restricted to holders of the BLA degree. Strongly motivated graduates of honours programs in a variety of disciplines may be admissible under the normal Faculty of Graduate Studies admission requirements. Well prepared applicants will have studied as broadly as possible in their undergraduate programs.

Application deadline and additional information on the MLA program at the University of Guelph can be obtained from our internet address at: http://www.uoguelph.ca/sedrd/

Degree Requirements

Students are encouraged to relate their major emphasis in the MLA to their undergraduate discipline through course work and thesis.

Required Core

For the holder of a BLA with several subsequent years of significant professional experience:

LARC*6380 [0.25] Research Seminar
LARC*6600 [0.50] Critical Inquiry & Research Analysis
LARC*6610 [0.50] Research Methods
LARC*6710 [0.50] Special Study
1 Elective
Thesis

For the holder of a BLA without such professional experience:

LARC*6380 [0.25] Research Seminar
LARC*6470 [0.50] Integrative Environmental Planning
LARC*6600 [0.50] Critical Inquiry & Research Analysis
LARC*6610 [0.50] Research Methods
LARC*6710 [0.50] Special Study
2 Electives
Thesis

For holders of degrees other than the BLA:

LARC*2240 [0.50] Plants in the Landscape
LARC*6010 [0.50] Landscape Architecture Studio I
LARC*6020 [0.50] Landscape Architecture Studio II
LARC*6030 [0.50] Landscape Architecture Studio III
LARC*6040 [0.50] Landscape Architecture Studio IV
LARC*6120 [0.50] Community Design
LARC*6340 [0.25] Landscape History Seminar
LARC*6360 [0.25] Professional Practice Seminar
LARC*6380 [0.25] Research Seminar
LARC*6430 [0.50] Landscape Resource Analysis
LARC*6470 [0.50] Integrative Environmental Planning
LARC*6440 [0.50] Environmental Design
LARC*6600 [0.50] Critical Inquiry & Research Analysis
LARC*6610 [0.50] Research Methods
LARC*6710 [0.50] Special Study
Thesis

Courses

Theory and Practice

LARC*6010 Landscape Architecture Studio I F [0.50]

Studio and field instruction introduces the student to landscape architecture through acquisition of basic professional skills and knowledge. Topics include design theory, landscape inventory and analysis, application of the design process to projects at the site scale, graphic and oral communication.

Restriction(s): Available only to students registered in the MLA program.
Department(s): School of Environmental Design and Rural Development

LARC*6020 Landscape Architecture Studio II F [0.50]

LARC*6030 Landscape Architecture Studio III W [0.50]

LARC*6040 Landscape Architecture Studio IV W [0.50]

LARC*6120 Community Design W [0.50]

LARC*6340 Landscape History Seminar F [0.25]

A lecture/seminar course focussed on the history of Landscape Architecture. Skills emphasize the development of oral and writing skills.

Restriction(s): Available only to students registered in the MLA program.
Department(s): School of Environmental Design and Rural Development

LARC*6360 Professional Practice Seminar F [0.25]

A lecture/seminar course focussed on the legal, business, ethical and professional practices of Landscape Architecture professionals. Skills emphasize the development of oral and writing skills.

Restriction(s): Available only to students registered in the MLA program.
Department(s): School of Environmental Design and Rural Development

March 9, 2015
<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Description</th>
<th>Restrictions</th>
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</tr>
</thead>
<tbody>
<tr>
<td>LARC*6430</td>
<td>Landscape Resource Analysis</td>
<td>0.50</td>
<td>Integrated field and classroom instruction introduces the student to inventory and analysis of biological, physical, social and cultural elements of the landscape. Projects will incorporate principles of landscape ecology and landscape planning. Field study will require some travel at student's expense.</td>
<td>Available only to students registered in the MLA program.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*6440</td>
<td>Environmental Design</td>
<td>0.50</td>
<td>This course integrates field and classroom study to apply landscape ecology to current landscape problems, including analysis of regional landscapes, restoration of degraded landscapes, and application of aesthetic and ecological principles across scales in site to regional settings. Case studies component will require some travel at students' expense.</td>
<td>Available only to students registered in the MLA program.</td>
<td>School of Environmental Design and Rural Development</td>
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<tr>
<td>LARC*6470</td>
<td>Integrative Environmental Planning</td>
<td>0.50</td>
<td>Landscape planning emphasizing the integration and interrelationships between biophysical and cultural resources, with application at a regional landscape planning scale. This course typically incorporates community-outreach projects.</td>
<td>Available only to students registered in the MLA program.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>EDRD*6000</td>
<td>Qualitative Analysis in Rural Development</td>
<td>0.50</td>
<td>A seminar course focussed on the process and communication of research, influenced by the current research of the participants. Participants organize a conference to present their research results.</td>
<td></td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*6380</td>
<td>Research Seminar</td>
<td>0.25</td>
<td>Students are introduced to critical inquiry as a method of evaluating information, design, and planning. The focus of the course is on the quantification and analysis of research data. Modelling and simulation are introduced and discussed in the context of planning, design, and research.</td>
<td>Available only to students registered in the MLA program.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*6600</td>
<td>Critical Inquiry &amp; Research Analysis</td>
<td>0.50</td>
<td>An introduction to a broad array of research methods as they apply to landscape planning and design, with a focus on the connections between research and design. Emphasis is on developing foundations for the creation of appropriate research questions.</td>
<td>Available only to students registered in the MLA program.</td>
<td>School of Environmental Design and Rural Development</td>
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<tr>
<td>LARC*6610</td>
<td>Research Methods</td>
<td>0.50</td>
<td>Independent study. A proposal for the content and product required for this course must be developed in conjunction with the student's Advisory Committee.</td>
<td>Instructor consent required.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
</tbody>
</table>
Latin American and Caribbean Studies

Administrative Staff

Director
Ruediger Mueller (267 MacKinnon, Ext. 53167)
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Tony Wison
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Gordana Yovanovich
BA Carleton, MA, PhD Toronto - Professor, Latin American Literature and Culture, SOLAL

MA Program

This is the only Latin American and Caribbean Studies Master’s program in Canada to bridge the social sciences and the humanities. The program is particularly innovative in its collaboration with International Development. In addition to being able to finish the program in three semesters, students also have the benefit of studying in a community with the largest concentration of Latin American scholars internationally renowned for their major collaborative and individual research projects. Study Abroad gives students an opportunity to study and/or participate in projects at partner institutions in Latin America and the Caribbean. LACS program does not train students for specific careers, but prepares them for a variety of jobs that require analytical skills, an international perspective, and the ability to communicate in both English and Spanish. The program prepares students for further study and research at the doctoral level, either in a related core discipline or in an interdisciplinary program.

Admission Requirements

The normal requirement for admission to the LACS MA program is the equivalent of an Honours degree from a recognized institution with at least a high second-class standing (75% or higher) in the last two years of study. Preference will be given to students who have taken upper-level undergraduate courses in areas such as Latin American and Caribbean history, society, politics, development, literature, art, languages, and music. A reading knowledge of Spanish will be required. Students wishing to enter the program normally do so in September.

Degree Requirements

LACS students will either take option 1 or 2. Study Abroad is not mandatory but strongly recommended to all students.

Option 1: take 6 courses (3.0 credits) and write a major research paper (1.0 credit). This option is recommended.

In addition to taking the four required courses students will also take two electives in the area of culture or society. Students who choose to go on an exchange in semester 2 of the program will not need to take LACS*6020 Latin American and Caribbean Identity and Culture II course. They can replace the winter portion of the course with a comparable course taken at the host university. While abroad, students will have the opportunity to develop language proficiency, and to conduct research or take courses for their major project. The major paper LACS*6100 Research Project (1.0 credits) consists of approximately 12,000 words and will be researched and written under the direction of one or two faculty members, one of whom could be from an exchange Latin American partner university.

Option 2: take 4 courses (2.0 credits) and write a thesis

All students will take four required courses:

- LACS*6000 [0.50] Research Methods Seminar
- LACS*6010 [0.50] Latin American Identity & Culture I
- LACS*6020 [0.50] Latin American Identity & Culture II
- LACS*6030 [0.50] Globalization & Insecurity in the Americas

Students who choose to write their major paper or thesis from a social science perspective may replace LACS*6000 with SOC*6140 (F) or SOC*6140 (W) or SOC*6130 (W).

Collaborative Programs

International Development Studies MA

Latin American and Caribbean Studies graduate students have the opportunity to pursue the MA in Latin American and Caribbean Studies with the designation “International Development Studies.” Students wishing to take MA in Latin American and Caribbean Studies (LACS) in conjunction with the collaborative International Development Studies (IDS) program must enter the LACS program and satisfy both the LACS admission requirements and the IDS admission requirements. Please consult the collaborative International Development Studies listing for a detailed description of the MA collaborative program including the special additional requirements for each of the participating departments or programs.

Courses

- ECON*6350 [0.50] Economic Development
- ECON*6370 [0.50] Economic Development in Historical Perspective
- ENGL*6811 [0.50] Special Topics in English
- FREN*6022 [0.50] Topics in Caribbean and African Literatures
- HIST*6500 [0.50] Topics in Global History
- HIST*6520 [0.50] Topics in Latin American History
- HIST*6521 [0.50] Latin American Research
- POLS*6050 [0.50] Gender and Politics
- POLS*6250 [0.50] Comparative Governments in the Americas
- SOC*6270 [0.50] Diversity and Social Equality
- SOC*6420 [0.50] Global Agro-Food Systems, Communities and Rural Change
- SOC*6460 [0.50] Gender and Development
- SOC*6500 [0.50] Social Movements in Latin America
- LACS*6000 Research Methods Seminar U [0.50]
- LACS*6010 Latin American Identity & Culture I F [0.50]

This is the first of the two required LACS culture core courses. They will address theoretical issues relevant to Latin American identities and cultures, and will use these as heuristic devices in the study of major and marginalized cultural events, narratives, and visual and musical expressions. In LACS*6010 students will analyze the concept of "hybridity" and study how hybrid culture has been incorporating past with the present, and how it is and has been incorporating local and African forms and themes with European and US derived high culture.

Department(s): School of Languages and Literatures

LACS*6010 Latin American Identity & Culture I F [0.50]
<table>
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<td>LACS*6020</td>
<td>Latin American Identity &amp; Culture II</td>
<td>0.50</td>
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<tr>
<td>LACS*6030</td>
<td>Globalization &amp; Insecurity in the Americas F</td>
<td>0.50</td>
</tr>
<tr>
<td>LACS*6040</td>
<td>Novel &amp; Nation in Spanish America U</td>
<td>0.50</td>
</tr>
<tr>
<td>LACS*6050</td>
<td>Globalization &amp; Latin American Representation in Art W</td>
<td>0.50</td>
</tr>
<tr>
<td>LACS*6100</td>
<td>Research Project</td>
<td>1.00</td>
</tr>
<tr>
<td>LACS*6200</td>
<td>Topics in Latin American and Caribbean Studies U</td>
<td>0.50</td>
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**LACS*6020 Latin American Identity & Culture II W [0.50]**

This course is a continuation of LACS*6010. Students going on an exchange may replace this course with a similar course taken at the exchange university. This course will study minority cultures and the relationship of the periphery and the centre. Feminist, queer, Latina/o and indigenous marginalized cultures will be studied in the context of Internationalism and Globalization.

*Department(s):* School of Languages and Literatures

**LACS*6030 Globalization & Insecurity in the Americas F [0.50]**

An analytical, critical and interdisciplinary introductory overview of Latin America and the Caribbean in the larger context of the Americas, from the point of view of the security and insecurity of its people. It will concentrate on the interplay of environmental, economic, social, political, and cultural factors upon such security in an era of globalization.

*Department(s):* School of Languages and Literatures

**LACS*6040 Novel & Nation in Spanish America U [0.50]**

This course will study the constitution of Spanish American nation in the novel since 1900 from a variety of theoretical perspectives. Particular attention will be paid to the novel's appropriation of foreign artistic and cultural influences to articulate Spanish American history.

*Department(s):* School of Languages and Literatures

**LACS*6050 Globalization & Latin American Representation in Art W [0.50]**

This course will examine the continuous flow of large, temporary high-profile identity-based "blockbuster" exhibitions based on Latin American and Caribbean art in Canada and the United States. These exhibitions play a key role as cultural agents, and raise questions of the concept of converging visual cultures.

*Department(s):* School of Languages and Literatures

**LACS*6100 Research Project U [1.00]**

This research project will result in a major paper of about 15,000 words. The student chooses a topic and writes a paper on the topic with the guidance of a faculty member. The topic must be approved by the Graduate Program Committee.

*Department(s):* School of Languages and Literatures

**LACS*6200 Topics in Latin American and Caribbean Studies U [0.50]**

An independent study course, the nature and content of which is agreed upon between the individual student and the person offering the course.

*Restriction(s):* Instructor and Graduate Co-ordinator signatures required. Course cannot be taken in first semester.

*Department(s):* School of Languages and Literatures
Admission Requirements

Minimum admission requirements are:

A four year undergraduate degree or its equivalent (from a recognized university or college) with an average of at least a “B-” (70-72%) in the last two years of study AND having completed at least five years of relevant work experience.

OR

General degree, diploma and/or an acceptable professional designation AND having completed at least seven years of relevant work experience.

Meeting the minimum criteria for admission does not guarantee acceptance into the program. Limitations of funds, space, facilities or personnel may make it necessary for the University, at its discretion, to refuse admission to an otherwise qualified applicant. Applicants for the program must have confirmed access to appropriate computer hardware and software. The computer equipment to be used by participants must have adequate peripherals to support the learning system, including DVD capability and a sound card. For information pertaining to computer equipment and software requirements contact the College of Business and Economics Executive Programs Office at 1-888-622-2474 or visit the MA (Leadership) web site at http://www.leadership.uoguelph.ca. Participants are solely responsible to arrange for the purchase and maintenance of the recommended computer system and software.

Degree Requirements

On average participants allot 20 to 25 hours per week to study and participate in the program. This is an approximate number of hours and may vary depending on personal learning style. Participants normally complete the MA (Leadership) in 20-24 months. Normally, course modules are eight weeks in length and are completed in a pre-determined sequence, but some variations exist. Participants must complete the program within six years of commencement.

The MA (Leadership) involves a challenging combination of course work with the option of completing a research-based project. Six web-based courses (3.0 credits) and two residency courses (1.0 credit) must be completed, followed by either the completion of the major research project (1.0 credit) or by taking two additional courses (1.0 credit). The project requires a literature review, data collection, and data analysis, which culminates in a major research project.

Courses

**LEAD*6000 Foundations of Leadership S.F [0.50]**

The course will enhance participants’ interpersonal competency, as well as their knowledge and understanding of the theory and research underlying the impact of team management and collaboration on the organization.

*Restriction(s):* CBE Executive Programs students only  
*Department(s):* Executive Leadership Program

**LEAD*6100 Theories of Leadership S.F [0.50]**

This course traces the development of the concept of leadership. Through the interplay of theory and practical application, participants will gain a deeper appreciation for the requirements, responsibilities, and consequences of effective leadership.

*Restriction(s):* CBE Executive Programs students only  
*Department(s):* Executive Leadership Program

**LEAD*6200 Leadership of Organizational Change F,W [0.50]**

This course studies the role of leadership in the management of change within an organization and the changes required of management. The course examines the development of trust, the building of organizational loyalty, and motivation and inspiring of high performance teams.

*Restriction(s):* CBE Executive Programs students only  
*Department(s):* Executive Leadership Program

**LEAD*6220 Strategic Leadership and Management W [0.50]**

As a research intensive course in the MA Leadership, this course examines the conceptual and practical dimensions of strategic leadership and management in a variety of organizational, external and individual contexts using a selection of readings, discussions, case analyses and a final paper.

*Department(s):* Executive Leadership Program

**LEAD*6300 Role of the Leader in Decision-Making F,W [0.50]**

The role of the leader in decision-making is explored through the study of the rational model for decision-making, human biases, creativity, and risk and uncertainty in decision-making. The course will also examine ethical issues and group decision-making.

*Restriction(s):* CBE Executive Programs students only  
*Department(s):* Executive Leadership Program
<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD*6350</td>
<td>The Role of the Leader as Reflective Practitioner F</td>
<td>0.50</td>
<td>This course will enhance the leader’s ability to navigate the complexity of organizational life and contribute to building a more sustainable society by developing skills in reflective practice. Reflective practice is divided into four areas that stretch over eight modules: Rethinking, Relating, Responding and Reinventing.</td>
</tr>
</tbody>
</table>
|             |              |         | Restrictions: CBE Executive Programs students only  
|             |              |         | Department(s): Executive Leadership Program |
| LEAD*6400   | Research Methods for Decision-Making S | 0.50    | The course will explore both quantitative and qualitative techniques used in the analysis of research results from a variety of sources (surveys, government statistics, in-depth interview, focus groups and program evaluation results). Case studies will be used to demonstrate the application of multiple research methods. |
|             |              |         | Restrictions: CBE Executive Programs students only  
|             |              |         | Department(s): Executive Leadership Program |
| LEAD*6500   | Ethics in Leadership W,S | 0.50    | Issues in the use and application of ethical standards by leaders are explored through examples from history, current events, novels, films and television. Relevant theory is applied to leadership examples to help students develop an ethical framework for the exercise of leadership skills. |
|             |              |         | Restrictions: CBE Executive Programs students only  
|             |              |         | Department(s): Executive Leadership Program |
| LEAD*6600   | Foundations of Leadership for Retirement and Senior Living U | 0.50    | Leadership in the senior living sector requires unique skills, competencies and practice. The purpose of this course is to explore leadership theories and concepts in this context. Understanding the rights and choices of seniors, the future of the aging population, care and support services available and legislative requirements is essential to individuals interested in pursuing career growth in senior living. |
|             |              |         | Restrictions: CBE Executive Programs students only  
|             |              |         | Department(s): Executive Leadership Program |
| LEAD*6720   | Politics of Organizations W | 0.50    | This elective course reviews a variety of theories and models that help to explain the behavioural underpinnings that influence and shape management and leadership processes within organizations. Examples from history and current events are explored to illustrate theory. |
|             |              |         | Restrictions: CBE Executive Programs students only  
|             |              |         | Department(s): Executive Leadership Program |
| LEAD*6740   | Coaching and Developing Others W | 0.50    | This course will provide student with an opportunity to design developmental plans for direct reports, assess their coaching skills, and develop their coaching skills to support the development of others. |
|             |              |         | Restrictions: CBE Executive Programs students only  
|             |              |         | Department(s): Executive Leadership Program |
| LEAD*6800   | Personal Skill Self-Assessment S | 0.50    | Using the "Basis of Competence" model, this course examines personal skills in four areas: Managing Self, Communicating, Managing People and Tasks, and Mobilizing Innovation and Change. The skills required to make smooth transitions from one job to another in a dynamic workplace will be explored. |
|             |              |         | Restrictions: CBE Executive Programs students only  
|             |              |         | Department(s): Executive Leadership Program |
| LEAD*6900   | Major Research Project W-S | 1.00    | This course involves a directed research project leading to a referenced, professional report on a leadership problem or issue. |
|             |              |         | Restrictions: CBE Executive Programs students only  
|             |              |         | Department(s): Executive Leadership Program |
Literary Studies/Theatre Studies in English

Administrative Staff

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J.R. (Tim) Struthers
BA, MA, PhD Western Ontario - Associate Professor

Ann Wilson
BA, MA, PhD York - Associate Professor and Associate Dean of Arts and Social Science

PhD Program

The PhD Program in Literary Studies/Theatre Studies in English at the University of Guelph presents an opportunity for doctoral study that is unique in Canada. Although students might choose to focus on either literary studies or theatre studies, the special opportunity provided by the PhD Program is its contribution to the evolution of interdisciplinary work in the humanities. This bridging of disciplines allows for opportunities not available in more traditional doctoral programs, especially in inter-discursive and theoretical work across the boundaries of literary and theatre studies. Students can choose to undertake research in one or more of six fields of specialization:

- Studies in Canadian Literatures
- Colonial, Postcolonial and Diasporic Studies
- Early Modern Studies
- Studies in the History and Politics of Performance and Theatre
- Sexuality and Gender Studies
- Transnational Nineteenth-Century Studies

Admission Requirements

Admission to the PhD Program normally requires an MA in English, and MA in Drama/Theatre, or an equivalent degree with at least an A- average in graduate work. In certain exceptional circumstances, students will be considered directly out of the undergraduate degree. Applications are considered by the Graduate Studies Committee and a recommendation to admit or decline is forwarded to the Assistant VP of Graduate Studies.

Program Requirements

Graduate Course Work (2.5 credits)

Students are required to take 5 graduate courses in the initial phase of their degree. The standard practice is to take two courses in the Fall semester of Year 1, two courses in the Winter semester of Year 1, and one course in the Fall semester of Year 2. This arrangement of courses is recommended, but remains flexible: any combination of 5 courses over these semesters is acceptable. In unusual circumstances, students may petition to do one course in the Winter semester of Year 2 in order to meet particular demands in their program of study. Courses are advertised on a two year cycle to maximize choice and facilitate planning in the program.

Graduate courses allow students to develop their knowledge of key theoretical, historical and critical concerns for the analysis of culture. It is during coursework that students hone their skills in writing and research so that they will be prepared for the challenges posed by their Primary and Secondary Area Qualifications. Students are encouraged to choose their courses in order to maximize their critical and historical repertoire, and to take advantage of the opportunity afforded by the program to work across the disciplines of English and Theatre Studies.

Language Requirement--LTS*7770 (0.0 credit)

Doctoral students are required to demonstrate reading proficiency in at least one language other than modern English, as approved by the Graduate Study Committee. Typically the language requirement will be completed by the end of the student's fifth semester in the program. Graded on a P (Pass) / F (Fail) basis. The language should normally have direct relevance to the student's program of study. In certain cases, students' research may require demonstrable competency in a non-written or technical language such as a programming language. The selection of the language(s) will be determined by the student in consultation with the dissertation advisor, and must be submitted for approval by the Graduate Studies Committee.

The aim is to test the student's ability to read critically in another language rather than to demonstrate mastery of translation. Assessment of the student's reading proficiency is based on both:

- a three-hour examination, which consists of the student's translation (with the help of a dictionary) of one passage in prose of not more than 1000 words, and
- a written analysis (in English) of approximately 500 words of the passage's critical implications.

A faculty member with expertise in the language grades the examination on a pass/fail basis. A student who fails the language examination twice will normally be required to withdraw from the program.

Evidence that a student has already demonstrated similar language ability at another university before admission may be submitted to the Graduate Studies Committee with a request to have the language requirement waived. Credit may be given, at the discretion of the Graduate Studies Committee, to any student who has fulfilled the equivalent language requirement through an MA-level examination. Credit will not normally be given for the completion of an undergraduate-level language course.

Secondary Area Qualification

The SAQ takes place in the Summer of Year One and provides an opportunity for students to quickly develop the repertoire needed to potentially teach in a field without necessarily committing to that field as an area of specialization. The objective here is to gain working knowledge of the major texts and statements relating to a field of scholarly enquiry. Upon completion of this exercise, students should have both the range and the depth to confidently teach in a secondary area.

As the name implies, this is a qualification exercise. The student is responsible for a reading list comprised of 60 texts, the definition of what constitutes a standard text is internal to the design of the list) selected from standard department reading lists; 30% of the list may be altered to suit particular interests. Students are assessed on a pass/fail basis on the following:

1. The student will write a three hour examination composed of four questions, from which the student chooses two. These questions give the student an opportunity to demonstrate the range and depth of their reading. The questions will ask the student to place a range of primary texts in relation to key critical debates in the field.
2. This written examination is followed one week later by a one hour oral examination on questions arising from both elements of the written work.

**Primary Area Qualification (Year 2)**

After the completion of the SAQ, the student progresses to his or her Primary Area Qualification. The objective here is to develop sufficient expertise in a field of scholarly enquiry to be able to make original contributions to that field through the writing of a doctoral dissertation. Through discussion with his or her advisory committee, the student develops a reading list of approximately 120 works divided roughly into two parts. The first comprises a Field Survey that is aimed at sketching the broad contours of an area of scholarly enquiry. The second is a more specific articulation of the works, called the Topic Readings, that will immediately impinge on the dissertation. The PAQ Examination, intended to determine whether the student is prepared to write and capable of writing the PhD thesis, is usually taken 12 months after the completion of the SAQ:

1. A three-hour examination on the primary material to be studied in the thesis and on scholarship concerning that primary material-i.e. this is directed specifically to the Topic Readings. The student will be asked to answer two questions from a choice of three.

2. A three-hour examination on the immediate background—the literary, cultural and intellectual milieu of the subject being studied-i.e. this is directed specifically at the Field Survey. The student will be asked to answer two questions from a choice of three.

3. A two hour oral examination in which the examining committee usually follows up on material in the written examinations and questions the student on plans for the doctoral thesis. While the examination is likely to focus on the student's main area of interest, examiners also have the leeway to ask questions pertaining to the overall list of texts.

Students are assessed on a pass/fail basis.

**Dissertation Prospectus**

Immediately following the Primary Area Qualification, the student develops, in consultation with his or her advisory committee, a full prospectus for their dissertation. The prospectus states the overall objective of the thesis, lays out the chapter structure, and summarizes the issues and concerns to be addressed in each chapter. If and when the Dissertation Committee ratifies the Prospectus, it is forwarded to the Graduate Studies Committee for formal approval.

**PhD Dissertation**

Following successful completion of the two Area Qualifications, the student must complete an original research project on an advanced topic. The advisory committee for the dissertation will consist of three members of the graduate faculty, one of whom assumes the primary advisory role. Ideally, the dissertation supervisor has worked with the student, in an advisory capacity, from her/his first semester in the program.

Each candidate shall submit a thesis, written by the candidate, on the research carried out by the candidate on an approved topic. The thesis is expected to be a significant contribution to knowledge in its field and the candidate must indicate in what ways it is a contribution. The thesis must demonstrate mature scholarship and critical judgement on the part of the candidate and it must indicate an ability to express oneself in a satisfactory literary style. Approval of the thesis is taken to imply that it is judged to be sufficiently meritorious to warrant publication in reputable scholarly media in the field.

The dissertation should normally be between 50,000 and 75,000 words in length. The regulations for submission, examination and publication are outlined in Chapter IV PhD Degree Regulations.

**Courses**

<table>
<thead>
<tr>
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<tr>
<td>ENGL*6441</td>
<td>Topics in Modern British Literature</td>
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<tr>
<td>ENGL*6451</td>
<td>Topics in American Literature</td>
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<tr>
<td>ENGL*6611</td>
<td>Topics in Women's Writing</td>
</tr>
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<td>ENGL*6621</td>
<td>Topics in Children's Literature</td>
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<tr>
<td>ENGL*6641</td>
<td>Topics in Scottish Literature</td>
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<tr>
<td>ENGL*6691</td>
<td>Interdisciplinary Studies</td>
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<tr>
<td>ENGL*6811</td>
<td>Special Topics in English</td>
</tr>
<tr>
<td>ENGL*6801</td>
<td>Reading Course I</td>
</tr>
<tr>
<td>ENGL*6802</td>
<td>Reading Course II</td>
</tr>
</tbody>
</table>

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**LTS*7770 Language Requirement U [0.00]**

A written demonstration of a student's reading knowledge of one language other than English, as approved by the Graduate Studies Committee.

*Department(s):* School of English and Theatre Studies

**LTS*7900 Directed Studies U [0.50]**

The study of a special topic under the guidance of a member of the graduate faculty.

*Department(s):* School of English and Theatre Studies

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>THST*6150</td>
<td>Theatre Historiography</td>
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<tr>
<td>THST*6210</td>
<td>Devising</td>
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<td>THST*6220</td>
<td>Theatre Theory</td>
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<tr>
<td>THST*6230</td>
<td>Performance and Difference</td>
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<td>THST*6250</td>
<td>Bodies and Space in Performance</td>
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<td>THST*6801</td>
<td>Reading Course I</td>
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<td>THST*6802</td>
<td>Reading Course II</td>
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<td>ENGL*6002</td>
<td>Topics in the History of Criticism</td>
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<td>ENGL*6003</td>
<td>Problems of Literary Analysis</td>
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<td>ENGL*6201</td>
<td>Topics in Canadian Literature</td>
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<td>ENGL*6209</td>
<td>Topics in Colonial, Postcolonial and Diasporic Literature</td>
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<td>ENGL*6412</td>
<td>Topics in Medieval/Renaissance Literature</td>
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<tr>
<td>ENGL*6421</td>
<td>Topics in Eighteenth Century and Romantic Literature</td>
</tr>
<tr>
<td>ENGL*6431</td>
<td>Topics in Nineteenth Century Literature</td>
</tr>
</tbody>
</table>
Management

The objective of the PhD in Management is to prepare individuals who already have a strong background in a management area such as marketing, organizational behaviour, leadership, hospitality / tourism, quality management, economics, finance, or human resources to be academic scholars. This program prepares individuals with solid, formal foundations in theory and practice.

The PhD in Management is a thesis-based program that is offered through the College of Business and Economics. The participating academic units are the Department of Marketing and Consumer Studies (MCS), the Department of Management (DoM) and the School of Hospitality, Food and Tourism Management (HFTM). The PhD in Management has three fields:

1. Marketing and Consumer Behaviour
2. Organizational Leadership
3. Services Management

which are offered jointly by the three academic units.

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Agnes Zdaniuk
BA, MSc, PhD Waterloo - Assistant Professor

PhD Program

Admission Requirements
All graduate programs must conform to the Faculty of Graduate Studies policy on admissions. Accordingly, there will be three means of entry to the three-field PhD in Management:

1. An applicant who holds a recognized master’s degree in a management field with an average standing of at least “B+” may be admitted to PhD studies as a regular or provisional student
2. An applicant who holds a recognized master’s degree with high standing in a field other than management and who wishes to proceed to doctoral study in a management field should consult with the graduate coordinator about eligibility.
3. An applicant who has achieved excellent standing at the honours baccalaureate level in a management field and who wishes to proceed to doctoral study may enroll in a related master’s degree. If the student achieves a superior academic record and shows a particular aptitude for research, the Board of Graduate Studies, on the recommendation of the Department/School admissions committee, may authorize transfer to the PhD program without requiring the student to complete the master’s degree.

All applicants are required to submit GRE (Graduate Records Exam) or GMAT (Graduate Management Admission Test).

**Degree Requirements**

The goal of the PhD program in Management is to produce graduates with both a breadth of knowledge about management theories in general, and a depth of knowledge such that they will be competent researchers and/or teachers in their chosen field. Since most courses will be common to the current three fields in this program as well as to any future fields, the key indicator of the student’s area of specialization will be his or her thesis topic. Students should select all courses in consultation with the graduate coordinator and their supervisor.

Students in all fields of the program will take five core courses that will ensure that each student has a breadth of knowledge about management and research. Of the five core courses, one will cover the theories and practice of management, another provides an understanding of the philosophy of research and design, two courses cover quantitative research and the fifth covers qualitative research methodologies. In addition to the five core courses, there are two required field courses in the first year specific to each field. In the second year students select two additional required courses and two elective courses in their field in consultation with the program coordinator. All students must take the University teaching course in the fall of the second year, bringing the total number of 0.5 credit courses to twelve. In addition, all students must write a paper in a non-credit course the summer of the first year and attend every year a non-credit seminar series course that introduces students to the diversity of research projects undertaken by Guelph faculty, graduate students and by visitors to the University. Following their coursework, students will complete a comprehensive exam designed to test their knowledge in the general area of management and in their field of specialization. Students are to present and defend a doctoral research proposal in the semester after completion of the qualifying examination. Overall, the proposed program consists of five semesters of coursework (five core courses, four required field courses, two electives and the teaching course), followed by the qualifying exam, presentation and defense of a research proposal, and finally, the completion and defense of a full doctoral dissertation.

Students are required to take a total of 6.0 credits (12 courses), the PhD Research Project Seminar course in the third (summer) semester (0.0 credit) and the Marketing & Consumer Studies Seminar course (0.0 credit) each fall and winter semester the student is registered.

**Year 1**

**Semester 1**

<table>
<thead>
<tr>
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<tr>
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<td>Marketing &amp; Consumer Studies Seminar</td>
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<tr>
<td>MGMT*6820</td>
<td>0.50</td>
<td>Theory of Management</td>
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<tr>
<td>MGMT*6830</td>
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<td>Applied Univariate Statistical Analysis for Management</td>
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</table>

**Required field course**

Marketing and Consumer Behaviour: one of

- MGMT*6600 | 0.50 | Consumption Behaviour Theory I |
- MGMT*6610 | 0.50 | Marketing Theory |

Organizational Leadership

- BUS*6830 | 0.50 | Foundational Theories of Leadership |

Services Management

- HTM*6710 | 0.50 | Services Management Theory I |

**Note**

MGMT*6830 can be substituted with PSYC*6060 Research Design and Statistics or with STAT*6950 Statistical Methods for Life Sciences, upon recommendation from the Graduate co-ordinator.

**Semester 2**

<table>
<thead>
<tr>
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<td>Marketing &amp; Consumer Studies Seminar</td>
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<tr>
<td>MGMT*6840</td>
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<td>Quantitative Research Methods: Multivariate Techniques</td>
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<td>Qualitative Research Methods</td>
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</table>

**Required field course**

Marketing and Consumer Behaviour: one of

- MGMT*6610 | 0.50 | Consumption Behaviour Theory II |
- MGMT*6620 | 0.50 | Marketing Management |

Organizational Leadership

- BUS*6840 | 0.50 | Foundational Theories of Management |

Services Management

- HTM*6720 | 0.50 | Services Management Theory II - Value Chains |

**Semester 3**

<table>
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<tbody>
<tr>
<td>MGMT*6950</td>
<td>0.50</td>
<td>Marketing &amp; Consumer Studies Seminar</td>
</tr>
</tbody>
</table>

**II. Graduate Programs, Management**

**Year 2**

**Semester 4**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT*6950</td>
<td>0.50</td>
<td>Marketing &amp; Consumer Studies Seminar</td>
</tr>
<tr>
<td>UNIV*6800</td>
<td>0.50</td>
<td>University Teaching: Theory and Practice</td>
</tr>
</tbody>
</table>

**Required field course**

Marketing and Consumer Behaviour: one of

- ECON*6600 | 0.50 | Labour Economics |
- MGMT*6070 | 0.50 | Introduction to Structural Equation Modeling |
- MGMT*6810 | 0.50 | Experimental Design and Analysis for Behavioural Research in Management Studies |

**Note**

The field course can be replaced by a course in Psychological Methods or Marketing Models upon agreement from program coordinator.

Organizational Leadership: one of

- BUS*6800 | 0.50 | Readings in Leadership I |
- BUS*6820 | 0.50 | Readings in Management |

Services Management: One of theory or methods courses:

- ECON*6600 | 0.50 | Microeconomic Theory I |
- ECON*6140 | 0.50 | Econometrics I |
- FARE*6380 | 0.50 | Applied Microeconomics for Agricultural Economists |
- MGMT*6000 | 0.50 | Consumption Behaviour Theory I |
- MGMT*6070 | 0.50 | Introduction to Structural Equation Modeling |
- MGMT*6100 | 0.50 | Marketing Theory |

**All streams: One elective course [0.50]**

The elective course can be one from the required courses list or another course from the list below. Other electives from other University of Guelph academic units can be considered if agreed to by the graduate coordinator.

**Year 1**

- ECON*6100 | 0.50 | Microeconomic Theory II |
- MGMT*6800 | 0.50 | Consumption Behaviour Theory II |
- MGMT*6810 | 0.50 | Marketing Management |
- MGMT*6820 | 0.50 | Organizational Leadership |
- BUS*6820 | 0.50 | Readings in Management |
- ECON*6140 | 0.50 | Econometrics II |
- FARE*6380 | 0.50 | Applied Microeconomics for Agricultural Economists |
- MGMT*6000 | 0.50 | Consumption Behaviour Theory I |
- MGMT*6070 | 0.50 | Introduction to Structural Equation Modeling |
- MGMT*6100 | 0.50 | Marketing Theory |
- BUS*6820 | 0.50 | Readings in Leadership I |

**Note**

MGMT*6830 can be substituted with PSYC*6060 Research Design and Statistics or with STAT*6950 Statistical Methods for Life Sciences, upon recommendation from the Graduate co-ordinator.
### Courses

#### Required Courses

- **MGMT*6800 Philosophy of Social Science Research F [0.50]**
  
  This course introduces students to the underlying philosophical assumptions that support empirical research methods within social science disciplines. The aim of this course is to examine the philosophy of knowledge generation and claims, particularly in the context of management phenomena.

  \[ Department(s): \text{Department of Marketing and Consumer Studies} \]

- **MGMT*6820 Theory of Management F [0.50]**
  
  This course examines the evolution of management thought and the overarching theories that have been successfully applied to multiple functional areas of the organization. Examples of theories that apply to such disparate areas as operations, marketing, and organizational behaviour include agency theory, transaction cost analysis, and contingency theory.

  \[ Department(s): \text{Department of Management} \]

- **MGMT*6830 Applied Univariate Statistical Analysis for Management F [0.50]**
  
  This course focuses on the use of univariate statistics as applied to social and behavioural research within the fields of organizational, management, and consumer studies. Emphasis will be placed on providing a solid understanding of descriptive statistics, mean difference testing, analysis of variance and covariance, linear and logistic regression, and power and effect size. Laboratory sessions will focus on analysis application using statistical packages such as SPSS, R, SAS, Stata, and Mplus.

  \[ Department(s): \text{Department of Management} \]

- **MGMT*6840 Quantitative Research Methods: Multivariate Techniques W [0.50]**
  
  This course provides a review of selected multivariate analysis techniques with applications to management. Students will learn to determine which multivariate technique is appropriate for a specific research problem and how to apply multivariate quantitative techniques to research questions. Topics include regression analysis, anova, principal components, factor and discriminant analysis, nonmetric scaling and trade-off analysis. The course uses a hands-on approach and requires computer-program analysis.

  \[ Department(s): \text{Department of Management} \]

- **MGMT*6850 Qualitative Research Methods W [0.50]**
  
  This doctoral seminar provides students with the historical roots, underlying theoretical frameworks, and methods of qualitative research for consumer and management studies. Students will develop their capacity to conduct qualitative research through the development of an original qualitative research project.

  \[ Department(s): \text{Department of Management} \]

- **MGMT*6900 PhD Research Seminar Project S [0.00]**
  
  The summer project seminar has the objective to start familiarizing students with the research process. Students will prepare and submit a research piece drawing on techniques acquired in the research methods courses.

  \[ Department(s): \text{Department of Management} \]

#### Field Courses

- **BUS*6830 [0.50]**  Foundational Theories of Leadership
- **BUS*6840 [0.50]**  Foundational Theories of Management
- **HTM*6710 [0.50]**  Services Management Theory I
- **HTM*6720 [0.50]**  Services Management Theory II - Value Chains
- **HTM*6730 [0.50]**  Cases in Management
- **MCS*6800 [0.50]**  Best Worst Scaling and Discrete Choice Analysis
- **MCS*6810 [0.50]**  Experimental Design and Analysis for Behavioural Research in Management Studies
Marketing and Consumer Studies

Faculty and graduate students in the Department of Marketing and Consumer Studies share a focus on the multi-disciplinary examination of consumer behaviour and marketplace phenomena. Central to the department's research and graduate teaching program is to help key stakeholders (businesses and policy makers) make informed decisions, formulate effective strategies and policies, improve economic welfare, and facilitate sustainable development by advancing their understanding of consumer decision making and consumer well-being. The department's graduate program leads to the master of science degree in marketing and consumer studies with a strong focus on theory and advanced methodologies.

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Jian Zhou
BA, MA Renmin, PhD Illinois (Chicago) - Associate Professor

MSc Program

The MSc program draws on a variety of disciplines for theory, concepts, and research methods. Students are required to successfully complete five departmental core courses; consumption behaviour theory, marketing theory, and three graduate courses in measurement and analysis. One elective course is selected by the student in conjunction with the graduate coordinator and/or his/her advisory committee and is normally chosen to provide theoretical, conceptual, and/or methodological background for the thesis. Each student is also required to attend the department’s graduate seminar for the duration of his or her program.

A significant number of graduate students in marketing and consumer studies direct their course work and thesis research toward applications related to marketing within private, public, and non-profit sector organizations. This particular focus is especially appropriate for students with undergraduate preparation in business administration, commerce, economics, or marketing who have career interests in research and analysis in marketing management. The program also provides excellent training toward the pursuit of a PhD in marketing or consumer behaviour or a related business discipline.

Departmental Core Courses

The departmental core is required of all graduate students in the Department of Marketing and Consumer Studies. It contains a minimum of 6 half credits (3.0 full credits) in total, and enrolment in the marketing and consumer studies department seminar (MCS*6950) for each semester of full-time graduate study. The program consists of:

**Fall Semester:**
- MCS*6600 [0.50] Consumption Behaviour Theory I
- MCS*6650 [0.50] Research Methods in Marketing and Consumer Studies
- MCS*6100 [0.50] Marketing Theory
- MCS*6950 [0.00] Marketing & Consumer Studies Seminar

**Winter Semester:**
- MCS*6600 [0.50] Multivariate Research Methods
- MCS*6680 [0.50] Qualitative Research Methods
- MCS*6950 [0.00] Marketing & Consumer Studies Seminar

* 1 of the following restricted electives
- MCS*6010 [0.50] Consumption Behaviour Theory II
- MCS*6120 [0.50] Marketing Management

**Note**

*Chosen by the graduate student with the approval of the graduate coordinator and his/her advisory committee. Any Social Science Graduate level course may be substituted for the Elective.

Admission Requirements

Admission information should be requested directly from the graduate secretary in the Department of Marketing and Consumer Studies. Offers of admission are granted on a competitive basis and, in part, on the ability of graduate faculty to supervise the student's intended research. Potential applicants are urged to visit the department to discuss their research objectives with graduate faculty prior to applying. Visits should be arranged directly with members of graduate faculty. Please visit our departmental website [http://www.uoguelph.ca/mcs](http://www.uoguelph.ca/mcs) for graduate faculty phone numbers and e-mail addresses.

All applicants should have completed a minimum of one course in statistics as part of their undergraduate program. Applicants are also encouraged to have completed courses in areas such as marketing, consumer behaviour, marketing research, and related subjects. Students may be admitted to the graduate program despite deficiencies in certain academic areas. Students admitted with deficiencies will likely be required to address academic weaknesses by enrolling in one or more undergraduate courses at the University of Guelph. Undergraduate courses do not count toward fulfillment of master of science graduation requirements.

All applicants are required to submit GRE or GMAT scores. The Department of Marketing and Consumer Studies admits students to the graduate program only in September. Program offices should be consulted for admission deadlines.

Degree Requirements

The program normally consists of at least 6 half credit (3.0 full credits) graduate courses, enrolment in the marketing and consumer studies seminar (MCS*6950) for each semester of full-time graduate study, and a successfully defended thesis. Additional course credits may be required by the student's advisory committee depending upon the student's background preparation for his/her intended area of study and thesis research.

Graduate Diploma in Market Research

The Graduate Diploma in Market Research serves two purposes:

1. It meets the needs of students who want to extend their knowledge of market research beyond the level they obtained while taking their undergraduate degree, but do not want to undertake a thesis-based degree.
2. It serves as an early exit point for participants in the MSc in Marketing and Consumer Studies program. The Department periodically enrolls students in its MSc program who do well in their coursework but decide not to complete their thesis research.

Admission Requirements - Transfer from MSc Program

Students who wish to exit early from the MSc in Marketing and Consumer Studies program and receive the Graduate Diploma in Market Research will apply to the Department's Graduate Admissions Committee for admission into the Diploma program. The Committee will make their decision based on reviewing the applicant's grades and performance in the MSc in Marketing and Consumer Studies program and discussing his or her potential as a market research practitioner with the Department’s graduate faculty.
## Admission Requirements – Direct Entry

Students who wish to enter directly into the Graduate Diploma in Market Research program will apply to the Department’s Graduate Admissions Committee through the normal University application process. The Committee will make their decision on essentially the same bases as they do for the MSc program (applicant’s undergraduate background, undergraduate grades, and GRE or GMAT scores). However, in lieu of the research interests discussion paper required of MSc applicants, Graduate Diploma applicants will submit a discussion paper indicating why they are interested in the market research field.

Other than the orientation of the discussion paper, the admission requirements for the Graduate Diploma in Market Research will be the same as those for the MSc in Marketing and Consumer Studies program. This will ensure that students who enter directly into the Graduate Diploma program can consider switching into the MSc program.

Thus, candidates for both the proposed Graduate Diploma and for the already-existing MSc will generally be graduates of a four-year honours degree program (or equivalent) who maintained at least a B average in the final two years of their undergraduate program. They will have an academic background in consumer studies, the social sciences or humanities, or professional or business programs such as marketing, finance, or real estate, and they will have acceptable GRE or GMAT scores.

Alternatively, they may be exceptional applicants, such as those with considerable experience in a business or management role, who meet the minimum grade requirements but are lacking in the required academic areas. If so, their full acceptance into the program may be conditional upon successfully completing one or more recommended undergraduate courses in order to comply with program standards.

As the Chair of the Department’s Graduate Admissions Committee, the Graduate Coordinator will be responsible for notifying Graduate Studies of the Committee’s admission decisions. The Graduate Coordinator will also act as the primary advisor for all direct entry Diploma students until they either graduate or switch into the MSc program.

### Degree Requirements

Students who are awarded the Graduate Diploma in Market Research will have taken courses for at least two semesters. To qualify for the Graduate Diploma, students will have successfully completed the following five courses, plus they will have regularly attended the Department’s 0.0 credit pass/fail weekly seminar class (MCS*6950) during both semesters:

### Fall Semester:
- **MCS*6000 [0.50]** Consumption Behaviour Theory I
- **MCS*6050 [0.50]** Research Methods in Marketing and Consumer Studies
- **MCS*6100 [0.50]** Marketing Theory
- **MCS*6950 [0.00]** Marketing & Consumer Studies Seminar

### Winter Semester:
- **MCS*6080 [0.50]** Qualitative Research Methods
- **MCS*6060 [0.50]** Multivariate Research Methods
- **MCS*6950 [0.00]** Marketing & Consumer Studies Seminar

### Courses

For courses without a semester designation the student should consult the graduate coordinator.

### MCS*6000 Consumption Behaviour Theory I F [0.50]

A review of the nature and scope of consumer behaviour and the approaches to studying the role of human consumption using the major theoretical perspectives.

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6010 Consumption Behaviour Theory II W [0.50]

Consumption behaviour is an interdisciplinary field of study which applies theories from multiple disciplines to the activities and processes people engage in when choosing, using and disposing of goods and services. The purpose of this course is to provide a basic review of the theoretical foundations of aspects of consumption and consumer behaviour and to demonstrate their applicability to marketing management. The course is designed to allow participants to bring their own background and interests to bear on the review and application of the theories underlying consumer behaviour.

**Prerequisite(s):** MCS*6000 or consent of instructor

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6050 Research Methods in Marketing and Consumer Studies F [0.50]

A comprehensive review of measurement theory, including issues such as construct definition, scale development, validity and reliability. Applicants of measurement principles will be demonstrated, particularly as they relate to experimental and survey research design.

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6060 Multivariate Research Methods W [0.50]

A review of selected multivariate analysis techniques as applied to marketing and consumer research. Topics include regression, anova, principal components, factor and discriminant analysis, nonmetric scaling and trade-off analysis. The course uses a hands-on approach with small sample databases available for required computer-program analysis.

**Prerequisite(s):** MCS*6050 or consent of instructor

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6070 Introduction to Structural Equation Modeling W [0.50]

This course introduces students to the theory, concepts and application of structural equation modeling. Topics covered include path analysis, confirmatory factor analysis and measurement models, latent variable modeling, multi-group modeling, and measurement invariance testing. Emphasis is placed on applying the principles of SEM to the creation and testing of theoretically driven models using both categorical and continuous data.

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6080 Qualitative Research Methods W [0.50]

A review of the nature, importance and validity issues associated with qualitative research. Topics include theory and tactics in design, interpersonal dynamics, analysis of interaction and transcripts.

**Prerequisite(s):** MCS*6050 or consent of instructor

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6090 Special Topics in Consumer Research and Analysis U [0.50]

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6100 Marketing Theory F [0.50]

A theoretical understanding of marketing, including philosophy of science and marketing, a history of marketing thought, market orientation, marketing strategy theory, modeling, social marketing, and ethical issues in marketing.

**Restriction(s):** Signature required for non-MCS students

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6120 Marketing Management U [0.50]

This course is designed to increase depth of knowledge of marketing by helping the student understand how marketing theory can directly affect marketing practice and firm performance. As this is an MSc course and NOT an MBA course, there is an expectation that the level of critical thinking and knowledge growth falls within the realm of the science of marketing and/or the empirical nature of marketing research and is not simply about marketing practice.

**Prerequisite(s):** MCS*6100

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6260 Special Topics in Food Marketing U [0.50]

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6500 Global Business Today U [0.50]

This course will survey the key issues related to doing business internationally including the cultural context for global business, cross border trade and investment, ethics, the global monetary system, foreign exchange challenges and effectively competing in the global environment.

**Restriction(s):** Non MBA/MA Leadership students only by permission of Executive Programs Office

**Department(s):** Executive MBA Programs

### MCS*6710 Special Topics in Marketing U [0.50]

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6720 Special Topics in Housing and Real Estate U [0.50]

**Department(s):** Department of Marketing and Consumer Studies

### MCS*6950 Marketing & Consumer Studies Seminar F,W [0.00]

**Department(s):** Department of Marketing and Consumer Studies
Mathematics and Statistics

The objective of the graduate program is to offer opportunities for advanced studies and research in the fields of applied mathematics and applied statistics, including the interface between the two. Although the two fields within the program have different requirements in terms of specific courses and qualifying examination areas, there is a considerable degree of interaction and commonality between them, from both philosophical and practical viewpoints. Philosophically, this commonality relates to the methodology of constructing and validating models of specific real-world situations. The major areas of specialization in applied mathematics are dynamical systems, mathematical biology, numerical analysis and operations research. Applied statistics encompasses the study and application of statistical procedures to data arising from real-world problems. Much of the emphasis in this field concerns problems originally arising in a biological setting. The major areas of specialization include linear and nonlinear models; bioassay; and survival analysis, life testing and reliability.

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Allan Williams
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Bei Zeng

BSc, MSc Tsinghua, PhD M.I.T - Associate Professor

MSc Program

The department offers an MSc degree with several options. Students choose between either mathematics or statistics fields and complete their program either by thesis or project. The two main program types are regular and interdisciplinary.

Interdisciplinary programs involve faculty members of this and other university departments and focus on problems of common interest to both departments. Examples include joint studies in quantitative genetics involving faculty in the Department of Animal and Poultry Science; studies of economic management of renewable resources involving faculty from the economics departments; modeling of physiological processes involving faculty from the Ontario Veterinary College or the College of Biological Science; toxicological modeling or risk assessment in collaboration with faculty involved in the Toxicology Research Centre.

Admission Requirements

For the MSc Degree Program, applicants will normally have either

i) an honours degree with an equivalent to a major in the intended area of emphasis.

or

ii) an honours degree with the equivalent of a minor in the intended area of emphasis, as defined in the University of Guelph Undergraduate Calendar.

Strong applicants with more diverse backgrounds will also be considered but are encouraged to contact the Graduate Coordinator or a potential advisor before applying. Note that the department’s undergraduate diploma in applied statistics fulfills the requirement of a minor equivalent in statistics.

Degree Requirements

For both regular and interdisciplinary programs, the degree requirements may be met by taking either:

• an MSc by thesis which requires at least 2.0 credits (four courses) plus a thesis; or

• an MSc without thesis (by project) which requires at least six courses; i.e., 3.0 credits.

One of:

- MATH*6998 [1.00] MSc Project in Mathematics
- STAT*6998 [1.00] MSc Project in Statistics

All programs of study must include the appropriate core courses (see below). Students who have obtained prior credit for a core course or its equivalent will normally substitute a departmental graduate course at the same or higher level, with the approval of the graduate coordinator. The remaining prescribed courses are to be selected from either graduate courses or 400-level undergraduate courses. Courses taken outside of this department must have the prior approval of the graduate program committee.

Mathematical Area of Emphasis

All candidates for the MSc with a mathematical area of emphasis are required to include in their program of study at least two of the core courses. The core courses are:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH*6010</td>
<td>0.50</td>
</tr>
<tr>
<td>MATH*6020</td>
<td>0.50</td>
</tr>
<tr>
<td>MATH*6051</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Statistical Area of Emphasis

All candidates for the MSc with a statistical area of emphasis are required to include in their program of study at least two of the core courses. The core courses are:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT*6801</td>
<td>0.50</td>
</tr>
<tr>
<td>STAT*6802</td>
<td>0.50</td>
</tr>
<tr>
<td>STAT*6841</td>
<td>0.50</td>
</tr>
<tr>
<td>STAT*6860</td>
<td>0.50</td>
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</tbody>
</table>

It is required that students take the undergraduate course Statistical Inference, STAT*4340, if this course or its equivalent has not previously been taken.

Interdisciplinary Programs

1. The general course requirements, above, must be met.

2. The project or thesis of an interdisciplinary program must directly integrate the study of mathematics or statistics with another discipline.

PhD Program

Admission Requirements

Normally a candidate for the PhD degree program must possess a recognized master's degree obtained with high academic standing. The Departmental Graduate Studies Committee will consider applications for direct entry to PhD and for transfer from MSc to PhD. In any event, a member of the department's graduate faculty must agree to act as an advisor to the student.
Degree Requirements
The PhD degree is primarily a research degree. For that reason, course work commonly comprises a smaller proportion of the student's effort than in the master's program. Course requirements are as follows:

Applied Mathematics
Students must successfully complete 2.0 graduate course credits; i.e. four graduate courses. At least three of these courses must be graduate level MATH courses. Depending upon the student's academic background, further courses may be prescribed. All courses are chosen in consultation with the advisory committee. Additional courses may be required at the discretion of the advisory committee and/or the departmental graduate program committee. With departmental approval, some courses given by other universities may be taken for credit.

Applied Statistics
Students must successfully complete 2.0 graduate-course credits. Depending upon the student's academic background, further courses may be prescribed. Students must take the following courses as part of the four required courses (providing that these courses were not taken as part of the student's master's-degree program):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT6801</td>
<td>Statistical Learning</td>
<td>0.50</td>
</tr>
<tr>
<td>STAT6841</td>
<td>Statistical Inference</td>
<td>0.50</td>
</tr>
</tbody>
</table>

All courses are chosen in consultation with the student's advisory committee. Additional courses may be required at the discretion of the advisory committee and/or the departmental graduate program committee. With departmental approval, some courses given by other universities may be taken for credit.

Interdepartmental Programs

Biophysics MSc/PhD Program
The Department of Mathematics and Statistics participates in the MSc/PhD programs in biophysics. Please consult the Biophysics listing for a detailed description of the graduate programs offered by the Biophysics Interdepartmental Group.

Bioinformatics MBNF/MSc Programs
The Department of Mathematics and Statistics participates in the MBNF and MSc programs in Bioinformatics. Please consult the Bioinformatics listing for a detailed description of these graduate programs and a list of the graduate faculty involved.

Courses

Mathematics

MATH*6010 Analysis U [0.50]
Half the course covers metric spaces, normed linear spaces, and inner product spaces, including Banach's and Schauder's fixed point theorems, LP spaces, Hilbert spaces and the projection theorem. The remaining content may include topics like operator theory, inverse problems, measure theory and spectral analysis.

Department(s): Department of Mathematics and Statistics

MATH*6011 Dynamical Systems I U [0.50]
Basic theorems on existence, uniqueness and differentiability; phase space, flows, dynamical systems; review of linear systems, Floquet theory; Hopf bifurcation; perturbation theory and structural stability; differential equations on manifolds. Applications drawn from the biological, physical, and social sciences.

Department(s): Department of Mathematics and Statistics

MATH*6012 Dynamical Systems II U [0.50]
The quantitative theory of dynamical systems defined by differential equations and discrete maps, including: generic properties; bifurcation theory; the center manifold theorem; nonlinear oscillations, phase locking and period doubling; the Birkhoff-Smale homoclinic theorem; strange attractors and deterministic chaos.

Department(s): Department of Mathematics and Statistics

MATH*6020 Scientific Computing U [0.50]
This course covers the fundamentals of algorithms and computer programming. This may include computer arithmetic, complexity, error analysis, linear and nonlinear equations, least squares, interpolation, numerical differentiation and integration, optimization, random number generators, Monte Carlo simulation; case studies will be undertaken using modern software.

Department(s): Department of Mathematics and Statistics

MATH*6021 Optimization I U [0.50]
A study of the basic concepts in: linear programming, convex programming, non-convex programming, geometric programming and related numerical methods.

Department(s): Department of Mathematics and Statistics

MATH*6022 Optimization II U [0.50]
A study of the basic concepts in: calculus of variations, optimal control theory, dynamic programming and related numerical methods.

Department(s): Department of Mathematics and Statistics

MATH*6031 Functional Analysis U [0.50]
Hilbert, Banach and metric spaces are covered including applications. The Baire Category theorem is covered along with its consequences such as the open mapping theorem, the principle of uniform boundedness and the closed graph theorem. The theory of linear functionals is discussed including the Hahn-Banach theorem, dual spaces, and if time permits, weak topologies or generalized functions. Basic operator theory is covered including topics such as adjoints, compact operators, the Frechet derivative and spectral theory. A brief introduction to the concepts of measure and integration required for some of the aforementioned topics is also included. Restriction(s): Credit may be obtained for only one of MATH*4220 or MATH*6031

Department(s): Department of Mathematics and Statistics

MATH*6041 Partial Differential Equations I U [0.50]
Classification of partial differential equations. The Hyperbolic type, the Cauchy problem, range of influence, well- and ill-posed problems, successive approximation, the Riemann function, The elliptic type; fundamental solutions, Dirichlet and Neumann problems. The parabolic type: boundary conditions, Green's functions and separation of variables. Introduction to certain non-linear equations and transformations methods.

Department(s): Department of Mathematics and Statistics

MATH*6042 Partial Differential Equations II U [0.50]
A continuation of some of the topics of Partial Differential Equations I. Also, systems of partial differential equations, equations of mixed type and non-linear equations.

Department(s): Department of Mathematics and Statistics

MATH*6051 Mathematical Modelling U [0.50]
The process of phenomena and systems model development, techniques of model analysis, model verification, and interpretation of results are presented. The examples of continuous or discrete, deterministic or probabilistic models may include differential equations, difference equations, cellular automata, agent based models, network models, stochastic processes.

Department(s): Department of Mathematics and Statistics

MATH*6071 Biomathematics U [0.50]
The application of mathematics to model and analyze biological systems. Specific models to illustrate the different mathematical approaches employed when considering different levels of biological function.

Department(s): Department of Mathematics and Statistics

MATH*6091 Topics in Analysis U [0.50]
Selected topics from topology, real analysis, complex analysis, and functional analysis.

Department(s): Department of Mathematics and Statistics

MATH*6181 Topics in Applied Mathematics I U [0.50]
This course provides graduate students, either individually or in groups, with the opportunity to pursue topics in applied mathematics under the guidance of graduate faculty. Course topics will normally be advertised by faculty in the semester prior to their offering. Courses may be offered in any of lecture, reading/seminar, or individual project formats.

Department(s): Department of Mathematics and Statistics

MATH*6182 Topics in Applied Mathematics II U [0.50]
This course provides graduate students, either individually or in groups, with the opportunity to pursue topics in applied mathematics under the guidance of graduate faculty. Course topics will normally be advertised by faculty in the semester prior to their offering. Courses may be offered in any of lecture, reading/seminar, or individual project formats.

Department(s): Department of Mathematics and Statistics

MATH*6400 Numerical Analysis I U [0.50]
Topics selected from numerical problems in: matrix operations, interpolation, approximation theory, quadrature, ordinary differential equations, partial differential equations, integral equations, nonlinear algebraic and transcendental equations.

Department(s): Department of Mathematics and Statistics

MATH*6410 Numerical Analysis II U [0.50]
One or more topics selected from those discussed in Numerical Analysis I, but in greater depth.

Department(s): Department of Mathematics and Statistics

MATH*6990 Mathematics Seminar U [0.00]
Students will review mathematical literature and present a published paper.

Department(s): Department of Mathematics and Statistics

MATH*6998 MSc Project in Mathematics U [1.00]

Department(s): Department of Mathematics and Statistics

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### Statistics

**STAT*6550 Computational Statistics U [0.50]**
This course covers the implementation of a variety of computational statistics techniques. These include random number generation, Monte Carlo methods, non-parametric techniques, Markov chain Monte Carlo methods, and the EM algorithm. A significant component of this course is the implementation of techniques.

*Department(s):* Department of Mathematics and Statistics

**STAT*6700 Stochastic Processes U [0.50]**
The content of this course is to introduce Brownian motion leading to the development of stochastic integrals thus providing a stochastic calculus. The content of this course will be delivered using concepts from measure theory and so familiarity with measures, measurable spaces, etc., will be assumed.

*Department(s):* Department of Mathematics and Statistics

**STAT*6721 Stochastic Modelling U [0.50]**
Topics include the Poisson process, renewal theory, Markov chains, Martingales, random walks, Brownian motion and other Markov processes. Methods will be applied to a variety of subject matter areas.

*Department(s):* Department of Mathematics and Statistics

**STAT*6741 Statistical Analysis for Reliability and Life Testing U [0.50]**
Statistical failure models, order statistics, point and interval estimation procedures for lifetime distributions, testing reliability hypotheses, Bayes methods in reliability, system reliability.

*Department(s):* Department of Mathematics and Statistics

**STAT*6761 Survival Analysis U [0.50]**
Kaplan-Meier estimation, life-table methods, the analysis of censored data, survival and hazard functions, a comparison of parametric and semi-parametric methods, longitudinal data analysis.

*Department(s):* Department of Mathematics and Statistics

**STAT*6801 Statistical Learning U [0.50]**
Topics include: nonparametric and semiparametric regression; kernel methods; regression splines; local polynomial models; generalized additive models; classification and regression trees; neural networks. This course deals with both the methodology and its application with appropriate software. Areas of application include biology, economics, engineering and medicine.

*Department(s):* Department of Mathematics and Statistics

**STAT*6802 Generalized Linear Models and Extensions U [0.50]**
Topics include: generalized linear models; generalized linear mixed models; joint modelling of mean and dispersion; generalized estimating equations; modelling longitudinal categorical data; modelling clustered data. This course will focus both on theory and implementation using relevant statistical software.

*Department(s):* Department of Mathematics and Statistics

**STAT*6821 Multivariate Analysis U [0.50]**
This is an advanced course in multivariate analysis and one of the primary emphases will be on the derivation of some of the fundamental classical results of multivariate analysis. In addition, topics that are more current to the field will also be discussed such as: multivariate adaptive regression splines; projection pursuit regression; and wavelets.

*Department(s):* Department of Mathematics and Statistics

**STAT*6841 Statistical Inference U [0.50]**
Bayesian and likelihood methods, large sample theory, nuisance parameters, profile, conditional and marginal likelihoods, EM algorithms and other optimization methods, estimating functions, Monte Carlo methods for exploring posterior distributions and likelihoods, data augmentation, importance sampling and MCMC methods.

*Department(s):* Department of Mathematics and Statistics

**STAT*6850 Advanced Biometry U [0.50]**
Topics on advanced techniques for analyzing data from biological systems. In particular, univariate discrete models, stochastic processes as it relates to population dynamics and growth models with time dependencies, generalized discrete models for spatial patterns in wildlife, the theoretical foundation and recent results in aquatic bioassays, and other topics relating to the student's research interest.

*Department(s):* Department of Mathematics and Statistics

**STAT*6860 Linear Statistical Models U [0.50]**
Generalized inverses of matrices; distribution of quadratic and linear forms; regression or full rank model; models not of full rank; hypothesis testing and estimation for full and non-full rank cases; estimability and testability; reduction sums of squares; balanced and unbalanced data; mixed models; components of variance.

*Department(s):* Department of Mathematics and Statistics

**STAT*6870 Experimental Design U [0.50]**
This is an advanced course in experimental design which emphasizes proofs of some of the fundamental results in the topic. The topics will include: design principles; design linear models; designs with several factors; confounding in symmetrical factorials; fractional factorials.

*Department(s):* Department of Mathematics and Statistics

**STAT*6880 Sampling Theory U [0.50]**
Theory of equal and unequal probability sampling. Topics in: simple random, systematic, and stratified sampling; ratio and regression estimates; cluster sampling and subsampling; double sampling procedure and repetitive surveys; nonsampling errors.

*Department(s):* Department of Mathematics and Statistics

**STAT*6920 Topics in Statistics U [0.50]**

*Department(s):* Department of Mathematics and Statistics

**STAT*6950 Statistical Methods for the Life Sciences F [0.50]**
Analysis of variance, completely randomized, randomized complete block and latin square designs; planned and unplanned treatment comparisons; random and fixed effects; factorial treatment arrangements; simple and multiple linear regression; analysis of covariance with emphasis on the life sciences. STAT*6950 and STAT*6960 are intended for graduate students of other departments and may not normally be taken for credit by mathematics and statistics graduate students.

*Department(s):* Department of Mathematics and Statistics

**STAT*6970 Statistical Consulting Internship U [0.25]**
This course provides experience in statistical consulting in a laboratory and seminar environment. The student will participate in providing statistical advice and/or statistical analyses and participate in seminar discussions of problems arising from research projects in various disciplines.

*Department(s):* Department of Mathematics and Statistics

**STAT*6990 Statistics Seminars by Graduate Students U [0.00]**

*Department(s):* Department of Mathematics and Statistics

**STAT*6998 MSc Project in Statistics U [1.00]**

*Department(s):* Department of Mathematics and Statistics
Molecular and Cellular Biology

The MCB graduate program offers opportunities for interdisciplinary studies in molecular and cellular biology leading to the MSc and PhD degrees. The research groups directed by the faculty pursue fundamental and applied research questions involving diverse biological systems (plants, humans and other animals, prokaryotic and eukaryotic microbes). In general, they follow lines of scientific enquiry at the molecule to cells. The five areas of emphasis are listed below. See the department website for additional information.

- Biochemistry (BCH)
- Cell Biology (CEB)
- Microbiology (MICR)
- Molecular Biology and Genetics (MBG)
- Plant Biology (PBIO)

Faculty in Molecular and Cellular Biology also participate in the interdepartmental programs in Bioinformatics, Biophysics and the collaborative programs in Neuroscience and Toxicology.

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Karen White (3479 Science Complex, Ext. 52730)
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BSc Toronto, PhD British Columbia - Professor

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BVsC, MScs Haryana, DSc Inst. Pasteur - Associate Professor

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BSc, PhD Toronto - Associate Professor

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BSc, MSc Carleton, PhD Dalhousie - Professor

Joseph S.L. Lam
BSc, PhD Calgary - Professor

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Baozhong Meng
BSc, MSc Hebei Agricultural Univ. (China) - Associate Professor

Rod Merrill
BSc Lethbridge, PhD Ottawa - Professor

Richard D. Mosser
BSc, PhD Waterloo - Associate Professor

Robert T. Mullen
BSc, PhD Alberta - Professor and Chair

Lucy M. Mathuria
BSc, MSc Nairobi, PhD British Columbia - Associate Professor

Annette Nassith
BSc, MSc Free University, Amsterdam, PhD Leiden - Associate Professor

Steven Rothstein
BA Swarthmore College, PhD Wisconsin - Professor

Scott Ryan
BSc Memorial, PhD Ottawa - Assistant Professor

Stephen Y.K. Seah
BSc, MSc National University of Singapore, PhD Sheffield - Associate Professor

Roselynn M.W. Stevenson
BSc, PhD Manitoba - Professor

Ian Tetlow
BSc Newcastle (UK), PhD North Wales - Associate Professor

James Uniake
BSc, PhD Concordia University - Assistant Professor

George van der Merve
BSc, MSc, PhD Stellenbosch (South Africa) - Associate Professor

Terry Van Raay
BSc Windsor, MSc Guelph, PhD Utah - Assistant Professor

John Vessey
BSc, MSc Dalhousie, PhD Eberhard Karls University of Tübingen - Assistant Professor

Christopher Whitfield
BSc Newcastle, PhD Edinburgh - Professor

Janet M. Wood
BSc Victoria, PhD Edinburgh - Professor

Krassimir (Joseph) Yankulov
BSc Sophia, PhD ICRF London - Associate Professor

MSc Program

The objective of the MCB MSc program is to provide graduate students with a high level of relevant knowledge and expertise in contemporary molecular and cellular biology, including experimental techniques, library research, writing and communication skills. Graduates will have the knowledge and skills needed to carry out high quality scientific research and will be prepared for employment in positions with some responsibility in the research and teaching enterprises of academic institutions (as instructors and technical staff), in science-related positions in the broad biotechnology sector (e.g. food and beverage industries, pharmaceuticals, biomedical, and agriculture-related industries), or in government sector institutes and laboratories. They will be well prepared to continue their graduate education at the PhD level. Alternatively they may opt to complete a professional degree (such as law, medicine, or business) or a teaching certificate.

Admission Requirements

To be considered, applicants must have completed a four-year honours undergraduate science degree (or its equivalent) in a relevant discipline. Normally, the applicant must have achieved a “B” (75%) average or higher during the last two years of full-time study. In exceptional circumstances, students with a “B-minus” average (70%) will be considered provided there is strong supporting evidence of research aptitude and potential. Each applicant must obtain the support of a faculty member willing to serve as his/her thesis advisor. Applications for the program will be considered at any time and admission may be granted for entry in January, May or September.

All components of the application, including transcript(s), graduate certificate(s), grading scale(s), language test results, assessment forms, a statement of interest, and the name of the faculty advisor must be uploaded no later than two months after an application is submitted through the OUAC portal. Applications that are incomplete after this time period will be closed.
**Admission Process**

Graduate student applications to programs in the College of Biological Science are handled by the Office of the Associate Dean, Research (ADR). Before submitting an application, applicants are strongly encouraged to view the "Before you Apply" and "Admission Process" webpages on the ADR Future Student's site.

Complete application instructions may also be found on the Office of Graduate Studies webpage or in the Graduate Calendar.

**Degree Requirements**

Students in the MSc program must complete a minimum of 3 courses (1.5 credits) at the graduate level. Courses MCB*6100 MSc Research Topics in Molecular & Cellular Biology (0.5) and MCB*6200 MSc Scientific Communication in Molecular & Cellular Biology (0.5) are mandatory. Normally these two courses must be completed in the first year of study. Senior undergraduate courses may be taken on the recommendation of the Advisory Committee but these will not count towards the 1.5 credit requirement. An average of “B-minus” (70%) must be achieved in the prescribed courses.

The MSc thesis research must involve original inquiry into a well-defined question in the molecular biosciences. It is expected that the research will not have been previously reported in the literature and, wherever possible, the research should yield publishable data.

All students beyond year 1 in the program are required to participate annually in the CBS Graduate Student Symposium by presenting a poster or giving a short talk describing their research progress.

**PhD Program**

The objective of the MCB PhD program is to develop independent and creative scientists specializing in molecular and cellular biology. Graduates will be prepared for positions as scholars in academic institutions, as leaders in the research and development sector of the biomedical and other industries or government agencies, and in social institutions.

**Admission Requirements**

There are three pathways for admission to the PhD program:

1. Students who have achieved an “A-minus” (80%) average or higher during the last two years of full-time study while completing a four-year honours BSc program (or its equivalent) and who provide evidence of research aptitude and potential based on laboratory research experience may apply to enter the PhD program directly, or

2. An MSc student may apply to transfer to the PhD program before completing the MSc degree. To be eligible for transfer, the student must have completed a high quality undergraduate degree with a grade average of B+ or higher. Before applying for transfer to the PhD program students must complete courses MCB*6100 (Research Topics in Molecular and Cellular Biology) and MCB*6200 (Scientific Communication in Molecular and Cellular Biology) plus an additional course with at least 0.5 graduate course credit, attaining an overall A minus average (at least 80%). Applications for transfer must be approved by the end of the fourth semester in the MSc program.

3. Applicants may have completed a recognized Masters degree in a relevant discipline with a minimum academic standing of “A-minus” (80%).

Each applicant must obtain the support of a faculty member willing to serve as his/her thesis advisor.

All components of the application, including transcript(s), graduate certificate(s), grading scale(s), language test results, assessment forms, a statement of interest, and the name of the faculty advisor must be uploaded no later than two months after an application is submitted through the OUAC portal. Applications that are incomplete after this time period will be closed.

Applications for the program will be considered at any time and admission may be granted for entry in January, May or September.

**Admission Process**

Graduate student applications to programs in the College of Biological Science are handled by the Office of the Associate Dean, Research (ADR). Before submitting an application, applicants are strongly encouraged to view the "Before you Apply" and "Admission Process" webpages on the ADR Future Student's site.

Completed application instructions may also be found on the Office of Graduate Studies webpage or in the Graduate Calendar.

**Degree Requirements**

Students in the PhD program must complete two mandatory graduate level courses MCB*7100 PhD Research Topics in Molecular & Cellular Biology (0.50 credit) and MCB*7200 PhD Scientific Communication in Molecular & Cellular Biology (0.50 credit).

Normally, these two courses must be completed in the first year of study. Students without an MSc degree in Molecular and Cellular Biology or the equivalent are required to take one additional graduate course. Other courses may be taken on the recommendation of the Advisory Committee. An average of “B-minus” (70%) must be achieved in the prescribed courses. To be a candidate for the PhD degree, each student must pass a PhD Qualifying Exam. The Qualifying Examination is completed before the end of the fifth semester (for students with an MSc) or the end of the seventh semester (for students without an MSc).

The PhD thesis research must involve original inquiry into a well-defined question in the molecular biosciences. It is expected to result in the publication of one or more papers in high-quality peer-reviewed journals. The research must represent a significant contribution to the relevant research field.

All students beyond year 1 in the program are required to participate annually in the CBS Graduate Student Symposium by presenting a poster or giving a short talk describing their research progress.

**Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCB*6100</td>
<td>MSc Research Topics in Molecular and Cellular Biology U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*6200</td>
<td>MSc Scientific Communication in Molecular and Cellular Biology U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*6310</td>
<td>Advanced Topics in Developmental and Cellular Biology U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*6320</td>
<td>Advanced Topics in Microbiology U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*6330</td>
<td>Molecular Biology of Viruses U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*6340</td>
<td>Advanced Topics in Molecular Genetics U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*6350</td>
<td>Advanced Topics in Plant Biology U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*6360</td>
<td>Advanced Topics in Biochemistry and Molecular Biology U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
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<tr>
<td>MCB*6370</td>
<td>Protein Structural Biology and Bioinformatics U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*6380</td>
<td>Structure and Function of Biological Membranes U [0.50]</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
</tbody>
</table>

The courses and their prerequisites are mandatory. The courses are offered on an ad hoc basis, and the course will be offered according to demand.

**Department(s)**

Graduate student applications to programs in the College of Biological Science are handled by the Office of the Associate Dean, Research (ADR). Before submitting an application, applicants are strongly encouraged to view the "Before you Apply" and "Admission Process" webpages on the ADR Future Student's site.

Completed application instructions may also be found on the Office of Graduate Studies webpage or in the Graduate Calendar.

March 9, 2015

2014-2015 Graduate Calendar
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCB*7100</td>
<td>PhD Research Topics in Molecular and Cellular Biology U [0.50]</td>
<td>0.50</td>
<td>The development and refinement of the skills of scientific communication, emphasizing writing skills, in the context of developing a thesis proposal. This course is mandatory for all students in the MCB PhD program and is normally completed within the first semester of the program and before MCB*7200.</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MCB*7200</td>
<td>PhD Scientific Communication in Molecular and Cell Biology U [0.50]</td>
<td>0.50</td>
<td>The development and refinement of the skills of scientific communication emphasizing oral presentation. Students will present a public seminar on a contemporary subject in the molecular biosciences culminating in a description of the proposed research. This course is mandatory for all students in the MCB PhD program and must be taken after MCB*7100.</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
</tbody>
</table>

**Prerequisite(s):** MCB*7100

**Department(s):** Department of Molecular and Cellular Biology
**Neuroscience**

The Collaborative Neuroscience program provides a specialization for MSc/MBS/PhD students engaged in research in the rapidly expanding field of neuroscience, by permitting students to combine their departmental degree program with multidisciplinary exposure to the field of neuroscience. This unique combination of multidisciplinary studies provides students with the best possible foundation for academic careers in neuroscience and related areas. The program includes participation from core faculty in the following departments: Animal and Poultry Science, Biomedical Sciences, Human Health and Nutritional Sciences, Integrative Biology, Molecular and Cellular Biology, Pathobiology, Population Medicine and Psychology.

**Graduate Faculty**

<table>
<thead>
<tr>
<th>Name</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neil MacLusky</td>
<td>Director &amp; Graduate Coordinator (OVCE 2633, Ext. 54700) <a href="mailto:nmaclusk@uoguelph.ca">nmaclusk@uoguelph.ca</a></td>
</tr>
<tr>
<td>John L. Zettel</td>
<td>Professor and Canada Research Chair, Biomedical Sciences</td>
</tr>
<tr>
<td>Boyer D. Winters</td>
<td>Associate Professor, Psychology</td>
</tr>
<tr>
<td>Andreas Heyland</td>
<td>Assistant Professor, Integrative Biology</td>
</tr>
<tr>
<td>Fiona James</td>
<td>Assistant Professor, Clinical Studies</td>
</tr>
<tr>
<td>Nina Jones</td>
<td>Associate Professor and Canada Research Chair, Biomedical Sciences</td>
</tr>
<tr>
<td>Bettina E. Kalisch</td>
<td>Associate Professor, Biomedical Sciences</td>
</tr>
<tr>
<td>Frederic Laberge</td>
<td>Assistant Professor, Integrative Biology</td>
</tr>
<tr>
<td>Francesco Leri</td>
<td>Associate Professor, Psychology</td>
</tr>
<tr>
<td>Ray Lu</td>
<td>Associate Professor, Molecular and Cellular Biology</td>
</tr>
<tr>
<td>David W.L. Ma</td>
<td>Associate Professor, Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>Neil J. MacLusky</td>
<td>Professor and Chair, Biomedical Sciences</td>
</tr>
<tr>
<td>Georgia Mason</td>
<td>Professor and Canada Research Chair, Animal and Poultry Science</td>
</tr>
<tr>
<td>Robert L. McLaughlin</td>
<td>Associate Professor, Integrative Biology</td>
</tr>
<tr>
<td>Daniel V. Meegan</td>
<td>Associate Professor, Psychology</td>
</tr>
<tr>
<td>Lee Niel</td>
<td>Assistant Professor, Population Medicine</td>
</tr>
<tr>
<td>Linda A. Parker</td>
<td>Professor and Canada Research Chair, Psychology</td>
</tr>
<tr>
<td>John Z. Srbley</td>
<td>Assistant Professor, Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>Lana M. Trick</td>
<td>Associate Professor, Psychology</td>
</tr>
<tr>
<td>Patricia V. Turner</td>
<td>Professor, Pathobiology</td>
</tr>
</tbody>
</table>

**Admission Requirements**

MSC/MBS students in the Collaborative Program in Neuroscience must meet the admission requirements of the participating department in which they are enrolled. The application process has two stages: first, application to the primary program of interest, identifying interest in the Collaborative Program as a secondary focus. If the student is admitted to the primary program, the second stage is then admission to the Collaborative Program.

**Degree Requirements**

In addition to coursework in their respective departments, students in the MSc/MBS program must complete NEUR*6000 as well as registering for NEUR*6100 each term that they are in the program. In NEUR*6100, students and faculty will meet once a month to discuss issues/ hear talks/ present research in neuroscience.

**NEUR*6000 Principles of Neuroscience U [0.50]**

This course is designed to ensure that graduate students with diverse neuroscience backgrounds registered in the Collaborative Program in Neuroscience are exposed to the fundamentals in all areas of neuroscience.

**NEUR*6100 Seminar in Neuroscience U [0.00]**

This course will expose graduate students to some of the major theories, issues and methodologies driving research in neuroscience. Students will learn to critically evaluate presentations by researchers in this field as well as to communicate the results of their own research.
Pathobiology
The Department of Pathobiology offers programs in Veterinary Pathology, Comparative Pathology, Veterinary Infectious Diseases, and Immunology. The department offers programs of study leading to MSc and PhD degrees and a Graduate Diploma. The department also participates in the inter-departmental Doctor of Veterinary Science (DVSc) program.

Fields of Study
The Department of Pathobiology provides graduate programs in the following fields:

• Comparative Pathology
  Avian pathology
  Fish pathology
  Wildlife and zoo animal medicine and pathology
  Laboratory animal science

• Immunology

• Veterinary Infectious Diseases
  Veterinary bacteriology
  Veterinary parasitology
  Veterinary virology

• Veterinary Pathology
  Anatomic pathology
  Clinical pathology

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Patrick Boerlin
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Byram Bridle
BSc, MSc, PhD Guelph - Assistant Professor

Jeff Caswell
DVM, DVSc Guelph, PhD Saskatchewan, Diplomate ACVP - Professor and Graduate Coordinator

Robert A. Foster
BVSc (Hons) Queensland, PhD James Cook Univ. of North Queensland, MANZCVS, Diplomate ACVP - Professor

Robert M. Jacobs
BSc Toronto, DVM, PhD Guelph, Diplomate ACVP - Professor and Chair

Clare Jardine
BSc Guelph, MSc British Columbia, DVM, PhD Saskatchewan - Associate Professor

Brandon N. Lillie
DVM, PhD Guelph, Diplomate ACVP - Assistant Professor

John S. Lumsden
BSc, DVM, MSc, PhD Guelph, Diplomate ACVP - Professor

Janet L. MacInnes
BSc Victoria, PhD Western Ontario - Professor

Bonnie A. Mallard
BSc, MSc, PhD Guelph - Professor

Éva Nagy
DVM, PhD, DSc Budapest - Professor

Nicole Nemeth
DVM, PhD Colorado State University - Assistant Professor

Andrew S. Peregrine
BVMS, PhD, DVM (Hons.) Glasgow, Diplomate EVPC, Diplomate ACVM - Associate Professor

Brandon L. Plattner
BSc, DVM Kansas State, PhD Iowa State, Diplomate ACVP - Assistant Professor

Shayan Sharif
DVM Tehran, PhD Guelph - Professor

Dale A. Smith
DVM, DVSc Guelph - Professor

Patricia V. Turner
BSc McMaster, MSc Dalhousie, DVM, DVSc Guelph, Diplomate ACLAM, Diplomate ABT - Professor

J. Scott Weese
DVM, DVSc Guelph, Diplomate ACVIM - Professor

R. Darren Wood
DVM Prince Edward Island, DVSc Guelph, Diplomate ACVP - Associate Professor

Geoffrey A. Wood
DVM Guelph, PhD Toronto, DVSc Guelph - Associate Professor

K. Sarah Wootton
BSc, PhD Guelph - Associate Professor

MSc Program
The primary objective of the MSc program is to provide students with training in conceptual and laboratory aspects of research, combined with advanced training in a field of knowledge relating to manifestations, basic mechanisms and host resistance for diseases of vertebrates.

Admission Requirements
Applicants should have either an honours degree in biological sciences with at least a 'B' average during the final 2 years of the program, or a DVM (or equivalent) degree with at least a 'B' average over the four years of the program. In either case, performance in relevant biomedical science courses, (e.g. microbiology, immunology, biochemistry, molecular biology, etc.) at a level above the minimum 'B' average is normally expected. Admission requires a statement of the applicant's interests and objectives and supportive letters of reference. An appropriate faculty advisor must be identified, as well as potential sources of funds for research and for provision of a stipend for the student. Applications may be submitted at any time. Initial enrolment can be in the Fall, Winter or Summer semesters, with a preference for the Fall.

Degree Requirements
Students must complete at least 1.5 credits of prescribed courses with at least a 'B' average, and must satisfactorily write and defend a research thesis. Prescribed courses and additional courses are selected by the student in consultation with the advisor. Research plans and progress must be approved by the advisory committee. The thesis defence includes a seminar presentation and a final oral examination by a committee of graduate faculty members.

See also the MSc Degree Regulations in the Graduate Calendar.

PhD Program
The PhD program is designed primarily for students who aspire to a career involving research on the biology of mechanisms of diseases in vertebrates. The program provides advanced training in conceptual and laboratory aspects of independent research, combined with advanced training in one or more fields of knowledge. The major emphasis is on the generation and critical evaluation of scientific knowledge relating to the causes, mechanisms and/or consequences of diseases affecting a particular species, organ system or biological process or to the understanding of host resistance and basic mechanisms of health or disease in vertebrates. DVM (or equivalent) graduates may obtain some of the practical experience required for specialty certification in veterinary anatomic pathology, clinical pathology, laboratory animal science, microbiology or parasitology.

Admission Requirements
The usual requirement for admission to the PhD program is the completion of an approved MSc degree with a minimum 'B+' average and strongly supportive letters from referees familiar with the background of the applicant. Performance in relevant biomedical science courses, (e.g. microbiology, immunology, biochemistry, molecular biology, etc.) at a level above the 'B+' average is normally expected. Students may apply for admission into the PhD program before completing the MSc program, providing that they have a minimum 'A' average and a demonstrated capacity for independent research. Some students with demonstrated potential for independent research and a superior academic record during their baccalaureate or DVM programs may be admitted directly into the PhD program. Admission requires a statement of the applicant's interests and objectives and supportive letters of reference. An appropriate faculty advisor must be identified, as well as potential sources of funds for research and provision of a stipend for the student. Applications may be submitted at any time. Initial enrolment can be in the Fall, Winter or Summer semesters, with a preference for the Fall.
Degree Requirements

Students must have successfully completed the department's graduate seminar course, PABI*6440, and have obtained at least a 'B-' average in all courses prescribed by the advisory committee. There are no other specific course requirements. Prescribed courses and additional courses are selected by the student in consultation with the advisor and advisory committee based on the student's background, their research and career objectives. Students are required to satisfactorily complete a qualifying examination before the end of the fifth semester if they possess an MSc degree, or before the end of the seventh semester if they possess an honours baccalaureate or DVM degree. The qualifying examination is conducted by a committee of graduate faculty members with expertise in the areas of study, and includes written and oral components. The qualifying examination covers a breadth of knowledge of topics related to the student's research area, and depth of knowledge within this research area. To successfully complete the examination, students must have a broad general understanding of one of the departmental fields of study, and a current and detailed understanding of one or two additional areas in their field of study. The advisory committee identifies selected areas of study by the end of the second semester. In addition, the advisory committee is required to confirm that the student has demonstrated both ability and promise in research. This is based on performance in the research project and in courses and other academic activities.

The thesis research is planned by the student in consultation with the advisor. The proposed thesis research is developed and defended as part of the course PABI*6440, Graduate Seminar in Pathobiology. Research plans and progress must be approved by the advisory committee. The program is completed with the satisfactory presentation and defence of a thesis, which includes a seminar presentation and a final oral examination by a committee that includes an external examiner and members of the graduate faculty.

See also the Degree Regulations in the Graduate Calendar.

DVSc Program

The Department of Pathobiology participates in the DVSc program which provides advanced training in a specialty discipline of veterinary medicine, combined with course work and a thesis-based research project. Specialty training is offered in the areas of veterinary anatomic pathology, veterinary clinical pathology, veterinary clinical microbiology, laboratory animal science, wildlife and zoo animal medicine and pathology, avian medicine and pathology, and fish pathology. The research project addresses an applied aspect of an important disease problem in vertebrates. The program provides practical training towards specialty certification in veterinary anatomic pathology, veterinary clinical pathology, laboratory animal science, veterinary clinical microbiology or veterinary parasitology. Refer to the Degree Regulations in the Graduate calendar for more information.

Admission Requirements

Applicants require a DVM (or equivalent) degree with high academic standing from a program that provides eligibility for the practice of veterinary medicine in Ontario. Alternatively, applicants with a DVM (or equivalent) degree can be admitted after completion of an acceptable graduate diploma, MSc, or PhD degree with an upper 'B' average. Admission requires the identification of a faculty advisor and a source of personal support for the student. If these have not been arranged by the applicant, a statement of the applicant's interests and objectives and supportive letters of reference are required to assist with the identification of an appropriate faculty advisor and potential sources of funds for research and student stipend. Several stipends for DVSc candidates are available intermittently for training in some disciplines. As these funds become available, stipends are awarded to the most qualified applicant(s) based on completed applications for admission to the DVSc program. Applications may be submitted at any time. Initial enrolment can be in the Fall, Winter or Summer semesters.

Degree Requirements

The degree requires a minimum of nine semesters of full-time study; the completion of at least 2.5 credits in courses prescribed by the student's advisory committee including completion of the department's graduate seminar course, with an overall average of at least 'B-', and satisfactory completion of a qualifying examination, thesis and final oral examination.

See also the Degree Regulations in the Graduate Calendar.

Graduate Diploma Program

The objective of the diploma program is to provide advanced practical training in a field of veterinary pathology to veterinarians working in industry, government or in private practice. The program emphasizes practical and course-based applied training in anatomic pathology, clinical pathology, avian medicine and pathology, laboratory animal science, or wildlife and zoo animal pathology. The Diploma program does not normally result in eligibility for specialty certification.

Admission Requirements

Applicants require a DVM (or equivalent) degree with acceptable academic standing. Admission requires the prior identification of a faculty advisor and a source of personal support for the student.

Diploma Requirements

The Graduate Diploma requires three semesters of full time study and completion of 1.5 credits of prescribed courses, including 0.5 credits in an applied course and no more than 0.5 credits in a Special Topics course. The remaining credits may be in the defined area of study, as prescribed by the faculty advisor. Diploma students must satisfactorily pass a final oral comprehensive examination on knowledge in their field of study. It will be conducted by faculty members in the Department of Pathobiology. There is no thesis, but students are required to write a paper that the advisor considers ready for submission to a peer reviewed scientific journal.

See also the Graduate Diploma Regulations of the Faculty of Graduate Studies.

Courses

General

PABI*6440 Graduate Seminar in Pathobiology S,F,W [0.50]

Following discussions of approaches to scientific research and communication, students will develop and submit a thorough written critical review of the literature on an agreed upon topic, and a detailed research proposal in the same topic area. This material will also be presented in the form of a public seminar.

Department(s): Department of Pathobiology

PABI*6960 Special Topics in Pathobiology F,W,S [0.50]

In-depth independent study of subjects related to student's principal area of interest. Major paper(s), laboratory studies, and/or written and oral examination, with or without seminar preparation.

Restriction(s): Instructor consent required.

Department(s): Department of Pathobiology

Comparative Pathology

PABI*6050 Applied Avian Pathology I F [0.50]

Examination and interpretation of gross and microscopic lesions of domestic poultry.

Restriction(s): Instructor consent required.

Department(s): Department of Pathobiology

PABI*6060 Applied Avian Pathology II W [0.50]

A continuation of PABI*6050, emphasizing seasonal differences in diseases as well as diseases more commonly associated with winter conditions.

Restriction(s): Instructor consent required.

Department(s): Department of Pathobiology

PABI*6070 Applied Avian Pathology III S [0.50]

A continuation of PABI*6060, emphasizing seasonal differences in diseases as well as diseases more commonly associated with summer conditions.

Restriction(s): Instructor consent required.

Department(s): Department of Pathobiology

PABI*6221 Comparative Veterinary Pathology I U [0.50]

Pathological changes associated with diseases of amphibia, reptiles, wild and captive non-domestic birds, and wild mammals including fur-bearers.

Offering(s): Offered in even-numbered years.

Restriction(s): Instructor consent required.

Department(s): Department of Pathobiology

PABI*6222 Comparative Veterinary Pathology II U [0.50]

Pathological changes associated with diseases of poultry and pet birds, fish and various laboratory animals.

Offering(s): Offered in even-numbered years.

Restriction(s): Instructor consent required.

Department(s): Department of Pathobiology

PABI*6630 Applied Comparative Pathology I S,F,W [0.50]

Introductory course in the diagnostic pathology of mammals, birds, reptiles, amphibians, and fish. Cases may be restricted by animal taxa or context (e.g., free-ranging Canadian wildlife, zoological collections, aquaculture). The three Applied Comparative Pathology courses build in expected level of accomplishment.

Restriction(s): Instructor consent required.

Department(s): Department of Pathobiology

PABI*6640 Applied Comparative Pathology II S,F,W [0.50]

Intermediate course in the diagnostic pathology of mammals, birds, reptiles, amphibians, and fish. Cases may be restricted by animal taxa or context (e.g., free-ranging Canadian wildlife, zoological collections, aquaculture). The three Applied Comparative Pathology courses build in expected level of accomplishment.

Restriction(s): Instructor consent required.

Department(s): Department of Pathobiology
Veterinary Infectious Diseases

PABI*6000 Bacterial Pathogenesis F [0.50]
An overview of key concepts in bacterial pathogenesis with emphasis on veterinary and zoonotic pathogens.
Department(s): Department of Pathobiology

PABI*6100 Immunobiology F [0.50]
Major areas of immunology, including initiation, regulation, receptors, genetics, immune system development and function.
Department(s): Department of Pathobiology

PABI*6180 Clinical Bacteriology U [0.50]
Current techniques and approaches in diagnostic bacteriology.
Department(s): Department of Pathobiology

PABI*6330 Viral Diseases F [0.50]
A study of important viral diseases of animals, with emphasis on etiology, host responses, diagnosis and control.
Offering(s): Offered in odd-numbered years.
Department(s): Department of Pathobiology

Molecular, cellular and tissue processes involved in the pathogenesis of adaptive, degenerative, inflammatory, infectious, proliferative and neoplastic diseases.
Department(s): Department of Pathobiology

PABI*6105 Integrative Pathology U [0.50]
Basic and interpretive tissue and biochemical concepts of disease in the liver, pancreas, kidney, endocrine and hemolymphatic systems.
Offering(s): Offered in even-numbered years.
Restriction(s): Instructor consent required.
Department(s): Department of Pathobiology

PABI*6200 Applied Viral Pathology F [0.50]
Continuation of PABI*6100 with greater depth in the interpretation of data and increased understanding of ancillary diagnostic methods applied in clinical case material. (Intended for students training in anatomic pathology.)
Restriction(s): Instructor consent required.
Department(s): Department of Pathobiology

PABI*6260 Applied Clinical Pathology I S,F,W [0.50]
Introduction to laboratory procedures and interpretation of data arising from hematology, cytology, clinical chemistry, urinalysis and hemostasis analysis of clinical material. (Intended for students training in clinical pathology.)
Restriction(s): Instructor consent required.
Department(s): Department of Pathobiology

Immunology

PABI*6190 Topics in Immunology W [0.50]
Aspects of immune and non-specific host resistance, diagnostic immunology and immune-mediated disease.
Department(s): Department of Pathobiology

PABI*6290 Clinical Immunology F [0.50]
Basic and interpretive tissue and biochemical concepts of disease in the liver, pancreas, kidney, endocrine and hemolymphatic systems.
Department(s): Department of Pathobiology

PABI*6350 Molecular Epidemiology of Bacterial Diseases W [0.50]
This is a basic introduction to molecular epidemiology of bacterial diseases. It provides an understanding of molecular epidemiology methodologies and of their use for improving our understanding of infectious diseases epidemiology and control.
Prerequisite(s): STAT*2040 Statistics I
Restriction(s): Lab component: limited number of participants and WHIMIS certificate compulsory.
Department(s): Department of Pathobiology

PABI*6550 Epidemiology of Zoonoses W [0.50]
Characterization and distribution of diseases common to people and animals.
Department(s): Department of Pathobiology
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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>PABI*6110</td>
<td>Pathology I W</td>
<td>0.50</td>
<td>Disease processes of the respiratory, integumentary, reproductive and skeletal systems.</td>
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<td>Offerings:</td>
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<td>Offered in even-numbered years.</td>
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<td>Department of Pathobiology</td>
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<tr>
<td>PABI*6130</td>
<td>Pathology II W</td>
<td>0.50</td>
<td>Disease processes of the alimentary, central nervous, cardiovascular and muscular systems and special senses.</td>
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<td>Offerings:</td>
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<td>Department of Pathobiology</td>
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<tr>
<td>PABI*6300</td>
<td>Clinical Pathology I U</td>
<td>0.50</td>
<td>Principles and applications of veterinary hematology and cytology, with emphasis on the hematopoietic systems.</td>
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<td>Department of Pathobiology</td>
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<tr>
<td>PABI*6320</td>
<td>Clinical Pathology II W</td>
<td>0.50</td>
<td>In depth study of principles and applications of biochemical tests to evaluate the function of selected organ systems, including the renal, hepatic, pancreatic and endocrine systems.</td>
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<td>Department(s):</td>
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Administrative Staff

Chair
Mark McCullagh (347 MacKinnon, Ext. 53221)
mcculla@uoguelph.ca

Graduate Coordinator
Peter Eardley (336 MacKinnon, Ext. 53211)
peardley@uoguelph.ca

Graduate Secretary
Janet Thackray (348 MacKinnon, Ext. 56265)
jthack@uoguelph.ca

Graduate Faculty

Andrew Bailey
BA, MA Oxford, PhD Calgary - Associate Professor

Donald Dedrick
BA, MA Carleton, PhD Toronto - Associate Professor

Monique Deveaux
BA, MA McGill, MPhil, PhD Cambridge - Professor and Canada Research Chair

Peter Eardley
BA McGill, MA, PhD Toronto - Associate Professor

Karyn L. Freedman
BA, MA Manitoba, PhD Toronto - Associate Professor

Maja Goldberg
BA Toronto, MA McGill, PhD Michigan State - Associate Professor

John Hacker-Wright
BA Bradley, MA, PhD New York - Associate Professor

Jean Harvey
BA Wales, MA Simon Fraser, PhD British Columbia - Professor

Karen L. Houle
BSc, MA, PhD Guelph - Associate Professor

Jay Lampert
BA, MA, PhD Toronto - Professor

Stefan Linquist
BAH Simon Fraser, MSc New York, PhD Duke - Associate Professor

Mark McCullagh
BA Toronto, PhD Pittsburgh - Associate Professor and Chair

Jeffrey A. Mitscherling
BA California (Santa Barbara), MA McMaster, PhD Guelph - Professor

Omid Payrow Shabani
BA, MA Carleton, PhD Ottawa - Associate Professor

John Russon
BA Regina, MA, PhD Toronto - Professor

Patricia Sheridan
BA McGill, MA Concordia, PhD Western - Associate Professor

Andrew Wayne
BSc Toronto, MA, PhD California (San Diego) - Associate Professor

Karen Wendling
BA Michigan State, MA, PhD Toronto - Associate Professor

Department(s):

PHIL*6000 Value Theory U [0.50]
A critical examination of some selected contemporary works in value theory or aesthetics.
Department(s): Department of Philosophy

PHIL*6060 Logic U [0.50]
A course designed to bring the individual student to the level of competence in logical techniques and theory required for graduate studies.
Department(s): Department of Philosophy

PHIL*6110 Philosophy of Religion U [0.50]
A critical examination of some selected major works or central problems in the philosophy of religion.
Department(s): Department of Philosophy

PHIL*6120 Philosophy of Mind U [0.50]
A study of contemporary theories of mind and philosophies of psychology.
Department(s): Department of Philosophy

PHIL*6140 Contemporary European Philosophy I U [0.50]
A study of the historical and contemporary origins of existentialism, phenomenology and postmodernism, concentrating on one or several of the classic texts.
Department(s): Department of Philosophy

PHIL*6150 Contemporary European Philosophy II U [0.50]
A study of the historical and contemporary origins of existentialism, phenomenology and postmodernism, concentrating on texts not covered in PHIL*6140 in the same year.
Department(s): Department of Philosophy

PHIL*6200 Problems of Contemporary Philosophy U [0.50]
A study of a particular set of problems in contemporary philosophy.
Department(s): Department of Philosophy

PHIL*6210 Metaphysics U [0.50]
A critical examination of some selected major works or central problems in metaphysics.
Department(s): Department of Philosophy

IX. Graduate Programs, Philosophy

Degree Requirements

All students must take the MA Seminar (PHIL*6950) and complete either a thesis of between 20,000 and 30,000 words or a research project of between 10,000 and 15,000 words. Candidates by thesis must take at least four semester-long courses plus the two-semester MA Seminar. Candidates by research project must take at least six semester-long courses plus the two-semester MA Seminar plus the Guided Research Project (PHIL*6990). Candidates with a degree other than philosophy will be assigned courses in accordance with their needs and background up to a maximum of six additional semester courses. There are also several prerequisite courses required for the MA. See http://www.uoguelph.ca/philosophy for details.

Regardless of the option chosen, the MA in Philosophy at Guelph is a research degree, in which the responsibility for study begins to shift from the faculty to the student. Students in both streams are expected to develop their own topic for research. The Philosophy MA can normally be completed in 4 semesters, whichever stream is chosen.

PhD Program

The University of Guelph offers a program leading to a PhD in philosophy. The aim of the PhD program is to develop philosophers who are well rounded in the traditional areas of study and who have achieved a high level of expertise in their special fields of research. The program offers supervision in most of the traditional areas of philosophy but the special strengths of the program are in: (1) Continental, Social and Political Philosophy; (2) History of Western Philosophy; (3) Philosophy of Science, Mind and Language.

Admission Requirements

Admission to the program is restricted to those who have an MA in philosophy, or an outstanding record in undergraduate studies in philosophy.

Degree Requirements

Students are normally required to take between six and ten courses plus the PhD Research Seminar (PHIL*6960). Students must also demonstrate knowledge in at least five designated fields of study. This may be done by course work, by examination, by thesis or by a suitable combination of these. Students must pass an Oral Qualifying Examination by the end of their fifth semester in the program. Students in the program may be required to demonstrate competence in one or more skills which their advisory committee decides, in consultation with the program officer, is needed for their dissertation (e.g. a language other than English). PhD candidates must submit a thesis of not more than 75,000 words (250 pages). More details are available at http://www.uoguelph.ca/philosophy.

Courses

Except where specified, the courses listed below may be offered in any semester, subject to student demand and the availability of an instructor.

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<th>Description</th>
<th>Department(s)</th>
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<tr>
<td>PHIL*6220</td>
<td>Epistemology U</td>
<td>0.50</td>
<td>A critical examination of some selected major works or central problems in epistemology.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6230</td>
<td>Ethics U</td>
<td>0.50</td>
<td>A critical examination of some selected contemporary works or problems in ethical theory.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6240</td>
<td>Biomedical Ethics U</td>
<td>0.50</td>
<td>A critical examination of some selected contemporary works or problems in biomedical ethics.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6300</td>
<td>Plato U</td>
<td>0.50</td>
<td>A study of some of the major works of Plato.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6310</td>
<td>Aristotle U</td>
<td>0.50</td>
<td>A study of some of the major works of Aristotle.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6320</td>
<td>Medieval Philosophy U</td>
<td>0.50</td>
<td>A close examination of particular problems and texts of the medieval period.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6340</td>
<td>Modern Philosophy U</td>
<td>0.50</td>
<td>An examination of major texts, from Descartes to Mill.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6500</td>
<td>John Locke U</td>
<td>0.50</td>
<td>A critical examination of the works of John Locke.</td>
<td>Department of Philosophy</td>
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<td>PHIL*6530</td>
<td>Kant U</td>
<td>0.50</td>
<td>A critical examination of the works of Immanuel Kant.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6600</td>
<td>Social and Political Philosophy U</td>
<td>0.50</td>
<td>A critical examination of some selected contemporary works or central problems in the field of social philosophy.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6700</td>
<td>Survey of Ancient Philosophy U</td>
<td>0.50</td>
<td>A survey of ancient philosophy.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6710</td>
<td>Survey of Early Modern Philosophy U</td>
<td>0.50</td>
<td>A survey of modern philosophy from Hobbes to Hume.</td>
<td>Department of Philosophy</td>
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<tr>
<td>PHIL*6720</td>
<td>History of the Philosophy of Science U</td>
<td>0.50</td>
<td>A survey of the history of the philosophy of science from the Presocratics to the Positivists.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6730</td>
<td>Contemporary Philosophy of Science U</td>
<td>0.50</td>
<td>An examination of the contemporary discipline of the philosophy of science.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6740</td>
<td>Philosophy of Biology U</td>
<td>0.50</td>
<td>A general introduction to the history and philosophy of biology.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6760</td>
<td>Science and Ethics U</td>
<td>0.50</td>
<td>A consideration of the problems which arise in the conjunction of science and ethics.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6810</td>
<td>Survey of Late Modern Philosophy U</td>
<td>0.50</td>
<td>A survey of modern philosophy from Kant to the late 19th century.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6900</td>
<td>Reading Course U</td>
<td>0.50</td>
<td></td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6930</td>
<td>Selected Topics I U</td>
<td>0.50</td>
<td>Topics in this course will vary from offering to offering.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6940</td>
<td>Selected Topics II U</td>
<td>0.50</td>
<td>Topics in this course will vary from offering to offering.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6950</td>
<td>MA Seminar U</td>
<td>0.50</td>
<td>A seminar course in which students work on developing a range of academic skills for doing professional philosophy. This course is pass/fail and is mandatory for all incoming MA students. Please refer to the Philosophy Department website for a comprehensive description of this course.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6960</td>
<td>PhD Graduate Seminar U</td>
<td>0.50</td>
<td>A seminar course in which students work on developing a range of academic skills for doing professional philosophy. This course is pass/fail and is mandatory for all second year PhD students. Please refer to the Philosophy Department website for a comprehensive description of this course.</td>
<td>Department of Philosophy</td>
</tr>
<tr>
<td>PHIL*6990</td>
<td>Guided Research Project U</td>
<td>1.00</td>
<td>A guided research project undertaken by students doing an MA by course work, under the supervision of a faculty member.</td>
<td>Department of Philosophy</td>
</tr>
</tbody>
</table>
Physics

The Departments of Physics at the Universities of Guelph and Waterloo offer a joint program leading to MSc and PhD degrees. The Guelph-Waterloo Physics Institute consists of members from both university departments and is administered by a joint co-ordinating committee. Students interested in graduate work in physics at either university should consult the application requirements and the on-line application procedures available from the web-site http://gwp.on.ca. Students are ultimately registered at the university at which their advisor is located. A student comes under the general regulations of the university at which he or she is registered, and the degree is granted by that university.

Administrative Staff

Graduate teaching and research in physics at the University of Guelph are operated through the Guelph-Waterloo Physics Institute.

Director of the Institute
Brian McNamara (Waterloo - (519) 888-4567, Ext. 38170) bmcnamara@uwaterloo.ca

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Graduate Secretary
Reggi Valilieve (209 MacNaughton, Ext. 52262) rv@physics.uoguelph.ca

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BS, BA Moorhead State College, PhD Manitoba - Professor

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Paul E. Garrett
BSc Queen's, MSc, PhD McMaster - Professor, Graduate Coordinator, and Associate Director GWPI

Ralf Gellert
Dipl Phys, PhD Darmstadt - Associate Professor

Alexandros Gezerlis
Dipl National Technical University Athens, PhD Urbana-Champaign - Assistant Professor

De-Tong Jiang
BSc Jilin, PhD Simon Fraser - Associate Professor

Stefan W. Kycia
BSc McGill; MS Pennsylvania; PhD Iowa - Associate Professor

Vladimir Ladizhansky
BS Moscow Institute of Physics and Technology; MS, PhD Weizmann Institute of Science (Rehovot, Israel) - Associate Professor

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BSc Mount Allison, MSc, PhD McMaster - Professor

Joanne M. O'Meara
BSc, PhD McMaster - Associate Professor

Eric Poisson
BSc Laval, MSc, PhD Alberta - Professor and Chair

Xiao-Rong Qin
BSc, MSc Tsinghua (Beijing), PhD Simon Fraser - Associate Professor

Carl E. Svensson
BSc, PhD McMaster - Professor

Robert Wickham
BSc Toronto, PhD Chicago - Associate Professor

Martin Williams
PhD Imperial College, London - Assistant Professor and Undergraduate Coordinator

Graduate Faculty from the University of Waterloo

Niayesh Afshordi
BA Iran, BSc Providence, PhD Princeton - Assistant Professor

Michael Balogh
BSc McMaster, PhD Victoria - Associate Professor

Jonathan Baugh
BS Tennessee, PhD North Carolina - Assistant Professor

Peter F. Bernath
BSc Waterloo, PhD M.I.T. - Professor

Kostadinka Bizheva
BS, MS Plovdiv, MS, PhD Tufts - Associate Professor

Avery Broderick
BS Stoney Brook, PhD CalTech - Assistant Professor

Anton Burkov
BS, MS Plovdiv, MS, PhD Tufts - Assistant Professor

Melanie C. Campbell
BSc Toronto, MSc Waterloo, PhD Australian National, FAAO - Professor

Z.Y. ‘Jeff’ Chen
BSc Fuden, PhD Maryland - Professor and Chair of the Department of Physics and Astronomy

Andrew M. Childs
BS Cal Tech, PhD MIT - Assistant Professor

David Cory
BA, PhD Case Western Reserve - Professor

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Joseph Emerson
MSc, PhD British Columbia - Assistant Professor

Michael Fich
BSc Waterloo, MSc, PhD California - Professor

James Forrest
BSc Simon Fraser, MSc, PhD Guelph - Professor and Associate Dean of Research, Faculty of Science

Michel Gingras
BSc, MSc Laval, PhD British Columbia - Professor

Bae-Yeun Ha
BSc, MS Korea, PhD Maryland - Associate Professor

Gretchen L. Harris
BA Mount Holyoke College, MA Wesleyan, PhD Toronto - Associate Professor

David G. Hawthorn
BSc McMaster, PhD Toronto - Assistant Professor

Thorsten Hesjedal
BSc Universitat Stuttgart, MSc Eberhard-Karls-Universitaet Tuebingen, PhD Humboldt Universität - Associate Professor

Robert Hill
BSc, PhD Bristol - Associate Professor

Michael Hudson
BSc Montreal, PhD Cambridge - Associate Professor and Associate Dean of Science (Computing), Faculty of Science

Stefan H.J. Idziak
BSc McGill, PhD Pennsylvania - Associate Professor

Thomas Jennennewin
MSc Innsbruck, PhD Munich - Associate Professor

Lyndon Jones
BSc Cardiff, PhD Birmingham - Associate Professor

Achim Kempf
BSc Heidelberg, PhD Manchester - Associate Professor

Holger Kleinke
BSc, MSc Münster, PhD Mainz - Professor

Jan Kycia
BSc McGill, MSc Pennsylvania, PhD Northwestern - Associate Professor

Raymond Laflamme
BSc Laval, PhD Cambridge - Professor

Yuri Leonenko
MSc Novosibirsk, PhD Russia - Assistant Professor

Zoya Leonenko
MSc, PhD Novosibirsk - Associate Professor

Tong K. Leung
BSc, PhD British Columbia - Associate Professor

Wing-Ki Liu
BSc, MSc, PhD Illinois - Professor
Successful applicants are encouraged to start their graduate studies in May or September, but a January starting date is possible. Academic transcripts and other supporting documents should be forwarded as soon as they become available. Admission to the program cannot be granted until all requirements have been met and all documents submitted.

Applications are considered by the Admissions Committee. It should be noted that students will normally be admitted only if an advisor can be found to oversee their research. Since there are a limited number of openings each year, applicants are advised to state alternative areas of research on the preference form supplied (see web-site http://gwp.on.ca/).

Degree Requirements

Research-Based MSc Option

Four one-term courses (at least 2.0 course credits) acceptable for graduate credit and a thesis based on original research are required. The subject of research must be approved by the candidate's advisory committee and the thesis must be read and approved by the advisory committee. One of the four courses may be an undergraduate course approved by the student's advisory committee and the graduate coordinator. If it is a physics course, it must be at the fourth-year level.

For all students one of the courses must include at least one of Quantum Mechanics 1 (PHYS*7010), Introduction to Quantum Field Theory (PHYS*7030), Statistical Physics 1 (PHYS*7040), Electromagnetic Theory (PHYS*7060), and Fundamentals of Astrophysics (PHYS*7810). An MSc student in this program who shows a particular aptitude for research and has a superior record in fourth-year undergraduate and three one-term graduate courses may be permitted, upon recommendation of the advisor and with the approval of the co-ordinating committee, to transfer into the PhD program without completing an MSc thesis.

An average of at least 70% must be obtained in the required courses. A minimum grade of 65% is required for a pass in each course. No more than two courses, of the first four taken, can have a grade of less than 70%. If a student does not meet these minimum grade requirements, or receives a failing grade in any course, he/she may be required to withdraw from the program.

Course-Based MSc Option

Eight one-term courses (0.50 unit weight) acceptable for graduate credit, including a project course summarized in a report, are required. The project must be approved by the candidate's advisor and the report read and approved by the advisor and one other faculty member. (Exception: biophysics students taking the course-based MSc option are required to take only one of the core courses PHYS*7010, PHYS*7030, PHYS*7040, PHYS*7060, PHYS*7670, and PHYS*7810. Two of the courses may be undergraduate courses approved by the advisor and the Graduate Advisory Committee. If they are Physics courses, they must be at the fourth year level. This program is recommended for those planning careers requiring a broad non-specialized knowledge of physics (for example, high school teaching).

PhD Program

The PhD program is research-based in the general areas of astrophysics and gravitation, atomic, molecular and optical physics, biophysics, chemical physics, condensed matter and material physics, industrial and applied physics, subatomic physics, and quantum computing.

Admission Requirements

A MSc degree in physics from an approved university or college with at least a B standing (75%) is normally required for entrance into the PhD program. Other requirements are the same as those described above for the MSc program (see web-site http://gwp.on.ca/).

Degree Requirements

Four one-term courses not including any already taken for MSc credit are required; courses taken during the MSc program and in excess of those required will, however, be allowed for PhD credit. The extra courses must be identified prior to admission. The core courses for the program are Quantum Mechanics 1 (PHYS*7010), Introduction to Quantum Field Theory (PHYS*7030), Statistical Physics 1 (PHYS*7040), Electromagnetic Theory (PHYS*7060), Introduction to Quantum Information Processing (PHYS*7670), and Fundamentals of Astrophysics (PHYS*7810). By the end of the first year of the program, three of the core courses, including one of Quantum Mechanics 1 (PHYS*7010), Statistical Physics 1 (PHYS*7040), Electromagnetic Theory (PHYS*7060), and Electromagnetic Theory (PHYS*7670) by the completion of the first year of the PhD program.) One of the required courses may be an undergraduate course outside the student's main field of study and must be approved by the student's advisory committee and the graduate coordinator. No undergraduate course in physics may be taken for credit.

An average of at least 70% must be obtained in the required courses. A minimum grade of 65% is required for a pass in each course. No more than two courses, of the first four taken, can have a grade of less than 70%. If a student does not meet these minimum grade requirements, or receives a failing grade in any course, he/she may be required to withdraw from the program.

Qing-Bin Lu
BSc, MSc Fuzhou, China, PhD Newcastle - Associate Professor
Adrian Lupascu
BSc, MSc Bucharest (Romania), PhD Netherlands - Assistant Professor
Norbert I. Lütkenhaus
MSc München, PhD Scotland, Habilitation Germany - Associate Professor
Brian McNamara
BS Villanova, MA, PhD Virginia - Professor and Director of the Institute
Robert B. Mann
BSc McMaster, MSc, PhD Toronto - Professor
James Martin
BSc, MSc, PhD Waterloo - Associate Professor
Brian McNamara
BS Villanova, MA, PhD Virginia - Professor, GWPI Director
Roger Melko
BSc, MSc Waterloo, MA, PhD UC Santa Barbara - Assistant Professor
Michele Mosca
BMath Waterloo, MSc, DPhil Oxford - Professor
Linda F. Nazar
BSc British Columbia, PhD Toronto - Professor
Hartwig Peemoeller
BSc Winnipeg, MSc Victoria, PhD Waterloo - Professor
Marco Piani
MSc, PhD Trieste Italy - Assistant Professor
Kevin Resch
BSc Queen's, MSc, PhD Toronto - Assistant Professor
Joseph Sanderson
BSc, PhD London - Associate Professor
Guenther A. Scholz
BSc Simon Fraser, MSc McMaster, PhD Simon Fraser - Associate Professor
Donna Strickland
BEng McMaster, PhD Rochester - Associate Professor and Associate Chair
James Taylor
BSc, MSc Toronto, PhD Victoria - Assistant Professor
Russell Thompson
BSc Ottawa, MSc Regina, PhD Western Ontario - Assistant Professor
Paul S. Wesson
BSc London, PhD Cambridge, FRAS London - Professor
Frank Wilhelm-Mauch
BSc Vordiplom, MSc (Dipl.-Phys.), PhD Karlsruhe (Germany) - Professor
David Yevick
AB Harvard, MA, PhD Princeton, Docent Lund - Professor

MSc Program

The MSc programs provide for emphasis on astrophysics and gravitation, atomic, molecular and optical physics, biophysics, chemical physics, condensed matter and material physics, industrial and applied physics, subatomic physics, and quantum computing.

Two options are available for the MSc degree:

- A research-based option in which the student is required to complete four one-semester courses (at least 2.0 course credits) and a thesis.
- A course-work option in which the student is required to complete eight one-semester courses (at least 4.0 course credits), one of which must be a research project course that includes a report.

Admission Requirements

Application for admission should be made as early as possible using on-line application methods described on the web-site http://gwp.on.ca/application/index.html. Successful applicants are encouraged to start their graduate studies in May or September, but a January starting date is possible. Program offices should be consulted for admission deadlines.

The admission requirements are as follows:

- An honours BSc degree in physics (or equivalent) with at least a B standing (75%) from a recognized university.
- Three letters of reference, two of which normally are from academic sources.
- Proof of competency in English (for applicants whose prior education was in a language other than English). See the University regulations on English Language Proficiency Certification.
- GRE Physics Subject Test score for all applicants who have completed their post-secondary education outside of Canada.

March 9, 2015
PhD candidates are required to pass a Qualifying Examination normally during the first year of the program; in any case, it must be passed no later than the fifth semester in which he/she is enrolled. This is an oral examination of approximately two hours' duration before a committee that includes representation from the student's advisory committee. It is designed to test the student's knowledge of the fundamentals and applications of physics closely related to the thesis topic. An assessment of the student's ability in research will be a factor in determining the examination result. If a student has not passed the Qualifying Examination by the end of the fifth semester in which they are enrolled, he/she may be required to withdraw from the program.

PhD students must meet their advisory committee members at least once a year to present a written and oral report on their progress. Candidates must present a thesis embodying material. An assessment of the student's ability in research will be the topic. The thesis is defended before a committee which may also examine the student's knowledge of related material.

### Interdepartmental Programs

#### Biophysics Interdepartmental Group

The Department of Physics participates in the MSc/PhD programs in biophysics. Please consult the Biophysics listing for a detailed description of the graduate programs offered by the Biophysics Interdepartmental Group.

### Courses

* Courses offered annually. Other courses are offered on an alternate year basis and as requested.

#### Perimeter Scholars' Institute Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS*6010</td>
<td>PSI Quantum Field Theory I</td>
<td>0.50</td>
</tr>
<tr>
<td>PHYS*6020</td>
<td>PSI Statistical Physics</td>
<td>0.50</td>
</tr>
<tr>
<td>PHYS*6030</td>
<td>PSI Quantum Field Theory II</td>
<td>0.50</td>
</tr>
<tr>
<td>PHYS*6040</td>
<td>PSI Relativity</td>
<td>0.50</td>
</tr>
<tr>
<td>PHYS*6050</td>
<td>PSI Quantum Theory</td>
<td>0.50</td>
</tr>
<tr>
<td>PHYS*6060</td>
<td>PSI Information and Data Analysis</td>
<td>0.50</td>
</tr>
<tr>
<td>PHYS*6070</td>
<td>PSI Dynamical Systems</td>
<td>0.50</td>
</tr>
<tr>
<td>PHYS*6080</td>
<td>PSI Computation</td>
<td>0.50</td>
</tr>
<tr>
<td>PHYS*6210</td>
<td>PSI Cosmology</td>
<td>0.25</td>
</tr>
</tbody>
</table>

**Department(s):** Department of Physics

#### PHYS*6220 PSI Standard Model U [0.25]
Application of Yang-Mills theory to particle physics, QCD and its tests in the perturbative regime, theory of weak interactions, precision tests of electroweak theory, CKM matrix and flavour physics, open questions. **Department(s):** Department of Physics

#### PHYS*6230 PSI String Theory U [0.25]
Superstring spectrum in 10d Minkowski, as well as simple toroidal and orbifold compactifications. T-duality, D-branes, tree amplitudes. Construct some simple unified models of particle physics. Motivate the 10- 11-dimensional supergravities. Simple supergravity solutions and use these to explore some aspects of ads/CFT duality. **Department(s):** Department of Physics

#### PHYS*6240 PSI Mathematical Physics Topics U [0.25]
Differential forms, de Rham cohomology, differential topology and characteristic classes, monopoles and instantons, Kahler manifolds, Dirac equations, zero modes and index theorems. **Department(s):** Department of Physics

#### PHYS*6350 PSI Quantum Information Review U [0.25]
Review of selected topics in Quantum Information. **Department(s):** Department of Physics

#### PHYS*6360 PSI Gravitational Physics Review U [0.25]
Review of selected topics in Gravitational Physics. **Department(s):** Department of Physics

#### PHYS*6370 PSI Condensed Matter Theory U [0.25]
Review of selected topics in Condensed Matter Theory. **Department(s):** Department of Physics

#### PHYS*6380 PSI Quantum Gravity U [0.25]
Review of selected topics in Quantum Gravity. **Department(s):** Department of Physics

#### PHYS*6390 PSI Foundations of Quantum Theory U [0.25]
Review of selected topics in Foundations of Quantum Theory. **Department(s):** Department of Physics

#### PHYS*6410 PSI Explorations in Quantum Information U [0.25]
Review of selected topics in Quantum Information. **Department(s):** Department of Physics

#### PHYS*6420 PSI Explorations in Gravitational Physics U [0.25]
Review of selected topics in Gravitational Physics. **Department(s):** Department of Physics

#### PHYS*6430 PSI Exploration in Condensed Matter Theory U [0.25]
Review of selected topics in Condensed Matter Theory. **Department(s):** Department of Physics

#### PHYS*6440 PSI Exploration in Quantum Gravity U [0.25]
Review of selected topics in Quantum Gravity. **Department(s):** Department of Physics

#### PHYS*6450 PSI Explorations in Foundations of Quantum Theory U [0.25]
Review of selected topics in Foundations of Quantum Theory. **Department(s):** Department of Physics

#### PHYS*6460 PSI Explorations in Particle Physics U [0.25]
Review of selected topics in Particle Physics. **Department(s):** Department of Physics

#### PHYS*6470 PSI Explorations in String Theory U [0.25]
Review of selected topics in String Theory. **Department(s):** Department of Physics

#### PHYS*6480 PSI Explorations in Complex Systems U [0.25]
Review of selected topics in Complex Systems. **Department(s):** Department of Physics

#### PHYS*6490 PSI Explorations in Cosmology U [0.25]
Review of selected topics in Cosmology. **Department(s):** Department of Physics
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS*7010</td>
<td>Quantum Mechanics I * U [0.50]</td>
<td>Review of formalism of nonrelativistic quantum mechanics including symmetries and invariances. Approximation methods and scattering theory. Elementary quantum theory of radiation. Introduction to one-particle relativistic wave equations.</td>
</tr>
<tr>
<td>PHYS*7020</td>
<td>Quantum Mechanics II U [0.50]</td>
<td>Concepts of relativistic quantum mechanics, elementary quantum field theory, and Feynman diagrams. Application to many-particle systems.</td>
</tr>
<tr>
<td>PHYS*7040</td>
<td>Statistical Physics I * U [0.50]</td>
<td>Statistical basis of thermodynamics; microcanonical, canonical and grand canonical ensembles; quantum statistical mechanics, theory of the density matrix; fluctuations, noise, irreversible thermodynamics; transport theory; application to gases, liquids, solids.</td>
</tr>
<tr>
<td>PHYS*7050</td>
<td>Statistical Physics II U [0.50]</td>
<td>Phase transitions. Fluctuation phenomena. Kubo's theory of time correlation functions for transport and spectral properties; applications selected from a variety of topics including linearized hydrodynamics of normal and superfluids, molecular liquids, liquid crystals, surface phenomena, theory of the dielectric constant, etc.</td>
</tr>
<tr>
<td>PHYS*7060</td>
<td>Electromagnetic Theory * U [0.50]</td>
<td>Solutions to Maxwell's equations; radiation theory, normal modes; multipole expansion; Kirchhoff's diffraction theory; radiating point charge; optical theorem. Special relativity; transformation laws for the electromagnetic field; line broadening. Dispersion; Kramers-Kronig relations. Magnetohydrodynamics and plasmas.</td>
</tr>
<tr>
<td>PHYS*7080</td>
<td>Applications of Group Theory U [0.50]</td>
<td>Introduction to group theory; symmetry, the group concept, representation theory, character theory. Applications to molecular vibrations, the solid state, quantum mechanics and crystal field theory.</td>
</tr>
<tr>
<td>PHYS*7110</td>
<td>Nuclear Physics U [0.50]</td>
<td>Static properties of nuclei; alpha, beta, gamma decay; two-body systems; nuclear forces; nuclear reactions; single-particle models for spherical and deformed nuclei; shell, collective, interacting boson models.</td>
</tr>
<tr>
<td>PHYS*7140</td>
<td>Special Topics in Subatomic and Nuclear Physics U [0.50]</td>
<td>Strong, electromagnetic and weak interactions. Isospin, strangeness, conservation laws and symmetry principles. Leptons, hadrons, quarks and their classification, formation, interactions and decay.</td>
</tr>
</tbody>
</table>

### Subatomic and Nuclear

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS*7180</td>
<td>Special Topics in Subatomic and Nuclear Physics U [0.25]</td>
<td>Instructor consent required.</td>
</tr>
</tbody>
</table>

### Astronomy and Astrophysics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>PHYS*7810</td>
<td>Fundamentals of Astrophysics U [0.50]</td>
<td>The fundamental astronomical data: techniques to obtain it and the shortcomings present. The classification systems. Wide- and narrow-band photometric systems. The intrinsic properties of stars: colours, luminosities, masses, radii, temperatures. Variable stars. Distance indicators. Interstellar reddening. Related topics.</td>
</tr>
<tr>
<td>PHYS*7850</td>
<td>Quantum Field Theory for Cosmology U [0.50]</td>
<td>Introduction to scalar field theory and its canonical quantization in flat and curved spacetimes. The flat space effects of Casimir and Unruh. Quantum fluctuations of scalar fields and of the metric on curved space-times and application to inflationary cosmology. Hawking radiation.</td>
</tr>
<tr>
<td>PHYS*7860</td>
<td>General Relativity for Cosmology U [0.50]</td>
<td>Introduction to the differential geometry of Lorentzian manifolds. The principles of general relativity. Causal structure and cosmological singularities. Cosmological space-times with Killing vector fields. Friedmann-Lemaître cosmologies, scalar vector and tensor perturbations in the linear and nonlinear regimes. De Sitter space-times and inflationary models.</td>
</tr>
<tr>
<td>PHYS*7870</td>
<td>Cosmology U [0.50]</td>
<td>Friedmann-Robertson-Walker metric and dynamics; big bang thermodynamics; nucleosynthesis; recombination; perturbation theory and structure formation; anisotropies in the Cosmic Microwave Background; statistics of cosmological density and velocity fields; galaxy formation; inflation.</td>
</tr>
<tr>
<td>PHYS*7880</td>
<td>Special Topics in Astronomy U [0.50]</td>
<td>Offered on demand</td>
</tr>
<tr>
<td>PHYS*7890</td>
<td>Special Topics in Astrophysics U [0.25]</td>
<td>Offered on demand</td>
</tr>
<tr>
<td>PHYS*7900</td>
<td>Special Topics in Gravitation and Cosmology U [0.50]</td>
<td></td>
</tr>
<tr>
<td>PHYS*7910</td>
<td>Special Topics in Gravitation and Cosmology U [0.25]</td>
<td></td>
</tr>
</tbody>
</table>

### Atomic and Molecular

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS*7100</td>
<td>Atomic Physics U [0.50]</td>
<td>Emphasis on atomic structure and spectroscopy. Review of angular momentum, rotations. Wigner-Eckart theorem, n-j symbols. Energy levels in complex atoms, Hartree-Fock theory, radiative-transitions and inner-shell processes. Further topics selected with class interest in mind, at least one of which is to be taken from current literature.</td>
</tr>
<tr>
<td>PHYS*7140</td>
<td>Molecular Physics U [0.50]</td>
<td>Angular momentum and the rotation of molecules; introduction to group theory with application to molecular vibrations; principles of molecular spectroscopy; spectra of isolated molecules; intermolecular interactions and their effects on molecular spectra; selected additional topics (e.g., electronic structure of molecules, experimental spectroscopic techniques, neutron scattering, correlation functions, collision induced absorption, extension of group theory to molecular crystals, normal co-ordinate analysis, etc.).</td>
</tr>
</tbody>
</table>
### Condensed Matter

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS*7310</td>
<td>Solid State Physics I U [0.50]</td>
<td>Phonons, electron states, electron-electron interaction, static properties of solids.</td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS*7320</td>
<td>Solid State Physics II U [0.50]</td>
<td>Transport properties; optical properties; magnetism; superconductivity; disordered systems.</td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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<tr>
<td>PHYS*7330</td>
<td>Special Topics in Theoretical Condensed Matter Physics U [0.50]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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<tr>
<td>PHYS*7370</td>
<td>Special Topics in Surface Physics U [0.50]</td>
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<td>Department(s): Department of Physics</td>
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### Biophysics

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<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>PHYS*7510</td>
<td>Cellular Biophysics U [0.50]</td>
<td>The physics of cellular structure and function; membrane theories, diffusion and active transport, bioelectric phenomena; intracellular motion, thermodynamics; selected topics of current interest and seminar.</td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS*7520</td>
<td>Molecular Biophysics U [0.50]</td>
<td>Physical methods of determining macromolecular structure: energetics, intramolecular and intermolecular forces, with application to lamellar structures, information storage, DNA and RNA, recognition and rejection of foreign molecules.</td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS*7540</td>
<td>Special Topics in Biophysics U [0.50]</td>
<td>Offered on demand</td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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<tr>
<td>PHYS*7570</td>
<td>Special Topics in Biophysics U [0.25]</td>
<td>Offered on demand</td>
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<td>Department(s): Department of Physics</td>
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### Applied Physics (including Technical Methods)

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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Notes</th>
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<tbody>
<tr>
<td>PHYS*7140</td>
<td>Nonlinear Optics U [0.50]</td>
<td>Classical and Quantum Mechanical descriptions of nonlinear susceptibility, nonlinear wave propagation, nonlinear effects such as Peckel's and Kerr effects, harmonic generation, phase conjugation and stimulated scattering processes.</td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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<tr>
<td>PHYS*7450</td>
<td>Special Topics in Experimental Physics * U [0.50]</td>
<td>A modular course in which each module deals with an established technique of experimental physics. Four modules will be offered during the Winter and Spring semesters, but registration and credit will be in the spring semester. Typical topics are neutron diffraction, light scattering, acoustics, molecular beams, NMR, surface analysis, etc.</td>
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<tr>
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<td>Department(s): Department of Physics</td>
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<tr>
<td>PHYS*7470</td>
<td>Optical Electronics U [0.50]</td>
<td>Optoelectronic component fabrication, light propagation in linear and nonlinear media, optical fiber properties, electro-optic and acousto-optic modulation, spontaneous and stimulated emission, semiconductor lasers and detectors, noise effects in fiber systems.</td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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### Special Courses (offered on demand only)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Notes</th>
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<tbody>
<tr>
<td>PHYS*7120</td>
<td>Special Topics in Theoretical Physics U [0.50]</td>
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<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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<tr>
<td>PHYS*7710</td>
<td>Special Lecture and Reading Course U [0.50]</td>
<td></td>
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<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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<tr>
<td>PHYS*7730</td>
<td>Special Topics in Physics U [0.50]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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</tr>
<tr>
<td>PHYS*7750</td>
<td>Interinstitution Exchange U [0.50]</td>
<td>At the GWPI director's discretion, a PhD or MSc student may receive credit for a term of specialized studies at another institution. Formal evaluation is required.</td>
</tr>
<tr>
<td></td>
<td>Restriction(s): GWPI director approval required</td>
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<tr>
<td></td>
<td>Department(s): Department of Physics</td>
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</table>
Plant Agriculture

The MSc and PhD programs in the Department of Plant Agriculture offer specialization in three broad fields of the Plant Sciences: 1) plant breeding and genetics; 2) plant biochemistry and physiology; and 3) crop production systems.

- **Plant Breeding and Genetics** has long been a focus of our faculty and students. Through breeding and biotechnology, Guelph researchers help society by developing new field-crop, fruit, ornamental and vegetable cultivars that are grown in Canada and worldwide. Also, Plant Agriculture faculty and students seek both to understand the fundamental mechanisms that enable plant improvements and to discover novel methodologies and technologies that will be the foundation for future advances.

- **Plant Biochemistry and Physiology** is a broad discipline. Faculty and students in this area study the response of plants to environmental change and plant development at the ecosystem, whole plant, and molecular levels. Students investigate ecologically friendly management strategies, study underlying molecular and biochemical mechanisms that regulate plant development, investigate how plant performance can be optimized in the field or closed environments, and contribute to cultivar development.

- **Crop Production Systems** research seeks to develop or test agricultural management strategies for yield improvement and economically and environmentally sound production practices in field and horticultural crops such as ornamentals and turf. Students assist producers and industry in the control of weeds, insects and plant diseases, and investigate new management protocols for production of high quality crops.

### Administrative Staff

**Chair**

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Istvan Rajcan (221 Crop Science Building, Ext. 53564)
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**Graduate Secretary**

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### Graduate Faculty

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BS, MSc Guelph, PhD Kentucky - Associate Professor

**Gale G. Bozzo**

BSc, MSc York, PhD Queen's - Assistant Professor

**John A. Cline**

BSc Guelph, MSc Michigan State, PhD London UK - Associate Professor

**William Deen**

BSc, MSc, PhD Guelph - Associate Professor

**Hugh J. Earl**

BSc, MSc Guelph, PhD Western Ontario - Associate Professor

**Mehrzad Eskandari**

BSc, Arsenjan Azad Univ., MSc, Karaj Azad Univ., PhD Guelph - Assistant Professor

**Chris L. Gillard**

BSc, MSc, Guelph - Assistant Professor

**Bernard Grodzinski**

BSc Toronto, MSc, PhD York, MA Cambridge - Professor

**David C. Hooker**

BS Agr, MSc, PhD Guelph - Assistant Professor

**Katerina S. Jordan**

BS, MS Maryland, PhD Rhode Island - Associate Professor

**Elizabeth A. Lee**

BSc Minnesota, MSc Iowa State, PhD Missouri - Professor

**Lewis Lukens**

BSc Carleton College, PhD Minnesota - Associate Professor

**Eric M. Lyons**

BSc Northern Iowa, PhD Pennsylvania State - Associate Professor

**Ralph Martin**

BA, MSc Carleton, PhD McGill - Professor and Loblaw Chair Sustainable Food Production

**Mary Ruth McDonald**

BSc, MSc Guelph - Professor and Associate Chair

**Barry J. Micaleff**

BSc, MSc Guelph, PhD Wisconsin-Madison - Associate Professor

**Amar K. Mohanty**

BSc, MSc, PhD Utah - Professor and Premier’s Research Chair in Biomatics & Transportation

**Gopinadh Paliyath**

BS, Ed Mysore, MSc Calicut, PhD Indian Institute of Science - Professor

**K. Peter Pauls**

BSc, MSc, PhD Waterloo - Professor and Chair

**Manish N. Raizada**

BSc Western, PhD Stanford - Associate Professor

**Istvan Rajcan**

BSc Novi Sad, Yugoslavia, PhD Guelph - Professor and Associate Graduate Coordinator

**Darren E. Robinson**

BSc Winnipeg, MSc Manitoba, PhD Guelph - Associate Professor

**Praveen K. Saxena**

BSc Meerut, MSc Lucknow, PhD Delhi - Professor

**Arthur W. Schaafsmia**

BSc, MSc, PhD Guelph - Professor

**Barry J. Shelp**

BSc, MSc Brock, PhD Queen's - Professor and Graduate Coordinator

**Peter H. Sikkema**

BSc, MSc Guelph, PhD Western Ontario - Professor

**Jayasankar Subramanian**

BSc, MSc TamilNadu Agricultural (India), PhD Florida - Associate Professor

**J. Alan Sullivan**

BSc, MSc, PhD Guelph - Professor

**Clarence J. Swanton**

BSc Toronto, MSc Guelph, PhD Western Ontario - Professor

**François Tardif**

BSc, MSc, PhD Laval - Associate Professor

**Rene C. Van Acker**

BSc, MSc Guelph, PhD Reading - Professor and Associate Dean, OAC

**David J. Wolyn**

BS Rutgers, MS, PhD Wisconsin - Professor

**MSc Program**

The Department of Plant Agriculture offers an MSc program in three broad fields of the Plant Sciences: 1) plant breeding and genetics; 2) plant biochemistry and physiology; and 3) crop production systems. Students conduct basic and/or applied research on topics within these fields.

### Admission Requirements

Applicants should have a baccalaureate degree in an honors plant science/biology program, or the equivalent, from a recognized university or college with an average academic standing of at least ‘B’ during the last two years of full-time study (or equivalent). To assist in identifying a suitable thesis advisor(s), applicants should submit a short statement of research interests. Supportive letters of reference are essential and should outline the applicant's strengths and weaknesses. Students may be admitted in the Fall, Winter or Summer semesters. The University of Guelph requires that applicants from some foreign institutions have a MSc (or equivalent) degree before they are considered for admission to the University of Guelph's MSc program.

### Degree Requirements

A program of prescribed courses (at least 1.5 credits of 6000 level courses) and additional courses is established with the student's advisory committee. All MSc candidates must complete a thesis and present a seminar in conjunction with the final oral examination. Students are required to participate in the Seminar PLNT*4600 and in a Departmental Colloquium course dealing with current topics. Students are expected to participate in Departmental events, with particular emphasis on seminar series.

### PhD Program

The Department of Plant Agriculture offers a PhD program in three broad fields of the Plant Sciences: 1) plant breeding and genetics; 2) plant biochemistry and physiology; and 3) crop production systems. Students conduct research on topics within these fields.
Admission Requirements

The usual requirement for admission into the PhD program is a MSc degree by thesis in a field appropriate to their proposed area of specialization with a minimum B average and supportive letters of reference. Direct admission to the PhD program is permitted to applicants holding an honours baccalaureate degree and demonstrating extraordinary academic and research capabilities. It is also possible for a student to transfer from the MSc without completing the requirements for that degree if the student has an excellent academic record and has strong research progress that can be expanded to the doctoral level. The request for transfer must be initiated by the student and must be done no earlier than the end of the second semester and no later than the end of the fourth semester. Applicants should submit a statement of research interests, background experiences, and career goals to assist in the identification of an appropriate faculty adviser with the resources necessary to support the thesis research. Students may be admitted in the Fall, Winter or Spring semesters. In some instances, applicants who already hold a MSc may be required to initially register in the MSc program.

Degree Requirements

The major emphasis in the PhD program is on research and the preparation and defense of an acceptable thesis. All PhD candidates must complete a thesis and present a seminar -in conjunction with the final oral examination. Students are required to participate in the Seminar PLNT*6400 and in a Departmental Colloquium course dealing with current topics. There are no other specific course requirements. It is usual for most students, in consultation with their advisory committee, to select some appropriate courses in preparation for the qualifying examination and thesis research. The qualifying examination is in two parts (written and oral) and evaluates the student’s knowledge of their field of specialization and related topics. The qualifying examination is taken no later than the fifth semester. For students who have transferred from the MSc program or have been admitted directly to the PhD program from a BSc, the qualifying examination is taken no later than the seventh semester. The advisory committee is required to submit a written evaluation of the student's performance in research and the student's potential as a researcher. Upon completion of the qualifying examination, the student becomes a candidate for the PhD degree.

All students are expected to participate in Departmental events, with particular emphasis on seminar series.

Collaborative Programs

Toxicology MSc/PhD

The Department of Plant Agriculture participates in the MSc/PhD program in toxicology. Please consult the Toxicology listing for a detailed description of the MSc/PhD collaborative program.

Interdepartmental Programs

Bioinformatics MBNF

The Department of Plant Agriculture participates in the Master of Bioinformatics Program. Please consult the Bioinformatics listing for a detailed description of the Master of Bioinformatics Program.

Courses

Plant Breeding and Genetics

PLNT*6100 Advanced Plant Breeding I W [0.50]

The practical consideration of genetic theory and biological limitations to improving plant populations and developing cultivars are discussed. Current and emerging breeding methodologies and sources of variation used to achieve plant breeding goals are examined through lectures, paper discussion, site visits and invited talks.

Department(s): Department of Plant Agriculture

PLNT*6160 Advanced Plant Breeding II W [0.50]

Fundamentals of quantitative genetics. Topics include gene and genotype frequencies means, variances, covariances and resemblance among relatives. Lecture topics are expanded through discussion of classic and current papers.

Offering(s): Offered in odd-numbered years.

Department(s): Department of Plant Agriculture

PLNT*6250 Colloquium in Plant Genetics and Breeding U [0.25]

An open discussion course designed to review and critically analyse contemporary issues in plant genetics and breeding.

Department(s): Department of Plant Agriculture

PLNT*6260 Advanced Plant Genetics I F [0.50]

A lecture and discussion course examining the underlying principles of genetics and the recent advances in plant genetics. Topics include: structure of the genome, experiments to measure and experimentally describe phenotypes, population structures, and molecular basis of inheritance of a phenotype.

Department(s): Department of Plant Agriculture

PLNT*6290 Advanced Plant Genetics II W [0.50]

A lecture and discussion course examining classical and molecular genetic investigations for understanding the genetic basis and regulation of physiological processes in plants.

Offering(s): Offered in even-numbered years.

Department(s): Department of Plant Agriculture

PLNT*6340 Plant Breeding F [0.50]

This course examines principles of plant breeding in self- and cross-pollinated crops. Additional topics include crop domestication, mating systems, heritability, gain from selection, disease resistance, polyploidy, marker assisted selection and government regulations.

Restriction(s): MBG*4160

Department(s): Department of Plant Agriculture

PLNT*6500 Applied Bioinformatics W [0.50]

The goal of this course is to provide an introductory understanding of the databases and methods used in computational molecular biology research. Topics include: reviewing major molecular databases and their structures, constructing sequence alignments, constructing phylogenics, and finding motifs and genes in biological sequences. Lab sessions include an introduction to Unix and Perl for the biologist and hands-on use of several molecular data analysis programs.

Prerequisite(s): Undergraduate level statistics class (such as STAT*2040 or STAT*2100) and undergraduate level molecular biology class (such as MBG*2020).

Department(s): Department of Plant Agriculture

Plant Biochemistry and Physiology

PLNT*6010 Physiology of Crop Yield W [0.50]

This course covers factors affecting biomass production and yield, with primary focus on phenomena measured at the whole canopy scale. Yield-limiting abiotic stresses (temperature, water deficit, nutrient deficiency) are considered in detail, as are technical aspects of instrumentation used in crop physiology research. (Offered annually)

Prerequisite(s): PBIO*3110 or permission of instructor

Department(s): Department of Plant Agriculture

PLNT*6110 Fruit and Vegetable Technology F [0.50]

The course is primarily intended to address science and technology aspects of fruits and vegetables, with specific reference to storage, packaging, quality, processing, products and ingredients, health regulatory properties and biotechnology issues. Methods of instruction include lectures and seminars. Students are evaluated during their seminar presentations, term papers and participation in discussions.

Offering(s): Offered in even-numbered years.

Department(s): Department of Plant Agriculture

PLNT*6230 Colloquium in Plant Physiology and Biochemistry U [0.25]

An open discussion course designed to review and critically analyze contemporary issues in plant physiology and biochemistry.

Department(s): Department of Plant Agriculture

PLNT*6320 Metabolic Processes in Crop Plants F [0.50]

A comprehensive examination of the metabolic mechanisms and versatility whereby autotrophic organisms sustain themselves. Emphasis is placed on our current understanding of the regulation and integration of metabolic processes in plants and their physiological and agricultural significance including available research methodologies.

Prerequisite(s): one undergraduate course in biochemistry

Restriction(s): No auditing without permission of Instructor.

Department(s): Department of Plant Agriculture

PLNT*6330 Metabolism of Natural Products in Plants W [0.50]

A comprehensive analysis of the metabolism and roles of natural products in plants. Emphasis is placed on the distinction between secondary and primary processes, and the composition, detection, and regulation of the biosynthesis, modification and turnover of natural products. Key research methodologies and the roles of natural products in abiotic and biotic stresses and their effects on human health are discussed.

Offering(s): Offered in even-numbered years.

Department(s): Department of Plant Agriculture

Crop Production Systems

PLNT*6210 Herbicide Activity, Modes-of-Action, Selectivity and Resistance F [0.50]

This course provides a comprehensive study of the major herbicide groups. The various herbicide groups will be discussed under the following topics: herbicide uptake and translocation, herbicide mode of action, herbicide selectivity, weeds controlled and crop injury.

Offering(s): Offered in odd-numbered years.

Department(s): Department of Plant Agriculture
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term(s)</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>PLNT*6240</td>
<td>Colloquium in Crop Production and Management</td>
<td>U</td>
<td>0.25</td>
<td>An open discussion course designed to review and critically analyze contemporary issues in crop production and management.</td>
</tr>
<tr>
<td>PLNT*6270</td>
<td>Agroecosystem Design and Function</td>
<td>F</td>
<td>0.50</td>
<td>This lecture-based course critically analyzes the agroecosystem in field crop, horticulture, turfgrass and greenhouse industries. Agroecosystem design is considered in relation to key components such as crop rotation and management of soil, nutrient and water supply. The significance of plant function, soil properties, and nutrient and water cycles to agroecosystem design are examined. Metrics of productivity and environmental sustainability serve to focus discussion on agroecosystem optimization.</td>
</tr>
<tr>
<td>PLNT*6280</td>
<td>Invasive Plant Ecology in Natural and Agricultural Systems</td>
<td>W</td>
<td>0.50</td>
<td>This course focuses on the ecological principles that are important in understanding the potential for a plant species to become invasive. Students are able to use this knowledge to facilitate management of these species under field conditions.</td>
</tr>
<tr>
<td>PLNT*6380</td>
<td>Plant Disease Epidemiology and Management</td>
<td>F</td>
<td>0.50</td>
<td>Epidemiology and management of plant diseases caused by fungi, viruses, and bacteria.</td>
</tr>
<tr>
<td>PLNT*6170</td>
<td>Statistics in Plant Agriculture</td>
<td>W</td>
<td>0.50</td>
<td>The application of statistical techniques to research in plant agriculture. SAS is the software used to perform data analysis. Emphasis is placed on statistical principles, the design of experiments, the testing of hypotheses, and communication of findings to other scientists.</td>
</tr>
<tr>
<td>PLNT*6400</td>
<td>Seminar</td>
<td>F,W</td>
<td>0.25</td>
<td>All graduate students present a departmental seminar on their research proposal in their second or third semester. Each student is expected to participate in the seminars of colleagues and faculty.</td>
</tr>
<tr>
<td>PLNT*6450</td>
<td>Plant Agriculture International Field Tour</td>
<td>U</td>
<td>0.25</td>
<td>A field course designed to increase student's knowledge of primary field and animal agricultural production systems, to explore the environmental and political issues related to international agriculture, and to understand the role of agri-business in the rural economy.</td>
</tr>
<tr>
<td>PLNT*6800</td>
<td>Special Topics in Plant Science</td>
<td>U</td>
<td>0.50</td>
<td>A study of selected contemporary topics in plant science. Proposed course descriptions are considered by the Department of Plant Agriculture on an ad hoc basis, and the course is offered according to demand.</td>
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</tbody>
</table>
IX. Graduate Programs, Political Science

Administrative Staff

Chair
Byron M. Sheldrick (525 MacKinnon, Ext. 56503)
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Graduate Coordinator
Candace Johnson (511 MacKinnon, Ext. 52179)
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Graduate Secretary
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Graduate Faculty

Dennis Baker
BA McMaster, LLB Toronto, PhD Calgary - Assistant Professor

Janine Clark
BES Waterloo, MA Carleton, PhD Toronto - Associate Professor

Carol L. Dauda
BA McMaster, MA Guelph, PhD Toronto - Assistant Professor

Jordi Diez
BA Toronto, MA Essex, PhD Toronto - Associate Professor

Candace Johnson
BA Toronto, MA, PhD Dalhousie - Associate Professor

Craig A. Johnson
BA Queen’s, MA Toronto, PhD London School of Economics - Associate Professor

Edward Koning
BA, MA Leiden, PhD Queen’s - Assistant Professor

Theresa M.L. Lee
BA Toronto, MA, PhD Princeton - Associate Professor

Leah Levac
BA Acadia, MA, PhD New Brunswick - Assistant Professor

David MacDonald
BA Carleton, MA Ottawa, PhD London School of Economics - Associate Professor

Maureen Mancuso
BA McMaster, MA Carleton, DPhil Oxford - Professor, Provost and Vice-President Academic

Tim A. Mau
BA, MA Guelph, PhD Oxford - Associate Professor

Judith McKenzie
BES Waterloo, MA, PhD Toronto - Associate Professor

Andrea Paras
BA UBC, MA, PhD Toronto - Assistant Professor

Troy Riddell
BA, MA Calgary, PhD McGill - Associate Professor

Byron M. Sheldrick
BA Carleton, LLB Toronto, MA, PhD York - Associate Professor

Julie Simmons
BA British Columbia, MA, PhD Toronto - Assistant Professor

Tamara Small
BA Guelph, MA Calgary, PhD Queen’s - Assistant Professor and Graduate Co-ordinator

Ian S. Spears
BA Toronto, MA Queen’s, PhD McGill - Associate Professor

Adam Sneyd
BA Queen’s, MA York, PhD McMaster - Assistant Professor

MA Program

The Department of Political Science offers three programs of study leading to the MA degree. Graduate students in the Department of Political Science are accepted into one of the following programs: 1) the General MA in Political Science; 2) the Collaborative MA Program in International Development Studies (IDS); or 3) the Guelph-McMaster Collaborative MA Program in Public Policy and Administration (The G-M Program). Each of these MA programs has separate course requirements. Students in the General MA and Collaborative MA Program in International Development Studies may pursue a thesis option or a major research paper option, both of which are research-based. Students in the Guelph-McMaster program are required to undertake a major research paper. The MA program can be completed in three semesters.

Application Procedure

All students must apply directly to the Department of Political Science. Graduate students are admitted each Fall semester. Program offices should be consulted for admission deadlines. All applications must be submitted on-line. Complete instructions can be found at http://www.uoguelph.ca/graduatestudies/apply.

A Statement of Interest forms a vital component of the application package (see website above). A Statement of Interest should include a clear delineation of the student’s research topic, preferably a specific research question and the problem this question addresses within the academic literature.

NOTE: This is a self-administered application process. Please have all materials (reference letters, transcripts, application form, statement of research) returned to you and send materials in one envelope to the Graduate Secretary, Department of Political Science.

Admission Requirements

The department requires an Honours BA degree (4 years) in political science (or its equivalent) with at least a ‘B’+ average for consideration for admission to the program. A methodology course equivalent to The Systematic Study of Politics, POLS*3650, in the Department of Political Science undergraduate program, is necessary for admission to the graduate program. Students not satisfying this requirement may be admitted with the provision that it be satisfied by completing the requisite extra course.

Degree Requirements

Departmental Program - Guelph MA Program in Political Science

The University of Guelph’s Department of Political Science has a large, academically diverse research-oriented faculty. We offer strong scholarly representation in two main fields: Governance and Public Policy; and Comparative Politics. Within these two fields, the faculty’s research and supervisory expertise further is concentrated in, but not limited to, the following thematic areas: Social Policy; Environmental Policy; International Trade Policy; Criminal Justice Policy; Politics of Development; and Women, Gender and Politics. The program’s structure and the diverse interests of its members have resulted in a very broad range of course offerings. Graduates of the General MA in Political Science are engaged in a wide range of careers in academia, government and industry.

In order to fulfill the requirements of the General MA Political Science, students must complete the requirements of either the thesis or the major paper options.

Thesis Option

In order to satisfy the degree requirements, the student will complete five courses plus a Pro-Seminar and a thesis, as described below for a total of 2.75 credits.

One professional development and orientation course:
POLS*6900 [0.25] Pro-Seminar

One methodology course:
POLS*6940 [0.50] Qualitative Research Design and Methods or an appropriate equivalent from another department.

One core course:
POLS*6000 [0.50] Comparative Approaches to Political Science

Three departmental courses or, in consultation with the graduate advisor, courses outside the department.

With the permission of the Graduate Coordinator, complete and successfully defend a thesis of no more than 20,000 words.

Major Research Paper Option

In order to satisfy the degree requirements, the student will complete six courses plus a Pro-Seminar and two course equivalents of major paper research, as described below, for a total of 4.25 credits.

One professional development and orientation course:
POLS*6900 [0.25] Pro-Seminar

One methodology course:
POLS*6940 [0.50] Qualitative Research Design and Methods or an approved equivalent from another department.

One core course:
POLS*6000 [0.50] Comparative Approaches to Political Science

Four departmental courses or, in consultation with the graduate advisor, courses outside the department.

With the permission of the Graduate Coordinator, graduate students complete and successfully defend a Major Research Paper of approximately 10,000 words.
POLS*6970 [1.00] Major Paper

Interuniversity MA Program - Guelph-McMaster Collaborative MA Program in Public Policy and Administration

The collaborative program in public policy and administration is an initiative on the part of the Departments of Political Science at the University of Guelph and McMaster University to co-ordinate their involvement in this particular field.

The program successfully melds policy studies and administrative studies into a unique program of study in Canada. Students can avail themselves of core courses that may be offered at either institution. Up to 50% of courses can be taken at each university. The program term is one year. All the courses are grounded within the discipline of political science, while giving attention and regard to the contribution of related disciplines - such as economics, law and sociology.

Graduates enjoy successful careers in the public services of Canada, Ontario and other provinces, as well as local governments, and pursue careers in the private sector as well as the non-profit sector. A number of graduates have pursued PhDs and now teach in universities and colleges.
Degree Requirements

In order to satisfy the degree requirements, the student will complete six courses plus a Pro-Seminar and two course equivalents of major paper research as described below for a total of 4.25 credits.

One professional development and orientation course:
POLS*6900  [0.25] Pro-Seminar

One methodology course:
POLS*6940  [0.50] Qualitative Research Design and Methods

Three core courses:
POLS*6630  [0.50] Approaches to Public Policy
POLS*6640  [0.50] Canadian Public Administration: Public Sector Management
MCM*7940  [0.50] Research Seminar: Public Policy

Two departmental courses offered at the University of Guelph or McMaster University. With the permission of the Graduate Program Committee, graduate students complete and successfully defend a Major Research Paper of approximately 10,000 words:
POLS*6970  [1.00] Major Paper

Interdepartmental MA Programs - International Development Studies

The Department of Political Science participates in the MA International Development Studies (IDS) program. Please consult the International Development Studies listing for a detailed description of the MA collaborative program including the special additional requirements for each of the participating departments.

IDS graduates hold positions in government in Canada and abroad with NGOs, international organizations and private consultancies. Many also enter PhD programs.

Degree Requirements

In order to fulfill the requirements of the IDS MA, students must complete the requirements of either the thesis or the major research paper options.

Thesis Option

In order to satisfy the degree requirements, the student will complete seven courses plus a Pro-Seminar and a thesis, as described below for a total of 3.75 credits.

One professional development and orientation course:
POLS*6900  [0.25] Pro-Seminar

One methodology course:
POLS*6940  [0.50] Qualitative Research Design and Methods or an approved equivalent from another department.

One core course:
POLS*6730  [0.50] The Politics of Development and Underdevelopment

Five CIDS core courses (2.50). See the Collaborative International Development Program entry in this calendar. POLS*6730 will count as both a Political Science requirement and a CIDS requirement. With the permission of the Graduate Program Committee, graduate students complete and successfully defend a thesis of no more than 20,000 words:
POLS*6970  [1.00] Major Paper

Major Research Paper Option

In order to satisfy the degree requirements, the student will complete eight courses plus Pro-Seminar and two course equivalents of major paper research as described below for a total of 5.25 credits.

One professional development and orientation course:
POLS*6900  [0.25] Pro-Seminar

One methodology course:
POLS*6940  [0.50] Qualitative Research Design and Methods or an approved equivalent from another department.

One core course:
POLS*6730  [0.50] The Politics of Development and Underdevelopment

Five CIDS core courses (2.50). See the Collaborative International Development Program entry in this calendar. POLS*6730 will count as both a Political Science requirement and a CIDS requirement. With the permission of the Graduate Program Committee, graduate students complete and successfully defend a Major Research Paper of approximately 10,000 words:
POLS*6970  [1.00] Major Paper

PhD Program

The PhD program offers students the opportunity to pursue studies in two fields: Comparative Politics, and Public Policy and Governance. Students are required to major in one field and minor in the other. Within Comparative Politics, students can focus their studies thematically or regionally. The department has expertise in developing, transitional, and advanced-industrial countries. Within the field of Public Policy and Governance, students can pursue studies in a wide range of areas, including health care, law, criminal justice, environmental policy, social policy, security policy, trade policy, federalism and intergovernmental relations, and multilevel governance.

Application Procedure

All students must apply directly to the Department of Political Science. Graduate students are admitted each Fall semester. Program offices should be consulted for admission deadlines. All applications must be submitted on-line. Complete instructions can be found at:
http://www.uoguelph.ca/graduatestudies/apply

A Statement of Interest forms a vital component of the application package (see website above). A Statement of Interest should include a clear delineation of the student’s research topic, preferably a specific research question and the problem this question addresses within the academic literature.

NOTE: This is a self-administered application process. Please have all materials (reference letters, transcripts, application form, statement of research) returned to you and send materials in one envelope to the Graduate Secretary, Department of Political Science.

Admission Requirements

Students are expected to have a completed an MA in Political Science with at least an A- average for consideration for admission to the program. Students are also required to have successfully completed a graduate course in quantitative and qualitative Political Science methods. Students not satisfying this requirement may be admitted with the provision that it be satisfied by completing the requisite extra course. Students with a MA in a Social Science other than Political Science, are encouraged to apply on the condition that they take additional courses upon their entry into the program.

Degree Requirements

Students will be required to successfully complete a minimum of four graduate courses:

• Two PhD core courses (see Department’s Graduate Handbook) in the student’s major field and minor field (selected in consultation with the student’s Advisor).
• Two of the following courses as electives:
  i. One or two of the other existing graduate courses offered in the Department
  ii. A graduate course offered in another department at the University of Guelph (selected in consultation with the student’s Advisor).
• A written qualifying exam and an oral qualifying exam.

The qualifying examination will take the form of a written take-home examination followed by an oral examination and will be based on the reading lists for the core courses in the major and minor field. Normally the examination will involve three questions based on the major field of study and two questions from the minor field.

• A thesis

Each candidate will be required to write and submit a thesis on the research carried out by the candidate on a topic approved by the Advisory Committee. The thesis is expected to be a significant contribution to knowledge in its field and the candidate must indicate in what ways it is a contribution. A thesis is expected to be no less than 200 pages in length. The thesis must demonstrate mature scholarship and critical judgement on the part of the candidate, and it must indicate an ability to express oneself in a satisfactory literary style. Approval of the thesis is taken to imply that it is judged to be sufficiently meritorious to warrant publication in reputable scholarly media in the field.

Collaborative Programs

International Development Studies MA Program

The Department of Political Science participates in the collaborative MA in International Development Studies (IDS) program. Please consult the International Development Studies listing for a detailed description of the collaborative MA program including the special additional requirements for each of the participating departments.

IDS graduates hold positions in government in Canada and abroad with NGOs, international organizations and private consultancies. Many also enter PhD programs.

International Development Studies PhD Program

The Department of Political Science participates in the collaborative PhD in International Development Studies (IDS), which provides an opportunity to engage in interdisciplinary study of international development issues. Applications are part of the general PhD application, and go directly to the Political Science Department. In addition to the Political Science PhD requirements, IDS applicants are expected to have a strong background in the social sciences, a demonstrable track record of experience in the course-based study of development issues, development research and/or development practice and a stated research interest relating to international development. The IDS designation also requires two core courses in international development theory and research methods. More information about the requirements and expectations of the IDS PhD program please consult the International Development Studies listing.

Courses

POLS*6600 Comparative Approaches to Political Science U [0.50]

In this course, the students examine the main theoretical frameworks and debates in political science and the ways in which these conceptual approaches guide empirical analysis and explain political behaviour. Examples include neo-institutionalism, political culture, Marxism, feminist and identity based approaches.

Department(s): Department of Political Science
### IX. Graduate Programs, Political Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Department(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS*6500</td>
<td>Gender and Politics U [0.50]</td>
<td></td>
<td>This course will survey theoretical approaches to gender, primarily feminist analysis. Through selected readings, students will be introduced to gender as an approach to examining current political problems such as social policy, security or development.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6210</td>
<td>Conceptions of Canada U [0.50]</td>
<td></td>
<td>This course will explore evolving conceptions of Canadian identity and nationalism through consideration of political culture, institutions and constitutional arrangements. Possible topics include: multiculturalism, aboriginal identity and community, Quebec nationalism, social citizenship, rights and representation, as well as Canada's global role and significance.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6250</td>
<td>Comparative Governments in the Americas U [0.50]</td>
<td></td>
<td>This course provides the theoretical and methodological foundation for the analysis of Canada, the United States, and Latin America and the Caribbean. Methodological issues in the analysis of constitutional regimes and theoretical frameworks for the comparative analysis of political institutions are examined.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6290</td>
<td>The American Political System U [0.50]</td>
<td></td>
<td>This course examines the institutions, processes and policies of the government and politics of the United States. Seminar discussion focuses on evaluating approaches to the study of the American system. Topics to be covered include Congress, interest groups, executive- legislative relations and re-inventing government.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6380</td>
<td>Democratization in Comparative Perspective U [0.50]</td>
<td></td>
<td>This course offers a graduate seminar in the study of democratization. Focusing primarily on the countries of the Global South, it explores theories of democratic transition, social mobilization and the articulation of rights aimed at defending new forms of democratic recognition.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6390</td>
<td>Environmental Policies and Policy U [0.50]</td>
<td></td>
<td>This course analyses environmental actors, movements, institutions, processes and policies across national, sub-national regional and/or global levels of governance utilizing a range of environmental perspectives and theories. Depending on the instructor(s), different case studies of critical and contemporary environmental policy issues will be explored.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6400</td>
<td>Comparative Social Policy U [0.50]</td>
<td></td>
<td>In this course, students will study social policy in comparative perspective. Theoretical models and various policy fields will be examined in order to understand welfare state development and re-enchment. Policy fields may include immigration, health, child care and income.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6450</td>
<td>International Political Economy U [0.50]</td>
<td></td>
<td>The course relies on theoretical approaches in IPE to examine the relationships between politics and economics across national and regional levels. The evolution of the global political economy and its globalization and state and non-state actors' responses. Issue areas may include: money and power, technology, trade, development and the environment.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6630</td>
<td>Approaches to Public Policy U [0.50]</td>
<td></td>
<td>This course introduces students to the main theoretical approaches utilized in understanding public policy making and outcomes. Throughout the course, particular attention is paid to varying conceptions of institutions, ideas and interest and the role of these conceptions in various explanations of policy change and stasis.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6640</td>
<td>Canadian Public Administration: Public Sector Management U [0.50]</td>
<td></td>
<td>This course examines the growth of the administrative state in Canada, especially in the post World War II period. It critically reviews issues such as the concept of public sector management, the delegation of authority, personnel management, accountability and the ethics of ministers and officials to Parliament and the public.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6730</td>
<td>The Politics of Development and Underdevelopment U [0.50]</td>
<td></td>
<td>This course, for MA students specializing in international and comparative development, has a primarily theoretical orientation, focusing on the main paradigms that have evolved to explain central problems and issues of development and underdevelopment, particularly modernization theory, dependency theory, world-systems theory and Marxist state-theory.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6750</td>
<td>Development in Practice U [0.50]</td>
<td></td>
<td>This course examines the politics of international development policy and practice. Drawing upon theories of development and underdevelopment, it examines the role of transnational regimes, international institutions, national governments, and NGOs in the provision of international development assistance.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6800</td>
<td>Public Policy and Governance - Selected Topics F [0.50]</td>
<td></td>
<td>This course explores concepts, theories and methods of public policy analysis and governance practices and questions; the factors that influence a state's ability to design, coordinate, implement and learn from policy interventions; the intellectual forces and conceptual-theoretical frameworks that underpin the literature.</td>
<td>Restriction(s): Doctoral students only. Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6810</td>
<td>Core Seminar in Comparative Politics W [0.50]</td>
<td></td>
<td>This PhD seminar course will familiarize students with themes and theorists in comparative politics.</td>
<td>Restriction(s): Doctoral students only. Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6900</td>
<td>Pro-Seminar U [0.25]</td>
<td></td>
<td>This course is a 0.25 credit course introducing students to graduate studies in the department and to the profession of political science. It includes information on the following: formation of a student's faculty advisory committee; preparation of research proposals for thesis and major papers; library orientation; research using the WWW and computers; and discussion of faculty research. All graduate students are required to take this course. The course is graded satisfactory (SAT) or unsatisfactory (UNS).</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6940</td>
<td>Qualitative Research Design and Methods U [0.50]</td>
<td></td>
<td>This course focuses on the elements of designing and writing a research question and proposal. It further examines a variety of research methods, such as the case study, comparative and survey methods. Data collection techniques also are examined.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6950</td>
<td>Specialized Topics in Political Studies U [0.50]</td>
<td></td>
<td>This course is intended to be an elective course for students wishing to pursue an area of investigation not covered in the other courses offered by the department. This course may also be chosen by students who want to further pursue a subject area to which they were introduced in a previous course.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6960</td>
<td>Directed Readings U [0.50]</td>
<td></td>
<td>This is an elective course for students wishing to pursue an area of investigation not covered in other courses offered by the department. This course may also be chosen by students who want to further pursue a subject area to which they were introduced in a previous course.</td>
<td>Department(s): Department of Political Science</td>
</tr>
<tr>
<td>POLS*6970</td>
<td>Major Paper U [1.00]</td>
<td></td>
<td>The major paper is an extensive research paper for those who do not elect to complete a thesis. It may be taken over two semesters. The length of the major paper is not to exceed 10,000 words.</td>
<td>Department(s): Department of Political Science</td>
</tr>
</tbody>
</table>

**Courses at McMaster University available to students in the collaborative MA program**

Descriptions of all McMaster University Graduate courses may be found at [http://graduate.mcmaster.ca/graduate-students/current-students/graduate-calendar.html](http://graduate.mcmaster.ca/graduate-students/current-students/graduate-calendar.html)

**March 9, 2015**

**2014-2015 Graduate Calendar**
Population Medicine

The Department of Population Medicine is an international leader in promoting the optimal health and productivity of animal populations, ensuring the safety of foods of animal origin and preventing animal-related disease in humans.

Our research mission is to discover and disseminate knowledge regarding the management of health and productivity of animal populations, and the interrelationships of animals with humans and the environment. In support of this mission we rely principally on our expertise in field-based quantitative observational studies and clinical trials.

Our teaching/learning mission is to guide students as they obtain an essential knowledge base and develop the necessary communicative, quantitative and problem-solving skills to integrate and apply this knowledge; and to instill the appropriate attitudes and abilities required for life-long learning.

The department offers programs leading to MSc, Master of Public Health (MPH), PhD and DvSc degrees.

Administrative Staff

Chair
Catherine E. Dewey (2509 OVC, Ext. 54746)
cdewey@ovc.uoguelph.ca

Graduate Coordinator, Admissions and Administration
David Kelton (Stewart Bldg. 2537 OVC, Ext. 54808)
dkelton@uoguelph.ca

Graduate Coordinator, Exams
Olaf Berke (Stewart Bldg. 2505B OVC, Ext. 58924)
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Graduate Secretary
OVC Graduate Programs Services (102 Population Medicine, Ext. 54900)
popmgrad@uoguelph.ca

Graduate Faculty

Olaf Berke
Dipl. Statistics, PhD Dortmund Germany - Associate Professor and Graduate Coordinator, Exams

Tracey S. Chenier
DVM, DvSc Guelph, Dip ACT - Assistant Professor

Jason Coe
DVM, PhD Guelph - Assistant Professor

Catherine E. Dewey
DVM, MSc, PhD Guelph - Professor and Chair

Todd F. Duffield
DVM, DvSc Guelph - Professor

Robert M. Friendship
DVM, MSc Guelph, Dip ABVP - Professor

Cathy J. Gartley
BSc New Brunswick, DVM, DvSc Guelph, Dip ACT - Assistant Professor

Jessica Gordon
BSc, MSc Michigan State Univ., DvSc Guelph - Assistant Professor

Amy Greer
BSc, Mount Allison, MSc, Trent, PhD Arizona State - Assistant Professor

Michele Guerin
DVM, MSc, PhD Guelph - Assistant Professor

Derek Haley
BHK Windsor, MSc Guelph, PhD Saskatchewan - Assistant Professor

Sherelee Harper
BSc Queen's, MSc, PhD Guelph - Assistant Professor

Andria Jones Bitton
DVM, PhD Guelph - Assistant Professor

David F. Kelton
DVM, MSc, PhD Guelph, Dip ABVP - Professor and Graduate Coordinator, Admissions and Administration

Deep Khosa
BSc, DvSc, PhD Murdoch - Assistant Professor

Stephen LeBlanc
BSc McGill, DVM, DvSc Guelph - Associate Professor

Kerry D. Lissimore
BSc Toronto, DVM, DvSc Guelph - Associate Professor and Associate Dean, Academic

Scott A. McEwen
DVM, DvSc Guelph, Dip. ACVP - Professor

Michael Meehan
BVSc, BSc, PhD University of Queensland - Assistant Professor

Paula I. Menzies
DVM Guelph, MPVM California - Associate Professor

Lee Niel
BSc Simon Fraser, PhD UBC - Assistant Professor

Terri O'Sullivan
DVM, PhD Guelph - Assistant Professor

Andrew Papadopoulos
BASc Ryerson, MBA York, PhD Guelph - Associate Professor and Coordinator, Master of Public Health Program

David Pearl
BSc McGill, MSc York, DVM, PhD Guelph - Associate Professor

Peter W. Physick-Share
BVSc Bristol, Dip Vet Surg, MSc Guelph, FRCVS (UK) - Associate Professor

Zvonimir Poljak
DVM Croatia, MSc, PhD Guelph - Assistant Professor

Jan Sargeant
DVM, MSc, PhD Guelph - Professor and Director - Centre for Public Health and Zoonoses

Elizabeth Scholtz
BA, Univ. of California, Santa Barbara, MA, PhD Univ. of California, Davis - Assistant Professor

MSc Program

The department offers a MSc by thesis program in the fields of epidemiology, theriogenology and health management, and a MSc by courses program in the field of epidemiology.

Admission Requirements

When reviewing transcripts, the department focuses on the applicant's performance in undergraduate and graduate-level courses relevant to the applicant's proposed area of specialization. Students admitted must have an honours or DVM degree (or its equivalent). In addition, the department considers the applicant's special circumstances and the referees' comments. Since the core of the MSc by course work program builds on analytic skills, students entering the program should possess knowledge of basic statistical methods and their application.

All applicants should submit a one-page statement of research interests and career goals to assist in the identification of a faculty advisor who has the funding necessary to support the research. Students may be admitted into the Fall, Winter or Summer semesters.

Degree Requirements

MSc by Thesis

The prescribed studies are a minimum of four courses (at least 2.0 course credits) appropriate to the discipline. Epidemiology I (POPM*6200) is a required course for students in epidemiology; students in health management and theriogenology must take either Epidemiology I (POPM*6200) or Applied Clinical Research (POPM*6230). A minimum of 'B-' average is required in the prescribed studies. The department seminar course, POPM*6100, is also required but does not count as one of the four courses. A thesis must be completed and successfully defended.

MSc by Courses

For the MSc by course work in the field of Epidemiology, no fewer than eight courses (at least 4.0 course credits) will be taken. These must be approved by the departmental graduate studies committee and the Assistant VP of Graduate Studies. Each student in the program will take three prescribed courses (including the Project in Epidemiology course, POPM*6250, which is equivalent to two courses), and at least four additional courses. The department seminar course, POPM*6100, is also required but does not count as one of the eight courses. Normally, the prescribed courses for the MSc in Epidemiology by course work will include:

Prescribed Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>POPM*6210</td>
<td>Epidemiology II</td>
</tr>
<tr>
<td>POPM*6250</td>
<td>Project in Epidemiology</td>
</tr>
</tbody>
</table>

Additional Courses

The four courses selected in this category will depend upon the student's background, specialty, interest and area of research. Examples of courses suitable for inclusion in the student's program include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PABI*6550</td>
<td>Epidemiology of Zoonoses</td>
</tr>
<tr>
<td>POPM*6230</td>
<td>Applied Clinical Research</td>
</tr>
<tr>
<td>POPM*6290</td>
<td>Statistics for the Health Sciences</td>
</tr>
<tr>
<td>POPM*6350</td>
<td>Safety of Foods of Animal Origins</td>
</tr>
<tr>
<td>POPM*6950</td>
<td>Studies in Population Medicine</td>
</tr>
<tr>
<td>STAT*6920</td>
<td>Topics in Statistics</td>
</tr>
<tr>
<td>POPM*6520</td>
<td>Introduction to Epidemiological and Statistical Methods</td>
</tr>
<tr>
<td>POPM*6700</td>
<td>Swine Health Management</td>
</tr>
<tr>
<td>POPM*6400</td>
<td>Dairy Health Management</td>
</tr>
</tbody>
</table>

Additional courses other than those listed above may be deemed suitable for the student's program by the Departmental Graduate Coordinator after recommendations are received from the Advisory Committee.
Degree Requirements
The major emphasis in the PhD program is on the preparation of an acceptable thesis. There are no specific course requirements other than the Seminar, POPM*6100, which must be completed twice. However, students are expected to have taken POPM*6200 Epidemiology I (F) and POPM*6210 Epidemiology II (S) or their equivalent, in their MSc program. It is usual for students, in consultation with their advisory committee, to select a suitable program of prescribed studies and additional courses. Course selection takes into account the student's background, research area, career aspirations, and need to prepare for the qualifying examination.

Courses should normally be completed before the qualifying exam is attempted. The written component of the examination is followed by an oral component (two to four hours), usually one week later. MSc holders must complete the qualifying examination by the end of the fifth semester. Students transferring from the MSc program and those who enter the program directly after their honours or DVM degrees (or their equivalents) must complete the examination by the end of the seventh semester. In addition, the advisory committee is required to confirm that the student has demonstrated ability and promise in research. The PhD program is completed by the successful defense of a thesis.

DVSc Program
The Department of Population Medicine participates in the DVSc program with recognized fields in health management and theriogenology. The normal basis for admission to DVSc studies as a regular or a provisional student is a DVM or equivalent degree which would allow the applicant to be eligible for licence to practice veterinary medicine in Ontario. The applicant must have achieved high academic standing as set out in the Admission Requirements in the DVSc program.

Health Management
Candidates must have a DVM or equivalent degree, appropriate clinical experience, cumulative average of at least second-class honours ("B" standing), and be licensed or eligible for licensing to practice veterinary medicine in Ontario. One position in ruminant health management and one position in swine health management are available during most academic years, and they normally start in May or September. It is a three-year program, which will provide training and experience in applied health management and clinical research. Approximately one-third of the time will involve clinical training, teaching final year veterinary students and service duties (including on-call), one-third course work and one-third research. Service duties in ruminant health management are with the Ruminant Field Service clinic of the Veterinary Teaching Hospital. In swine health management, clinical experience and advanced academic activities will be appropriate for a candidate preparing for board certification in Swine Health Management by the American Board of Veterinary Practitioners. The candidate will be required to complete a substantive thesis research project, related to an applied aspect of production medicine. The DVSc degree requirements include successful completion of 2.5 credits of prescribed graduate level courses, a qualifying examination in the student's discipline area, and a successful defense of a thesis. A faculty member(s) in the Department of Population Medicine will supervise each candidate for the Health Management DVSc position.

Theriogenology
The Department of Population Medicine offers the Doctor of Veterinary Science (DVSc) degree in the field of Theriogenology. Prerequisites include a DVM or equivalent degree, one or two years of practice experience/internship, cumulative average of at least second-class honours ("B" standing), and eligibility for licensure to practice veterinary medicine in Ontario. The DVSc program provides rigorous advanced academic preparation in the discipline of Theriogenology with a view to preparation for Board Certification by the American College of Theriogenologists. The Theriogenology field at the Ontario Veterinary College is multi-species, with emphasis placed on a candidate's specific areas of interest. The DVSc differs from PhD training by emphasizing the development of both research and applied clinical skills. It is a three-year program, with approximately one-third of the time involving clinical duties within the Veterinary Teaching Hospital, including assisting in teaching of final year veterinary students. The remainder of effort is directed towards a substantive thesis research project in Theriogenology and coursework. The DVSc degree requirements include successful completion of 2.5 credits of prescribed graduate level courses, a qualifying examination and successful defense of a thesis. A faculty member(s) in the Department of Population Medicine will supervise each candidate for the Theriogenology DVSc position.

Interdepartmental Programs

Food Safety and Quality Assurance MSc
The Department of Population Medicine participates in the MSc program in food safety and quality assurance. Those faculty members whose research and teaching expertise includes aspects of food safety and quality assurance may serve as advisors for MSc students. Please consult the Food Safety and Quality Assurance listing for a detailed description of the MSc program.

Collaborative Programs

International Development Studies MSc
The Department of Population Medicine participates in the International Development Studies MSc program. Those faculty members whose research and teaching expertise includes aspects of international studies may serve as advisors for MSc in International Development Studies students. Please consult the International Development Studies listing for a detailed description of the collaborative program.

Neuroscience MSc
The Department of Population Medicine participates in the Neuroscience MSc program. Those faculty members whose research and teaching expertise includes aspects of neuroscience may serve as advisors for MSc in Neuroscience students. Please consult the Neuroscience listing for a detailed description of the collaborative program.

Courses

*Given in alternate years.

Epidemiology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisites</th>
<th>Department(s)</th>
</tr>
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<tbody>
<tr>
<td>POPM*6200</td>
<td>Epidemiology I F</td>
<td>0.50</td>
<td></td>
<td>Department of Population Medicine</td>
</tr>
<tr>
<td>POPM*6210</td>
<td>Epidemiology II W</td>
<td>0.50</td>
<td></td>
<td>Department of Population Medicine</td>
</tr>
<tr>
<td>POPM*6220</td>
<td>Analytical Epidemiology S</td>
<td>0.50</td>
<td></td>
<td>Department of Population Medicine</td>
</tr>
<tr>
<td>POPM*6230</td>
<td>Applied Clinical Research F</td>
<td>0.50</td>
<td></td>
<td>Department of Population Medicine</td>
</tr>
</tbody>
</table>


**POPM*6250 Project in Epidemiology S [1.00]**
Collection and analysis of field data and the preparation of a written report suitable for publication, and oral presentation of the findings to the graduate faculty. This course is part of the MSc program by course work in epidemiology.
Department(s): Department of Population Medicine

**POPM*6290 Statistics for the Health Sciences F [0.50]**
This course gives an overview of advanced methods for the analysis of data of clustered/correlated data. Special emphasis is on spatial, longitudinal and survival data.
Prerequisite(s): POPM*6210 (or equivalent graduate course from another university)
Department(s): Department of Population Medicine

**POPM*6520 Introduction to Epidemiological and Statistical Methods F [0.50]**
This is a 0.5 credit introductory graduate course for MPH students and students interested in epidemiology. The course will provide an introduction to research design, grant proposal writing, and critical appraisal, as well as survey (questionnaire) design and basic statistical methods for epidemiological studies.
Co-requisite(s): POPM*6200
Department(s): Department of Population Medicine

**Health Management**

**POPM*6400 Dairy Health Management * S [0.50]**
This course stresses a population-based, herd-level approach to dairy herd health management, in which optimizing the efficiency of the dairy enterprise is the overall goal. The biological and economic impacts of disease and management deficiencies on herd performance will be discussed as they relate to design and implementation of herd health programs. The course will emphasize the critical role of record keeping, data analysis and monitoring on program success.
Department(s): Department of Population Medicine

**POPM*6700 Swine Health Management * U [0.50]**
Diseases of swine are studied with particular emphasis on preventive medicine and herd-health management.
Department(s): Department of Population Medicine

**Theriogenology**

**POPM*6610 Theriogenology of Cattle * U [0.50]**
A lecture/seminar course emphasizing the relationship of nutritional, genetic, endocrine, anatomic, and environmental factors with the reproductive health of cattle. Application of reproductive technologies will also be covered.
Department(s): Department of Population Medicine

**POPM*6630 Theriogenology of Horses * U [0.50]**
A lecture/seminar course covering the genetic, endocrine, anatomic and environmental factors that affect reproductive performance and health of horses. Breeding management, including recent technologies, and management of the infertile animal will be included.
Department(s): Department of Population Medicine

**POPM*6650 Theriogenology of Dogs and Cats * U [0.50]**
A seminar/lecture series that includes the theory and management of clinical reproduction for the dog and cat, including use of developing technologies.
Department(s): Department of Population Medicine

**POPM*6670 Theriogenology of Small Ruminants * U [0.50]**
A seminar/laboratory course emphasizing advanced reproductive management of sheep, goats and farmed deer/elk, with the emphasis on a sheep production model. New reproductive technologies will be included.
Department(s): Department of Population Medicine

**Other**

**POPM*6100 Seminar F [0.00]**
A practical course that utilizes tutorials, workshops, self and peer reviewed assessment to help participants develop skills in public speaking and presentation of scientific data. Each student presents at least one seminar on an approved subject during the departmental seminar series.
Department(s): Department of Population Medicine

**POPM*6950 Studies in Population Medicine U [0.50]**
Assigned reading and/or special projects selected to provide in-depth study of topics appropriate to the specialized interests of individual students. Courses offered under this title have included Special Topics in Public Health; Ecology and Health; Systems Approaches; and Animal Welfare. Different offerings are assigned different section numbers.
Department(s): Department of Population Medicine

**Public Health**

**POPM*6350 Safety of Foods of Animal Origins F [0.50]**
The detection, epidemiology, human health risk, and control of hazards in food of animal origin.
Offering(s): Offered through Distance Education format only.
Department(s): Department of Population Medicine

**POPM*6510 Community Health Promotion F [0.50]**
The objective of this course is to provide students with an understanding of public health, population health and health promotion. Topics will include perspectives on health and illness, injury prevention, determinants of health, population diversity and the role of evidence in public health decision-making.
Department(s): Department of Population Medicine

**POPM*6530 Communication I W [0.50]**
This course introduces the theory of public health communication and emphasizes the development of communication skills related to public health.
Restriction(s): MPH students. Instructor consent required.
Department(s): Department of Population Medicine

**POPM*6540 Concepts in Environmental Public Health W [0.50]**
This course covers the main concepts of environmental public health including basic elements of environmental toxicology, risk analysis, air and water quality, food safety, waste, occupational health and eco health.
Department(s): Department of Population Medicine

**POPM*6550 Public Health Policy and Systems W [0.50]**
This course covers concepts and principles of public health policy and systems including: public health systems, their structure, funding and governance and their integration into the healthcare system; evolution of public health policy; models of policy development and analysis; stakeholder analysis; and, public health ethics.
Department(s): Department of Population Medicine

**POPM*6560 Public Health Practicum U [1.00]**
In this 1.0 credit course, students will synthesize theoretical concepts, learned via prior coursework, with public health practice. Students will work in a host public health agency for a 12-to 16-week period, focusing on a major project of significance to the host organization.
Prerequisite(s): POPM*6200, POPM*6510, POPM*6520, POPM*6530, POPM*6540, and POPM*6550
Restriction(s): MPH students only. Instructor consent required.
Department(s): Department of Population Medicine

**POPM*6570 Communication II F [0.50]**
This course is a capstone course for the MPH program as students reflect on, interpret and present their practicum experience in a variety of formats. The course also focuses on the practice of public health communication, including ethical considerations, message framing and the development of a public health communication campaign.
Prerequisite(s): POPM*6560 or instructor's signature required
Department(s): Department of Population Medicine

**POPM*6580 Public Health Administration F [0.50]**
This course will teach students to develop, implement and evaluate public health programs. Knowing an organization’s mission and priorities, developing strategic plans and conducting a cost-benefit analysis is critical for an effective administrator. Furthermore, conducting a program evaluation, understanding the role of advocacy is vital.
Department(s): Department of Population Medicine

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2014-2015 Graduate Calendar

March 9, 2015
Psychology

The Department of Psychology offers three graduate degrees, a Master of Arts, a Master of Science and a Doctor of Philosophy. The first is an MA in: 1) Applied Social Psychology, 2) Clinical Psychology: Applied Developmental Emphasis and 3) Industrial/Organizational Psychology. The second is an MSc in: 1) Neuroscience & Applied Cognitive Science. The third is a PhD in: 1) Applied Social Psychology, 2) Clinical Psychology: Applied Developmental Emphasis, 3) Industrial/Organizational Psychology and 4) Neuroscience & Applied Cognitive Science. Note that the Masters programs are an integral part of the doctoral studies and students are admitted with the expectation of completing the doctoral degree. These areas of study, which are described below, provide training in both research and professional skills, as well as a firm grounding in theory and research in relevant content areas. See the department website at http://www.psychology.uoguelph.ca for additional information.

Administrative Staff

Chair
Francesco Leri (4013 MacKinnon, Ext. 58264)
fleri@uoguelph.ca

Graduate Coordinator
Mark Fenske (4001 MacKinnon Ext, Ext. 56411)
mfenske@uoguelph.ca

Graduate Secretary
Robin Fraser (4014 MacKinnon, Ext. 53508)
rfraser@psy.uoguelph.ca

Graduate Faculty

Naseem Al-Aidroos
BSc Waterloo, MA, PhD Toronto - Assistant Professor

Heidi N. Bailey
BA British Columbia, PhD Western - Associate Professor

Paula Barata
BA British Columbia, MA, PhD Windsor - Associate Professor

Pat Barclay
BSc Guelph, PhD McMaster - Associate Professor

Roderick W. Barron
BA Occidental, MA, PhD Ohio State - Professor

Elena Choleris
BSc, PhD Parma (Italy) - Professor

Donald Dedrick
BA, MA Carleton, PhD Toronto - Associate Professor, (cross-appointed with Department of Philosophy)

Serge Desmarais
BA, MA, PhD Waterloo - Professor, Canada Research Chair, Associate Vice-President (Academic)

Mary Ann Evans
BA Toronto, MA, PhD Waterloo - Professor

Mark J. Fenske
BSc Lethbridge, MA, PhD Waterloo - Associate Professor

Benjamin Giguère
BA McGill, MA, PhD York - Assistant Professor

Harjinder Gill
BA Waterloo, MA, PhD Western Ontario - Associate Professor

Gloria Gonzalez-Morales
BA La Laguna, DIPL, PhD Valencia - Associate Professor

Michael P. Grand
BA Toronto, PhD SUNY at Stony Brook - Professor

Peter A. Hausdorff
BSc McMaster, MA Guelph, PhD McMaster - Associate Professor and Associate Chair

Karl H. Hennig
BEd, MA, PhD British Columbia - Assistant Professor

Francesco Leri
BA, MA, PhD McGill - Professor and Graduate Coordinator

Stephen Lewis
BSc, PhD Dalhousie - Associate Professor

Margaret N. Lumsley
BA Waterloo, MA, PhD Queen's - Associate Professor

Harvey H.C. Marmurek
BA Toronto, MA, PhD Ohio State - Professor

C. Meghan McMurty
BA Laurier, PhD Dalhousie - Assistant Professor

Daniel V. Meegan
BA SUNY at Albany, PhD McMaster - Associate Professor

Barbara A. Morrongiello
BA Douglass College (Rutgers), MS, PhD Massachusetts - Professor, Canada Research Chair

Ian R. Newby-Clark
BSc Toronto, PhD Waterloo - Associate Professor

Kieran O'Doherty
BSc Witwatersrand, BHSc, PhD Adelaide - Associate Professor

Linda A. Parker
BA, MA California State, Long Beach PhD Memorial - Professor, Canada Research Chair

Deborah Powell
BA Queen's, MA, PhD Western - Associate Professor

Saba F. Safdar
BA McMaster, MA, PhD York - Associate Professor

Leanne S.M. Son Hing
BA Queen's, MA, PhD Waterloo - Associate Professor

Jeffrey Spence
BA Laurier, MA, PhD Waterloo - Assistant Professor

David Stanley
BA Waterloo, MA, PhD Western Ontario - Associate Professor

Lana M. Trick
BSc Calgary, MA, PhD Western Ontario - Associate Professor

Franco Vaccarino
BSc Toronto, MA, PhD McGill - Professor, President, and Vice-Chancellor

Boyer D. Winters
BA Dalhousie, PhD Cambridge - Associate Professor

Jeffery Yen
BSc MA Rhodes, PhD Toronto - Assistant Professor

Arlene Young
BA Guelph, MSASc, PhD Waterloo - Associate Professor

Neuroscience and Applied Cognitive Science (MSc, PhD)

http://www.uoguelph.ca/nacs

The Masters and PhD programs in the areas of Neuroscience and Applied Cognitive Science provides training for students interested in the integrative functioning of the brain. This program encompasses: basic cognitive processes, behavioural neuroscience, cognitive ergonomics, cognitive neuroscience, developmental and life-span cognition, and foundations of cognitive science. Students in these disciplines have the opportunity to learn about the interdisciplinary work of other students, faculty and outside researchers in the weekly research seminar in Neuroscience and Applied Cognitive Science. Additionally, students take courses specific to their research. A unique feature of this area of study is the practicum that provides students with additional specific training in a research laboratory, hospital, government agency, or non-government agency. As well, the Department of Psychology (and specifically the Neuroscience and Applied Cognitive Science area of Psychology) participates in the Collaborative Neuroscience and Collaborative Toxicology programs. That means that students in the Neuroscience and Applied Cognitive Science area have 3 alternatives for their degree. They can elect to register in Psychology alone, Psychology and Collaborative Neuroscience, or Psychology and Collaborative Toxicology. (Note that students cannot register in both the Collaborative Toxicology and Collaborative Neuroscience Programs.)

The program involves three components:

1. Preparatory Course Work
Students will acquire knowledge and skills necessary to carry our Neuroscience and Cognitive Science research in academic and/or applied settings. At the Masters level, this will involve a course in Research Design and Statistics, a course in Research Ethics (Animal research ethics or Human research ethics), at least one elective in their specific field of research and the Research Seminar in Neuroscience and Applied Cognitive Science. A. PhD students take Research Seminar in Neuroscience and Applied Cognitive Science B, at least three electives and must pass a qualifying exam.

2. Practicum
One of the unique features of University of Guelph's Neuroscience and Applied Cognitive Science masters program is the practicum. Students will complete a practicum in a variety of research settings, including government agencies, hospitals, businesses, and other research laboratories. The practicum may involve learning a new technique in a laboratory other than that of the advisor. Practicum experiences will be tailored to the student's interests, and will enable student to acquire and refine skills and develop professional contacts. The research practicum is a required course for Masters students. PhD students may take one or more practicums as part of their electives.

3. Thesis research
Students will carry out an independent research project under the supervision of a faculty supervisor. This will involve a thesis for the Masters program and a Dissertation for the PhD.
Clinical Psychology: Applied Developmental Emphasis (MA, PhD)

The area of Clinical Psychology: Applied Developmental Emphasis concentrates on understanding the development and treatment of psychological disorders experienced by children, youth and families. This includes a focus on the social, emotional, cognitive, and neurobiological features of normal and atypical development; risk and protective factors that influence the nature and progression of atypical development and response to treatment; and approaches to assessment, psychodiagnosis, and intervention. Also considered is the developmental impact of stressful life events such as divorce, illness, poverty, adoption, and death. Training in this field follows an integrated series of courses and practica which contributes to and mutually supports the students' acquisition of competence as both practitioners and researchers. Students participate in our on-campus clinic, the Centre for Psychological Services, and complete off campus practica in hospitals, schools and mental health settings under the supervision of registered psychologists. This training allows students to enter careers involving clinical and/or research positions in mental health centres, hospitals, schools, and the private sector, as well as careers involving teaching and research in university settings. It also prepares students for registration as psychologists with provincial licensing boards.

Industrial/Organizational Psychology (MA, PhD)

The objective of study in the area of Industrial/Organizational Psychology is to train future professionals in the area of Industrial/Organizational Psychology following the guidelines established by the Canadian Society for Industrial/Organizational Psychology. Graduate students are expected to obtain a high level of proficiency in both research skills and practice in the core areas of Industrial/Organizational Psychology including personnel selection, organizational behaviour, work attitudes, performance appraisal, and measurement of individual differences. Graduates from this field of study will be in a position to enter careers in a wide range of private and public sector organizations, including universities, consulting firms, industries, and government agencies.

General Admission and Program Requirements

To apply for admission, applicants must view "How to Apply" in the section Prospective Students... Graduate, in the Psychology Department website http://www.psychology.uoguelph.ca. This is a self-administered application.

MA Program

Admission Requirements MA Program

Consideration for admission to the MA program in the areas of Applied Social Psychology, Clinical Psychology: Applied Developmental Emphasis, or Industrial/Organizational Psychology will be granted to an honours BA or BSc (or its equivalent) in Psychology and a minimum of a 'B+' standing. Students are normally expected to have taken courses across the breadth of psychology with some courses in the area to which they are applying. A strong background in methodology and statistics is expected. As well, applicants must have undertaken an Honours thesis research project or senior research project equivalent. Students are admitted to the MA program with the understanding that they intend to proceed to the PhD program.

Degree Requirements MA Program

Applied Social Psychology

- PSYC*6640 [0.50] Foundations of Applied Social Psychology
- PSYC*6830 [0.50] Applied Social Psychology
- PSYC*6590 [0.50] Social and Community Intervention
- PSYC*6522 [0.50] Research Seminar II
- PSYC*6840 [0.50] Program Evaluation
- PSYC*6522 [0.50] Research Seminar II
- PSYC*6880 [0.25] Ethical Issues in Psychology
- PSYC*6600 [0.50] Research Design and Statistics
- PSYC*6670 [0.50] Research Methods
- PSYC*6671 [0.50] Practicum I

and one elective course to be determined in consultation with the student's MA Advisory Committee, and MA Thesis.

Clinical Psychology: Applied Developmental Emphasis

- PSYC*6060 [0.50] Research Design and Statistics
- PSYC*6630 [0.50] Developmental Psychology
- PSYC*6000 [0.50] Developmental Psychopathology: Etiology and Assessment
- PSYC*6690 [0.50] Cognitive Assessment of Children and Adolescents

PSYC*6700 [0.50] Personality and Social Assessment of Children and Adolescents
PSYC*6610 [0.50] Learning Disorders: Research and Clinical Practice
PSYC*6880 [0.25] Ethical Issues in Psychology
PSYC*7991 [0.25] CP:ADE Clinical Practicum I
PSYC*7992 [0.25] CP:ADE Clinical Practicum II

and MA Thesis.

Industrial/Organizational Psychology

- PSYC*6600 [0.50] Research Design and Statistics
- PSYC*6380 [0.50] Psychological Applications of Multivariate Analysis
- PSYC*6670 [0.50] Research Methods
- PSYC*7080 [0.00] Consulting in Industrial/Organizational Psychology
- PSYC*7130 [0.50] Introduction to Industrial/Organizational Psychology

At least 2 of the following set of 3 electives
- PSYC*7010 [0.50] Recruitment and Selection: Methods and Outcomes
- PSYC*7520 [0.50] Employee Performance
- PSYC*7760 [0.50] Employee Development: Methods and Outcomes

At least 2 of the following set of 3 electives
- PSYC*7030 [0.50] Work Attitudes and Behaviour
- PSYC*7040 [0.50] Social Processes in the Workplace
- PSYC*7190 [0.50] Work Motivation and Leadership

MA Program

Admission Requirements MSc Program

Consideration for admission to the MSc program will be given to students with an honours BA or BSc (or its equivalent) in Psychology or a related field of study (e.g. neuroscience) and a minimum of a 'B+' standing. Students are normally expected to have taken courses across the breadth of psychology with some courses in the area to which they are applying. A strong background in methodology and statistics is expected. As well, applicants must have undertaken an Honours thesis research project or senior research project equivalent. Students are admitted to the MSc program with the understanding that they intend to proceed to the PhD program.

Degree Requirements MSc Program

Neuroscience and Applied Cognitive Science

- PSYC*6600 [0.50] Research Design and Statistics
- PSYC*6471 [0.50] Practicum I
- PSYC*6740 [0.50] Research Seminar in Neuroscience and Applied Cognitive Science A
- PSYC*6880 [0.25] Ethical Issues in Psychology

or

UNIV*6600 [0.00] Animal Care Short Course

Students must also take at least 1 of the following electives:
- PSYC*6570 [0.50] Applications of Cognitive Science
- PSYC*6780 [0.50] Foundations of Cognitive Science
- PSYC*6790 [0.50] Memory and Cognition
- PSYC*6800 [0.50] Neuropsychology
- NEUR*6000 [0.50] Principles of Neuroscience

Students are also given the option of choosing a graduate elective from outside this list with the permission of their advisor.

If students take more than one year to complete their Masters degree, then for each Fall and Winter semester until they graduate, they must register in PSYC*6760 [0.00] Research Seminar in Neuroscience and Applied Cognitive Science B. All students must also complete a MSc thesis.

PhD Program

Admission Requirements PhD Program

Students must have completed Masters requirements in the appropriate field of study (Neuroscience and Applied Cognitive Science; Applied Social Psychology; Clinical Psychology: Applied Developmental Emphasis; Industrial/Organizational Psychology) with a minimum 'A' standing to be eligible for admission to the PhD program. These Masters requirements are normally met within the department in a two-year course of studies comprising specified course work and a thesis. Students admitted to the PhD program who have completed MA or MSc degrees in other fields of study and/or from other universities may be required to take Masters level courses to ensure adequate background preparation for PhD work.

Degree Requirements PhD Program

Neuroscience and Applied Cognitive Science

- PSYC*6760 [0.00] Research Seminar in Neuroscience and Applied Cognitive Science B

Three elective courses from the following list:
- PSYC*6472 [1.00] Practicum II
- PSYC*6473 [0.25] Practicum III
- PSYC*6750 [0.50] Applications of Cognitive Science
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PSYC*6780</td>
<td>Foundations of Cognitive Science</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6790</td>
<td>Memory and Cognition</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6800</td>
<td>Neurobiology of Learning</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6810</td>
<td>Neuropsychology</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6900</td>
<td>Philosophy and History of Psychology as a Science</td>
<td>[0.50]</td>
</tr>
<tr>
<td>NEUR*6000</td>
<td>Principles of Neuroscience</td>
<td>[0.50]</td>
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</tbody>
</table>

Students are also given the option of choosing an elective from outside this list with the permission of their advisor. All students must also take the Qualifying exam and do a PhD thesis.

### Applied Social Psychology

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<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PSYC*6900</td>
<td>Philosophy and History of Psychology as a Science</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6380</td>
<td>Psychological Applications of Multivariate Analysis</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6522</td>
<td>Research Seminar II</td>
<td>[0.50]</td>
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<tr>
<td>PSYC*6471</td>
<td>Practicum I</td>
<td>[0.50]</td>
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<tr>
<td>PSYC*6270</td>
<td>Issues in Social Policy</td>
<td>[0.50]</td>
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One of:

1 elective to be determined in consultation with the student's PhD Advisory Committee; Qualifying Exam; and PhD Thesis.

### Clinical Psychology: Applied Developmental Emphasis

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<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>PSYC*6580</td>
<td>Models of Child and Adolescent Psychotherapy</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6670</td>
<td>Research Methods</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6900</td>
<td>Philosophy and History of Psychology as a Science</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6380</td>
<td>Psychological Applications of Multivariate Analysis</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*7070</td>
<td>Psychological Measurement</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6840</td>
<td>Program Evaluation</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6610</td>
<td>Advanced Child and Adolescent Psychotherapy</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6890</td>
<td>Legislation and Professional Practice</td>
<td>[0.50]</td>
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<tr>
<td>PSYC*6020</td>
<td>Clinical and Diagnostic Interviewing Skills</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*7993</td>
<td>CP.ADE Clinical Practicum III</td>
<td>[1.00]</td>
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In accordance with CPA Accreditation Standards, if student has not completed 2 senior undergraduate half courses in the social bases of behaviour, one of the following three courses is required:

- PSYC*6590  Social and Community Intervention [0.50]
- PSYC*6640  Foundations of Applied Social Psychology [0.50]
- PSYC*6830  Applied Social Psychology [0.50]

If a student has not completed 2 senior undergraduate half courses in the biological bases of behaviour, the following course is required:

- PSYC*6810  Neuropsychology [0.50]

If a student has not completed 2 senior undergraduate half courses in the cognitive-affective bases of behaviour, the following course is required:

- PSYC*6790  Memory and Cognition [0.50]

The following course is required if a student has not taken a one-half undergraduate course of this nature:

- PSYC*6900  Philosophy and History of Psychology as a Science Qualifying Exam; [0.50]
- PSYC*8000  Clinical Internship [0.00]

### Industrial/Organizational Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PSYC*7130</td>
<td>Introduction to Industrial/Organizational Psychology (if not already taken)</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*6900</td>
<td>Philosophy and History of Psychology as a Science</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*7070</td>
<td>Psychological Measurement</td>
<td>[0.50]</td>
</tr>
<tr>
<td>PSYC*7080</td>
<td>Consulting in Industrial/Organizational Psychology (fall and winter 1st year PhD)</td>
<td>[0.00]</td>
</tr>
</tbody>
</table>

At least one of the following set of 3 courses:

- PSYC*7010  Recruitment and Selection: Methods and Outcomes [0.50]
- PSYC*7020  Employee Performance [0.50]
- PSYC*7160  Employee Development: Methods and Outcomes [0.50]

At least one of the following set of 3 courses:

- PSYC*7030  Work Attitudes and Behaviour [0.50]
- PSYC*7040  Social Processes in the Workplace [0.50]
- PSYC*7190  Work Motivation and Leadership [0.50]

One elective from:

- PSYC*6840  Program Evaluation [0.50]
- PSYC*7140  Industrial/Organizational Psychology Special Topic [0.50]
- PSYC*7170  Industrial/Organizational Psychology Doctoral Research Seminar Course [0.50]
- PSYC*7180  Industrial/Organizational Psychology Doctoral Research Internship II [0.50]

All students must also do a Qualifying exam and PhD thesis.

### Courses

**Restriction:** All courses are restricted to Psychology graduate students; all others are by permission only. Students from all areas of Psychology may choose from the Department Core courses. For convenience, the other graduate courses are categorized by area, but students from any area may take courses from outside their specific area with the permission of their thesis advisor and with instructor consent. In fact, in some cases, students are encouraged to take courses out of area as these courses are specified in their list of electives or required courses.

#### Departmental Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PSYC*6060</td>
<td>Research Design and Statistics U</td>
<td>[0.50]</td>
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</table>

This course covers non-parametric and parametric hypothesis testing and estimation, analysis of variance and covariance, and multiple correlation and multiple regression. Current controversial issues are presented.

**Department(s):** Department of Psychology

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<th>Credits</th>
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<tbody>
<tr>
<td>PSYC*6190</td>
<td>Research Project U</td>
<td>[1.00]</td>
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</table>

This course is an option for students in the applied streams of MA studies who do not plan on proceeding to a PhD program. Under the supervision of a faculty member, students will design and conduct an empirical investigation in their area of emphasis.

**Department(s):** Department of Psychology

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>PSYC*6380</td>
<td>Psychological Applications of Multivariate Analysis</td>
<td>[0.50]</td>
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</tbody>
</table>

This course emphasizes the use of multivariate techniques in psychological research. Both predictive (e.g., regression, canonical correlation, discriminant analysis, MANOVA) and reduction (e.g., factor analysis, multidimensional scaling, cluster analysis) techniques are considered in addition to the use of both observed and latent variable structural models.

**Department(s):** Department of Psychology

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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>PSYC*6401</td>
<td>Reading Course I U</td>
<td>[0.25]</td>
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</table>

An independent in-depth study of current theoretical and empirical issues in the student's area of specialization.

**Department(s):** Department of Psychology

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<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC*6402</td>
<td>Reading Course II U</td>
<td>[0.50]</td>
</tr>
</tbody>
</table>

An independent in-depth study of current theoretical and empirical issues in the student’s area of specialization.

**Department(s):** Department of Psychology

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<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>PSYC*6411</td>
<td>Special Problems in Psychology I U</td>
<td>[0.25]</td>
</tr>
</tbody>
</table>

A critical examination of current problems relating to conceptual and methodological developments in an area of psychology.

**Department(s):** Department of Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PSYC*6412</td>
<td>Special Problems in Psychology II U</td>
<td>[0.50]</td>
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</tbody>
</table>

A critical examination of current problems relating to conceptual and methodological developments in an area of psychology.

**Department(s):** Department of Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>PSYC*6471</td>
<td>Practicum I U</td>
<td>[1.00]</td>
</tr>
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</table>

See PSYC*6471. Students work four to five days a week in the selected setting.

**Department(s):** Department of Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PSYC*6472</td>
<td>Practicum II U</td>
<td>[1.00]</td>
</tr>
</tbody>
</table>

See PSYC*6471. This course is intended for students who wish to gain additional practicum experience after completing the requirements for PSYC*6471/PSYC*6472. Students work one day a week in the selected setting.

**Department(s):** Department of Psychology

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>PSYC*6521</td>
<td>Research Seminar I U</td>
<td>[0.25]</td>
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</table>

An in-depth review of current theoretical and empirical developments in topic areas related to the student's area of specialization.

**Department(s):** Department of Psychology

<table>
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<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PSYC*6522</td>
<td>Research Seminar II U</td>
<td>[0.50]</td>
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</table>

An in-depth review of current theoretical and empirical developments in topic areas related to the student’s area of specialization. The course requirements may include the completion of an empirical research project.

**Department(s):** Department of Psychology
PSYC*6670 Research Methods U [0.50]
This course emphasizes those techniques most frequently used in applied and field settings. These include: quasi-experimental designs, survey research, interviewing, questionnaire design, observational techniques, and other more qualitative methods.
Department(s): Department of Psychology

PSYC*6880 Ethical Issues in Psychology U [0.25]
Relevant issues in the application of professional ethical standards to the practice of psychology, including consultation, field research, intervention, and decision-making models are discussed in this half course. Depending on the particular faculty and students involved, discussion emphasizes specific applications to either I/O or applied developmental/social psychology.
Department(s): Department of Psychology

PSYC*6890 Legislation and Professional Practice U [0.25]
This companion course to PSYC*6880, Ethics in Psychology, provides an introduction to the Provincial and Federal legislation governing the practice of psychology. Students will become familiar with legislation relevant to professional practice with children and adults in hospital, educational, community, and other settings.

Co-requisite(s): PSYC*6880
Department(s): Department of Psychology

PSYC*6900 Philosophy and History of Psychology U [0.50]
This course examines the philosophical and metatheoretical issues involved in the scientific analysis of human experience. Both the historical context of these issues and the status of current metaethical debates are covered.
Department(s): Department of Psychology

PSYC*7070 Psychological Measurement U [0.50]
Concepts and applications of classical measurement theory, especially reliability and validity of tests and measurements used in applied psychology. Principles of test construction, standardization, norming, administration, and interpretation are discussed, as well as integration of test information and its use in decision making.
Restriction(s): Instructor consent required.
Department(s): Department of Psychology

Neuroscience and Applied Cognitive Science

PSYC*6740 Research Seminar in Neuroscience and Applied Cognitive Science A U [0.50]
This course will expose graduate students to some of the major theories, issues and methodologies driving research in the broad field of Neuroscience and Applied Cognitive Science. Students will learn to critically evaluate presentations by researchers as well as to communicate the results of their own research, in both a written and oral format. All first year master's students in NACS are required to enroll in this course in both the fall and winter semesters.
Department(s): Department of Psychology

PSYC*6750 Applications of Cognitive Science U [0.50]
This course surveys applications of cognitive science to the problem of optimizing human performance. Topics of discussion will include human-system interactions (including Human-Computer and Human-Vehicle), education, and cognitive rehabilitation.
Department(s): Department of Psychology

PSYC*6760 Research Seminar in Neuroscience and Applied Cognitive Science B U [0.00]
This course will expose graduate students to some of the major theories, issues and methodologies driving the research broad field of Neuroscience and Applied Cognitive Science. Students will learn to critically evaluate presentations by researchers in this field as well as to communicate the results of their own research, in both a written and oral format. All second year master’s and doctoral students in NACS are required to enroll in this course each fall and winter semester of their graduate program until they graduate.
Department(s): Department of Psychology

PSYC*6780 Foundations of Cognitive Science U [0.50]
Cognitive Science is an inter-disciplinary field that encompasses cognitive psychology, neuroscience, philosophy, and computer science. The foundational issues and basic methodologies that define cognitive science will be discussed, with specific examples from perception, learning, memory, language, decision-making, and problem solving.
Restriction(s): Restricted to Psychology graduate students; all others by permission only
Department(s): Department of Psychology

PSYC*6790 Memory and Cognition U [0.50]
This course reviews the major theories, issues and methodologies guiding contemporary research in human memory and related aspects of human cognition. Topics include the encoding and retrieval of information, the nature of representations in memory, classifications of memory, and applications to reading and eyewitness testimony.
Department(s): Department of Psychology

PSYC*6800 Neurobiology of Learning U [0.50]
This course reviews the major theories, issues, and methodologies guiding contemporary research in the neurobiology of learning.
Department(s): Department of Psychology

PSYC*6810 Neuropsychology U [0.50]
This course focuses on current developments in neuropsychology. Particular emphasis is placed on the aphasias, apraxias, memory disorders, and disorders of movement.
Department(s): Department of Psychology

Applied Social Psychology

PSYC*6270 Issues in Social Policy U [0.50]
This doctoral course examines historical developments and selected contemporary policy domains in Canada. Topics may include policies affecting children, families, the elderly, First Nations people, the mentally and physically disabled, and one parent families. The course also addresses the interplay between social and psychological research and policy formation, as well as the use of social policy as an instrument of social change.
Department(s): Department of Psychology

PSYC*6590 Social and Community Intervention U [0.50]
A highly applied course that focuses on the epidemiology of mental disorders, the design and implementation of preventive interventions with children, youth, and adults in the community, as well as stress and coping theory and practice.
Department(s): Department of Psychology

PSYC*6640 Foundations of Applied Social Psychology U [0.50]
This course examines theory and research in social psychology, particularly in those areas most relevant to applied concerns. Topics may include attribution, attitudes, social relationships, language and communication, and self and identity.
Department(s): Department of Psychology

PSYC*6830 Applied Social Psychology U [0.50]
This course reviews selected theories, methods and problem areas in applied social psychology. Issues involved in the conduct and application of social research, as well as alternative paradigms for such research, are discussed.
Department(s): Department of Psychology

PSYC*6840 Program Evaluation U [0.50]
This course provides an introduction to a variety of methods of social program evaluation and to the process of consultation with program staff.
Department(s): Department of Psychology

Clinical Psychology: Applied Developmental Emphasis

PSYC*6600 Developmental Psychopathology: Etiology and Assessment U [0.50]
The interaction of neurobiological, physiological, familial and social factors to an understanding of developmental psychopathology is the focus of this course. Emphasis is given to etiology and clinical assessment issues.
Department(s): Department of Psychology

PSYC*6610 Learning Disorders: Research and Clinical Practice U [0.50]
This course examines various cognitive, social, and educational components of learning and language disorders and accompanying clinical methods of diagnosis and remediation.
Department(s): Department of Psychology

PSYC*6620 Clinical and Diagnostic Interviewing Skills S [0.50]
This course provides practical training in clinical and diagnostic interviewing. Through role-play, direct observation, and in-vivo practice, students will learn how to conduct assessment and diagnostic interviews, and clinical dialogues with children and adults. This course is open only to graduate students in the CP:ADE field.
Prerequisite(s): Completion of all MA level course work except for the thesis
Restriction(s): Open only to graduate students in the Clinical Psychology: Applied Developmental Emphasis (CP:ADE) field
Department(s): Department of Psychology

PSYC*66270 Issues in Social Policy U [0.50]
This doctoral course examines historical developments and selected contemporary policy domains in Canada. Topics may include policies affecting children, families, the elderly, First Nations people, the mentally and physically disabled, and one parent families. The course also addresses the interplay between social and psychological research and policy formation, as well as the use of social policy as an instrument of social change.
Department(s): Department of Psychology
### PSYC*6580 Models of Child and Adolescent Psychotherapy U [0.50]

This course introduces a variety of therapeutic models for addressing problems of atypical development.

**Department(s):** Department of Psychology

### PSYC*6610 Advanced Child and Adolescent Psychotherapy U [0.50]

This course will consider newly emerging developments in child and adolescent psychotherapy, as well as issues of power relationships, cultural sensitivity and empirical support. In preparation, students should endeavor to complete two therapy cases prior to the commencement of the course.

**Prerequisite(s):** PSYC*6580 and PSYC*7993 (may be taken concurrently).  
**Restriction(s):** This course is open only to graduate students in the CP:ADE field.

**Department(s):** Department of Psychology

### PSYC*6630 Developmental Psychology U [0.50]

This course examines issues in the areas of cognitive, social, and emotional development. Specific research topics and theoretical issues concerning the nature of development are discussed.

**Department(s):** Department of Psychology

### PSYC*6690 Cognitive Assessment of Children and Adolescents U [0.50]

This course considers standards, ethics, use and interpretation of selected intelligence and other cognitive tests. Students administer tests, score, interpret and write reports under supervision.

**Restriction(s):** This course is open only to graduate students in the CP:ADE field.

**Department(s):** Department of Psychology

### PSYC*6700 Personality and Social Assessment of Children and Adolescents U [0.50]

This course considers projectives, questionnaires, observations and interviews for assessing children's personality and behaviour. Students administer tests, score, interpret and write reports under supervision.

**Restriction(s):** This course is open only to graduate students in the CP:ADE field.

**Department(s):** Department of Psychology

### PSYC*6799 CP:ADE Clinical Practicum I U [0.25]

This CP:ADE practicum is typically undertaken at the Center for Psychological Services, one day a week over a semester, to enhance skills introduced in other clinical courses. Expectations for the course will be based on the student's current level of clinical skill. Students will work with diverse clients, and gain knowledge of ethics and jurisprudence in a clinical setting.

**Restriction(s):** Restricted to students in the CP:ADE area of specialization.

**Department(s):** Department of Psychology

### PSYC*7992 CP:ADE Clinical Practicum II U [0.50]

This CP:ADE practicum is undertaken in a school board, psychological services department for two days a week over one semester. Students will develop clinical assessment skills with a diversity of clients, work with interdisciplinary teams, and apply knowledge of ethics and jurisprudence to educational settings. A passing grade and a satisfactory rating on the practical component must be achieved in PSYC*6690 and PSYC*6700 to enrol in this course.

**Prerequisite(s):** PSYC*6100, PSYC*6690, and PSYC*6700  
**Restriction(s):** Restricted to students in the CP:ADE area of specialization.

**Department(s):** Department of Psychology

### PSYC*7993 CP:ADE Clinical Practicum III U [1.00]

This CP:ADE practicum is undertaken in a children's mental health setting two days a week over two semesters. Students will develop complex assessment and therapy skills with diverse clients, work with interdisciplinary team, and apply knowledge of ethics and jurisprudence to mental health settings.

**Prerequisite(s):** PSYC*6471 or PSYC*7992  
**Restriction(s):** Restricted to students in the CP:ADE area of specialization. Instructor consent required.

**Department(s):** Department of Psychology

### PSYC*8000 Clinical Internship U [0.00]

A mark of satisfactory (SAT) in this course indicates that a student in the Clinical Psychology: Applied Developmental Emphasis (CP:ADE) field has successfully completed a full year (1800-2000 hour) internship in an accredited clinical setting (e.g., CPA or APA) approved by the Director of Clinical Training for CP:ADE.

**Prerequisite(s):** Completion of all course work in the CP:ADE field, the PhD qualifying examination, and the PhD Thesis proposal at the time of application, one year in advance of beginning the clinical internship.

**Department(s):** Department of Psychology

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### Industrial/Organizational Psychology

#### PSYC*7010 Recruitment and Selection: Methods and Outcomes U [0.50]

This course explores organizational issues in the recruitment and selection of new employees. Topics may include: individual differences, human rights, survey-based job analysis, recruitment methods and outcomes, selection methods and outcomes, hiring, decision making and employee placement/classification.

**Department(s):** Department of Psychology

#### PSYC*7020 Employee Performance U [0.50]

This course focuses on issues that relate to employee performance. Individuals and organizations are interested in maximizing the contributions of employees at work. This course focuses on performance-based job analysis, criterion theory, performance management/appraisal, employee socialization, compensation, benefits, technology, and labour relations.

**Department(s):** Department of Psychology

#### PSYC*7030 Work Attitudes and Behaviour U [0.50]

This course examines micro-level influences on organizational behaviour. Topics may include: organizational commitment, job satisfaction, emotions, other work attitudes and attitude change, organizational citizenship behaviours, withdrawal behaviours, employee well-being, deviance, and work-life integration.

**Department(s):** Department of Psychology

#### PSYC*7040 Social Processes in the Workplace U [0.50]

This course examines social processes in the workplace. Topics may include: groups, teams, and intergroup processes; justice; diversity in the workplace; prejudice and discrimination; harassment and unethical behaviour; climate, culture change; and, organizational development.

**Department(s):** Department of Psychology

#### PSYC*7050 Research Seminar in Industrial/Organizational Psychology U [0.00]

This course will expose graduate students to some of the major theories, issues, and methodologies driving research in the field of Industrial/Organizational psychology. Students will learn to critically evaluate presentations by researchers in this field, as well as to communicate the results of their own research, in both written and an oral format.

**Restriction(s):** Psychology students only.

**Department(s):** Department of Psychology

#### PSYC*7080 Consulting in Industrial/Organizational Psychology U [0.00]

This course introduces students to consulting in I/O Psychology through actual consulting projects with local organizations. Topics include: marketing consulting services, understanding consulting, client and project management. Specific projects will vary from semester to semester based on work secured with local organizations (e.g. training, surveys, coaching).

**Prerequisite(s):** Registration in the graduate IO psychology program and permission of the Instructor.

**Department(s):** Department of Psychology

#### PSYC*7130 Introduction to Industrial/Organizational Psychology U [0.50]

This course introduces graduate students to a broad range of topics in Industrial/Organizational psychology. It emphasizes researcher-practitioner issues, consumer behaviour, professionalism, ethics, and theory building. As well, graduate students will learn about contemporary issues in I-O Psychology.

**Department(s):** Department of Psychology

#### PSYC*7140 Industrial/Organizational Psychology Special Topic Doctoral Research Seminar U [0.50]

Participants investigate a specific area of Industrial/Organizational psychology. They critically review past and current research, including theory development and empirical findings. Participants work together to integrate past theory and findings, to note inconsistencies in the literature, and to identify promising areas for future investigations.

**Prerequisite(s):** PSYC*7130

**Department(s):** Department of Psychology

#### PSYC*7160 Employee Development: Methods and Outcomes U [0.50]

This course explores development in an organization context. Employee learning and development is a key focus for employees and organizations. This course covers functional job analysis, career development, succession management, multi-source feedback, training, coaching/mentoring and employee counseling.

**Department(s):** Department of Psychology
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Co-requisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC*7170</td>
<td>Industrial/Organizational Psychology Doctoral Research Internship I</td>
<td>U [0.50]</td>
<td>Participants work with an Industrial Organizational faculty member to conduct research on a topic of mutual interest (other than their doctoral research). They collect and/or analyze data and write up results with the goal of producing a conference presentation and/or a quality publication manuscript.</td>
<td>PSYC*7130</td>
<td></td>
<td>Instructor consent required.</td>
<td>Department of Psychology</td>
</tr>
<tr>
<td>PSYC*7180</td>
<td>Industrial/Organizational Psychology Doctoral Research Internship II</td>
<td>U [0.50]</td>
<td>Participants work with an Industrial Organizational faculty member to conduct research on a topic of mutual interest (other than their doctoral research). They collect and/or analyze data and write up results with the goal of producing a conference presentation and/or a quality publication manuscript.</td>
<td>PSYC<em>7130, PSYC</em>7140, PSYC*7170</td>
<td></td>
<td>Instructor consent required.</td>
<td>Department of Psychology</td>
</tr>
<tr>
<td>PSYC*7190</td>
<td>Work Motivation and Leadership</td>
<td>U [0.50]</td>
<td>This course examines theories, research, and application of work motivation and leadership within an organizational context. The course will include a description of classic and contemporary theories of work motivation and leadership, a critical evaluation of the research findings, and a discussion of the application of the research findings to the work environment.</td>
<td></td>
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<td>Psychology students only.</td>
<td>Department of Psychology</td>
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Public Health

The Master of Public Health (MPH) program is a 5-semester professional degree with concentration in epidemiology, environmental public health, infectious diseases, and zoonotic, foodborne and waterborne diseases. This program is of interest to individuals holding an undergraduate degree in science or applied science seeking for a career in public health or to public health professionals wishing to upgrade their skills. A Graduate Diploma is also offered for those individuals with public health-related experience that wish to increase their knowledge or acquire focused learning.

Administrative Staff

Graduate Coordinator
Andrew Papadopoulos (203 McNabb House, Ext. 53894)
apapadop@uoguelph.ca

Graduate Secretary
OVC Graduate Programs Services (102 Population Medicine, Ext. 54900)
mphinfo@uoguelph.ca

Graduate Faculty

Olaf Berke
Associate Professor, Population Medicine

Patrick Boerlin
Associate Professor, Pathobiology

Catherine Dewey
Professor, Population Medicine

Robert Friendship
Professor, Population Medicine

Amy Greer
Assistant Professor, Population Medicine

Sherilee Harper
Assistant Professor, Population Medicine

Claire Jardine
Assistant Professor, Pathobiology

Andria Jones Button
Assistant Professor, Population Medicine

Scott A. McEwen
Professor, Population Medicine

Michael Meehan
Assistant Professor, Population Medicine

Paula L. Menzies
Associate Professor, Population Medicine

Eva Nagy
Professor, Pathobiology

Andrew Papadopoulos
Associate Professor, Population Medicine and Coordinator, Master of Public Health Program

David Pearl
Associate Professor, Population Medicine

Andrew Peregrine
Associate Professor, Pathobiology

John Prescott
Professor, Pathobiology

Jan Sargeant
Professor, Population Medicine

Elizabeth Stone
Professor and Dean, Ontario Veterinary College

Scott Weese
Professor, Pathobiology

MPH Program

The objective of the MPH program is to prepare students for careers in public health. The curriculum is based on the core competencies for public health in Canada. Required courses will provide students with skills in all aspects of public health practice. Additional elective courses will provide students with the opportunity to develop added strength in specific areas, namely epidemiology, environmental public health, infectious disease, and zoonotic, foodborne, and water-borne diseases. Courses will incorporate case-based material to provide students with the opportunity to use a variety of problem-solving and communication skills. Further information can be found at the MPH program website. [http://www.ovc.uoguelph.ca/mph/](http://www.ovc.uoguelph.ca/mph/)

Admission Requirements

Eligible applicants include those with an honours BSc in Biomedical Sciences, Biological Sciences or Public Health, or those with a DVM, BScN or MD professional degrees (or equivalents). Students with an honours degree without a biological or health focus will be required to complete the distance education BSc course Principles of Disease prior to enrolling in the degree program. Candidates should have earned a B+ average in their honours BSc degree or at least a B- average in a professional degree (e.g., BScN, DVM, or MD). All applicants should submit a one-page statement of interest and career goals in public health. Students will be admitted into the Fall semester. Additional information can be found at the [MPH website](http://www.ovc.uoguelph.ca/mph/).

Degree Requirements

The MPH program at the Ontario Veterinary College will typically consist of five consecutive semesters of full-time study. Full-time students will take three semester-length courses for four semesters (total 12 courses) and a 12 to 16-week practicum in a public health practice setting. Students will begin their program in September. Students can complete the program in four semesters if they choose to add one additional elective to their course load during each of the Fall and Winter first-year and Fall second-year semesters (four courses / semester).

Students will complete at least six (0.5 credit) courses before they begin the practicum (between May and August inclusive), which will provide the opportunity to add function to the knowledge base achieved during the didactic portion of the program. A paper and public presentation developed from data gathered during the practicum will illustrate the cumulative experience. This is a residency program as core courses and most electives are not offered through distance education. Students may enroll part-time while they continue to work in their public health or regulatory careers. Part-time students will normally take one or two courses per semester.

Graduate Diploma

This stand-alone diploma consists of four courses, including Research Projects in Public Health, at least two other required courses and one elective course. Students may request a transfer from the Graduate Diploma into the MPH and if accepted, will receive credit for the courses taken (except for the Research Projects in Public Health course). Students interested in this option must apply to the MPH prior to initiating graduation procedures from the Graduate Diploma.

Admission Requirements

Eligible applicants include those with an honours BSc in Biomedical Sciences, Biological Sciences, or Public Health, or those with a DVM, BScN or MD professional degrees (or equivalents). Students with an honours degree without a biological or health focus will be required to complete the distance education BSc course Principles of Disease prior to enrolling in the degree program. Candidates should have earned a B+ average in an honours degree or at least a B- average in a professional degree (e.g., BScN, DVM, or MD).

Diploma Requirements

The Graduate Diploma program at the Ontario Veterinary College consists of four courses, including Research Projects in Public Health, at least two required courses, and one elective course.

Courses

**Required Courses**

<table>
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<th>Course</th>
<th>Credits</th>
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<td>PABI*6500</td>
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<td>PABI*6200</td>
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<td>POPM*6570</td>
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<tr>
<td>POPM*6580</td>
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</table>

**Electives**

Three electives are required and must be approved by the MPH program coordinator in advance.

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<thead>
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<th>Credits</th>
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<td>CDE*6690</td>
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[http://www.ovc.uoguelph.ca/mph/](http://www.ovc.uoguelph.ca/mph/)
Public Issues Anthropology

The Department of Sociology and Anthropology at the University of Guelph offers a program leading to an MA in Public Issues Anthropology. See the department website for more details on the program and admissions requirements.

Administrative Staff

Public Issues Anthropology Graduate Coordinator
Satsuki Kawano (603 MacKinnon, Ext. 53912)
skawano@uoguelph.ca

Graduate Secretary
Shelagh Daly (624 MacKinnon, Ext. 53895)
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Graduate Faculty

Elizabeth Finnis
BA McMaster, MA Western, PhD McMaster - Associate Professor

Edward J. Hedican
BA Lakehead, MA McMaster, PhD McGill - Professor

Satsuki Kawano
BA Keio, MA Minnesota, PhD Pittsburgh - Associate Professor

Belinda Leach
BA Carleton, MA, PhD Toronto - Professor

Thomas (Ted) McIlwraith
BA Toronto, MA UBC, PhD University of New Mexico - Assistant Professor

Marta Rohatynska
AB Wayne State, BA Carleton, MA, PhD Toronto - Associate Professor

Renée Sylvain
BA Wilfrid Laurier, MA, PhD Toronto - Associate Professor

MA Program

Admission Requirements
Applicants must possess an Honours BA (4 years) degree or its equivalent with at least a B+ average in the final two undergraduate years. Students who do not meet departmental requirements, e.g., students whose undergraduate degree does not include basic courses in sociology and/or anthropology, may be admitted provisionally.

Degree Requirements
The MA program allows students to become actively involved in advanced studies and research in Anthropology. Students have the option of writing a thesis or a major paper. Students who choose the thesis option must complete a minimum of 2.0 credits, conduct research, and write a thesis. Students who choose the major paper option must complete a minimum of 4.0 credits (including 1.0 credit in the Major Paper course) and write a major paper. All students are required to attend a Public Issues Anthropology seminar (ANTH*6080) in their first semester. They must also master basic theory and methodological skills. This is normally fulfilled through the successful completion of the courses ANTH*6000 and ANTH*6140. Students typically begin their studies in the Fall semester. When you begin the program, the graduate coordinator will meet with you to discuss which faculty members, on the basis of their areas of specialization, are likely candidates for membership on your advisory committee. Until you have formed your advisory committee, the graduate coordinator or an interim advisor will fill out your evaluation reports. You are required to choose your permanent advisor by November (in your first semester) and your committee by the end of January (in your second semester).

Collaborative Program

International Development Studies MA Program

The Department of Sociology and Anthropology participates in the MA program in international development studies (IDS). Students in this option register in an MA program in the department and IDS. Those faculty members whose research and teaching expertise includes aspects of international development studies may serve as advisors for MA students. Please consult the International Development Studies listing for a detailed description of the MA collaborative program and the special additional requirements for each of the participating departments.

Courses

Core courses

ANTH*6140 Qualitative Research Methods W [0.50]
An examination of the methods of qualitative research, including participant observation and unstructured interviews, as well as the ethical considerations of fieldwork. Other topics, such as comparative and historical methods, may be included.

Department(s): Department of Sociology and Anthropology

ANTH*6080 Anthropological Theory F [0.50]
An examination of classical and contemporary anthropological theory, including an emphasis on the most recent directions in the discipline.

Department(s): Department of Sociology and Anthropology

Elective courses

ANTH*6270 Diversity and Social Equality U [0.50]
This course will examine a range of approaches used in the study of intergroup relations, with special emphasis on struggles over influence and power. Students will acquire a deeper understanding of the complex intersection, as well as the overlap among forms of identity and group mobilization based on ethnic, linguistic, regional, class, gender, racial and other forms of social division. The course may also cover native issues and policies related to multiculturalism, equity and local or regional autonomy.

Department(s): Department of Sociology and Anthropology

ANTH*6420 Global Agro-Food Systems, Communities and Rural Change U [0.50]
This course will reflect recent sociological interests in food studies and global agro-food systems, resources and the environment, community sustainability, rural-urban linkages, the transnationalization of labour regimes, and social movements in the rural context. The course will encourage students to take a comparative and historical approach, focussing on cross-national and inter-regional studies where possible, and to examine how class, gender, race and ethnicity play out in each particular substantive topic comprising the rural field.

Department(s): Department of Sociology and Anthropology

ANTH*6460 Gender and Development F [0.50]
Cross-cultural and historical changes in gender relations and the roles/positions of women brought about by industrialization and the development of the world system. Critical examination of the predominant theories of gender relations, in so far as these inform development research and action in societies with different socio-economic systems. Introduction to the latest theories and research in the area of women and development, as well as with social and political actions undertaken by women themselves. This is one of the two alternative core courses for the Collaborative International Development Studies program.

Department(s): Department of Sociology and Anthropology

ANTH*6480 Work, Gender and Change in a Global Context U [0.50]
This course will consider some of the theoretical frameworks available for examining work, workers and work places in the context of globalization, economic restructuring, and shifts in public policy. Using case studies of particular work worlds, the course may include topics such as changing patterns of work and employment in comparative contexts, labour regimes, industrial and organizational change, organizations and protest, education for work, and the regulation of work. The course will focus on the dialectical relationship between the configurations of gender, class, race and ethnicity and the transformation of work.

Department(s): Department of Sociology and Anthropology

ANTH*6550 Selected Topics in Theory and Research U [0.50]
This course will be offered with varying content focusing on theory or research.

Department(s): Department of Sociology and Anthropology

ANTH*6660 Reading Course U [0.50]
A program of directed reading, complemented with the writing of papers or participation in research. Reading courses are arranged by students through their advisors or advisory committees and must be approved by the chair of the department. This course may be repeated provided different content is involved.

Department(s): Department of Sociology and Anthropology

ANTH*6660 Major Paper U [1.00]
The major paper is an extensive research paper for those who do not elect to complete a thesis. It may be taken over two semesters.

Department(s): Department of Sociology and Anthropology
Rural Planning and Development

Rural Planning and Development has a four-part mission of teaching, research, training and outreach.

Administrative Staff

Director, SEDRD
Wayne Caldwell (101 Landscape Architecture, Ext. 56420) wcaldwel@uoguelph.ca

Graduate Coordinator
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Graduate Secretary
Sue Hall (100 Landscape Architecture, Ext. 56780) shhall@uoguelph.ca

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BA, MA Western Ontario, PhD Waterloo, MCIP - Professor

F. Harry Cummings  
BA Western Ontario, MA, PhD Clark, MCIP - Professor

John E. FitzGibbon  
BA McMaster, MSc Wales, PhD McGill, MCIP - Professor

John FitzSimons  
BA Wales, MA McMaster, PhD Western Ontario - Associate Professor

Nonita T. Yap  
BSc San Carlos (Philippines), MES Dalhousie, PhD Alberta - Professor

MSc (Planning) Program

Rural Planning and Development provides the opportunity for graduate study, research and professional development in rural planning and development in either Canadian or international development contexts. The program leads to an MSc (Planning) degree. It is a professionally accredited (Canadian Institute of Planners) program that requires substantial commitment to professional performance and ethics.

Graduate students in Rural Planning and Development find employment in rural planning departments, governments, non-governmental organizations, and private consulting firms in Canada and overseas. Graduates are prepared for both local development and planning as well as national-level research and policy planning in international and Canadian contexts.

The program goal is to ensure that students have the knowledge and skill to conduct interdisciplinary research and, in a professional capacity, guide processes of change in rural planning and development.

Where appropriate, faculty from other academic units participate in an advisory capacity in students' research programs.

Admission Requirements

The program is open to qualified graduates from all disciplines including geography, international development, sociology, agriculture, environmental studies, landscape architecture, economics and planning. Applicants are required to demonstrate their specific interest in the program and relevant work experience in rural planning and development.

A four-year honours degree with a B- average is considered the normal basis for admission.

Degree Requirements

MSc (Planning) in Rural Planning and Development (Canadian)

This field offers both course-based (with major research paper) and thesis options. Both of these options are aimed at providing substantive professional, contextual and specialized knowledge and skill in the domestic rural planning and development context.

All students enrolled in this field are required to complete a set of core courses that provide a foundation for rural planning and development research and practice in the Canadian context.

For the Course-based (with Major Paper) Option, students must complete:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
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<tbody>
<tr>
<td>RPD*6170</td>
<td>Rural Research Methods</td>
<td>0.50</td>
</tr>
<tr>
<td>RPD*6380</td>
<td>Application of Quantitative Techniques in Rural Planning and Development</td>
<td>0.50</td>
</tr>
<tr>
<td>RPD*6240</td>
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<tr>
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<td>0.50</td>
</tr>
<tr>
<td>RPD*6250</td>
<td>Foundations in Rural Planning Practice</td>
<td>0.50</td>
</tr>
<tr>
<td>RPD*6360</td>
<td>Major Research Paper</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Plus a minimum of seven elective Rural Planning and Development courses or alternative open elective courses approved by their advisory committee.

For the Thesis Option, students must complete:

<table>
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<tbody>
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</tr>
</tbody>
</table>

Rural Planning Law

RPD*6260
F. Harry Cummings  
BA Western Ontario, MA, PhD Clark, MCIP - Professor

RPD*6250
John E. FitzGibbon  
BA McMaster, MSc Wales, PhD McGill, MCIP - Professor

Nonita T. Yap  
BSc San Carlos (Philippines), MES Dalhousie, PhD Alberta - Professor

John F. Devlin  
BA Western Ontario, MA, PhD Clark, MCIP - Professor

John E. FitzGibbon  
BA McMaster, MSc Wales, PhD McGill, MCIP - Professor

John FitzSimons  
BA Wales, MA McMaster, PhD Western Ontario - Associate Professor

Nonita T. Yap  
BSc San Carlos (Philippines), MES Dalhousie, PhD Alberta - Professor

MSc (Planning) Program

Rural Planning and Development provides the opportunity for graduate study, research and professional development in rural planning and development in either Canadian or international development contexts. The program leads to an MSc (Planning) degree. It is a professionally accredited (Canadian Institute of Planners) program that requires substantial commitment to professional performance and ethics.

Graduate students in Rural Planning and Development find employment in rural planning departments, governments, non-governmental organizations, and private consulting firms in Canada and overseas. Graduates are prepared for both local development and planning as well as national-level research and policy planning in international and Canadian contexts.

The program goal is to ensure that students have the knowledge and skill to conduct interdisciplinary research and, in a professional capacity, guide processes of change in rural planning and development.

Where appropriate, faculty from other academic units participate in an advisory capacity in students' research programs.

Admission Requirements

The program is open to qualified graduates from all disciplines including geography, international development, sociology, agriculture, environmental studies, landscape architecture, economics and planning. Applicants are required to demonstrate their specific interest in the program and relevant work experience in rural planning and development.

A four-year honours degree with a B- average is considered the normal basis for admission.

Degree Requirements

MSc (Planning) in Rural Planning and Development (Canadian)

This field offers both course-based (with major research paper) and thesis options. Both of these options are aimed at providing substantive professional, contextual and specialized knowledge and skill in the domestic rural planning and development context.

All students enrolled in this field are required to complete a set of core courses that provide a foundation for rural planning and development research and practice in the Canadian context.

For the Course-based (with Major Paper) Option, students must complete:

<table>
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<td>Foundations in Rural Planning Practice</td>
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</table>

Plus a minimum of five elective Rural Planning and Development courses or alternative open elective courses approved by their advisory committee.

For the Thesis Option, students must complete:

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MSc (Planning) in Rural Planning and Development (International)

This field prepares students for research and practice in international rural planning and development. Students may choose either the course-based (with major research paper) option, or the thesis option. An internship is not a field requirement but is strongly recommended.

All students enrolled in this field are required to complete a set of core courses and electives that provide a foundation for international rural planning and development research and practice.

For the Course-based (with Major Research Paper) Option students must complete:

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</tr>
<tr>
<td>RPD*6240</td>
<td>Planning and Development Theory</td>
<td>0.50</td>
</tr>
<tr>
<td>RPD*6030</td>
<td>International Rural Development Planning: Principles and Practices</td>
<td>0.50</td>
</tr>
<tr>
<td>RPD*6170</td>
<td>Rural Research Methods</td>
<td>0.50</td>
</tr>
<tr>
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<td>International Rural Development Planning: Principles and Practices</td>
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</table>

MPLAN Program

Rural Planning and Development provides the opportunity for graduate study, applied research and professional development in Rural Planning and Development in either Canadian or International development contexts. The program leads to a Master of Planning (MPLAN) degree.

This 1 year program is geared towards more experienced graduates working for an agency or non-governmental organization abroad or in Canada; or for mature Canadian planners working in a municipal planning environment, for other levels of government, in professional consulting, non-governmental organizations or other contexts or for graduates of related professional programs. It is explicitly designed for individuals wishing to upgrade their professional training to the Masters level without necessarily withdrawing from the work force for an extended period of time.

This degree may also be completed at a distance. Please consult with the program’s Graduate Coordinator for more details.

Admission Requirements

The program is open to:

1. Qualified graduates from relevant disciplines (minimum B- average) with 4-5 years of relevant experience. Relevant experience is determined by the admissions committee.

Graduates from a professional program in Planning, Landscape Architecture, Architecture or Engineering (minimum B+ average).

All applicants are required to demonstrate their specific interest in the program and their work and educational experience relating to rural planning and development.

Degree Requirements

- Four courses from the MSc (Planning) course list related to their research interest, chosen with the advice of their Advisory Committee.
- Senior Planning and Development (listed as RPD*6290)
- One open elective.
- Course selection will emphasize either the International field or the Canadian field.
- The candidate will also complete a Major Research Paper.

Collaborative Program

International Development Studies

Rural Planning and Development participates in the collaborative International Development Studies (IDS) program. The MSc degree for students in this program will be also be designated as a specialist designation: international development.

Please consult the International Development Studies listing for a detailed description of the collaborative program including the special additional requirements for each of the participating departments.

Courses

Core Courses

RPD*6030 International Rural Development Planning: Principles and Practices U [0.50]
This course presents the scope and nature of international development planning and alternative roles for development planners; has a rural emphasis; reviews the evolution of development planning from macroeconomic beginnings to more integrated local planning approaches; examines the development planning process and its organizational and spatial dimensions; compares policy, program, project, sectoral and integrated area planning; and compares rural development planning in market, mixed and state-driven societies.

Department(s): School of Environmental Design and Rural Development

RPD*6170 Rural Research Methods U [0.50]
The course provides rural planning and development professionals with a number of theoretical frameworks and practical approaches to problem solving in rural Canadian and international contexts. The course content provides an introduction to hypothesis development, data collection, analytical frameworks, research management, and information synthesis and presentation methodologies that are appropriate to the practicing rural planner and developer. It views the roles of the researcher and research as interventionist and intervention in the rural community. Research methods are discussed as an integral and supporting part of the planning and development process.

Department(s): School of Environmental Design and Rural Development

RPD*6240 Planning and Development Theory U [0.50]
Examines basic concepts, theories and perspectives in rural planning and development. A conceptual examination of ‘rural’, ‘planning’ and ‘development’ precedes an examination of how rural planning and development is viewed from alternative, often conflicting theories of rural change and planned intervention. The implications for practice are discussed.

Department(s): School of Environmental Design and Rural Development

RPD*6250 Foundations in Rural Planning Practice F [0.50]
This course provides an introduction to rural planning practice. This includes: i) Concepts in Public Administration - The structure, responsibility and functions of public sector administration and government. ii) The workings of local government. iii) Rural Planning Practice - An introduction to planning and development in rural regions and small municipalities.

Department(s): School of Environmental Design and Rural Development

RPD*6260 Land Use Planning Law U [0.50]
An introduction to the legal tools used to regulate the use of land and other resources. Zoning, subdivision controls, development control, land banking, expropriation, planning appeals, official maps, etc. An intensive study of the Ontario Planning Act and related legislation.

Department(s): School of Environmental Design and Rural Development

RPD*6291 Rural Development Administration U [0.50]
This course explores the administration of rural development by considering the main organizational types delivering rural programs. The structure and behaviour of these organizations, their interactions, and their respective sectors will be considered. Students will be introduced to administrative planning tools: international development studies.

Department(s): School of Environmental Design and Rural Development

RPD*6360 Major Research Paper U [1.00]
Students not pursuing the thesis route must satisfactorily complete a Major Research Paper. The paper will be supervised by a faculty committee. Content of the paper will generally focus on the placement of a problem in rural planning and development practice using appropriate methodological and analytical procedures. Note: This is a one semester course and must be completed in the semester of registration.

Restriction(s): For Major Paper option only. Instructor consent required.

Department(s): School of Environmental Design and Rural Development

RPD*6380 Application of Quantitative Techniques in Rural Planning and Development U [0.50]
Analysis and application of standard quantitative, statistical and computer-based techniques utilized in rural planning and development. Problems of data collection, analysis and interpretation.

Department(s): School of Environmental Design and Rural Development

Elective Courses

Students are to select their electives from the following knowledge and skills courses. This list of electives is modified from time to time by the RPD Graduate Program Committee, and the student should contact the Graduate Program Committee for the current list of available electives. An RPD core course from outside your required program can also be taken as an elective. Two electives may be selected from other courses offered within SEDRD (e.g. CDE or LARC) or by other University departments and not included below.

EDRD*6000 Qualitative Analysis in Rural Development U [0.50]

EDRD*6050 Farming Systems Analysis and Development U [0.50]

EDRD*6100 Disaster Planning and Management U [0.50]

EDRD*6630 Regional Planning U [0.50]

EDRD*6690 Program Evaluation U [0.50]

RPD*6070 Project Development: Principles, Procedures, and Selected Methods U [0.50]
This course introduces students to the principles, procedures and methods in developing a project. It examines the project cycle: identification, preparation, appraisal, implementation/supervision, monitoring and evaluation. It gives an understanding of the major methods involved and teaches selected methods. The focus is on the international, rural context and on small non-farm projects: small industries, small physical infrastructure and social projects.

Department(s): School of Environmental Design and Rural Development

RPD*6080 Environment and Development: Biophysical Resources and Sustainable Development in Rural Environments U [0.50]
This course will examine the problems and potential for ecologically sustainable development in the context of rural development planning particularly in the Third World environments. The course critically examines the strategic planning approaches and methods which involve the interaction between social systems and natural ecosystems in the context of planned intervention and change in rural environments.

Department(s): School of Environmental Design and Rural Development

RPD*6220 Planning and Development Policy Analysis U [0.50]
Planning and development policy has experienced a significant evolution. This course examines the history of policy, and the theory, methods and processes of policy development and governance in planning and management of environment and resources.

Department(s): School of Environmental Design and Rural Development

RPD*6280 Advanced Planning Practice W [0.50]
This course explores current issues, techniques, legislation and processes that are relevant to rural planning practice. A number of specific municipal (local and regional) rural planning examples will be presented. Comparisons between different jurisdictions will be reviewed. Students will be engaged in project-based learning.

Prerequisite(s): RPD*6250

Department(s): School of Environmental Design and Rural Development

RPD*6290 Special Topics in Rural Planning and Development U [0.50]
Selected study topics focus on the nature of rural planning and development issues and/or practices in Canadian and/or International small communities and rural environments. Among the topics which may be addressed are: rural land use planning, ecological restoration, gender analysis in development planning, GIS in agricultural development, micro-credit, physical/site planning and design, project management.

Restriction(s): Instructor consent required.

Department(s): School of Environmental Design and Rural Development

RPD*6310 Environmental Impact Assessment U [0.50]
This course deals with the role of environmental impact assessments and statements in the planning, development and operation of resource projects. Topics discussed include the philosophical and institutional basis for environmental impact assessments, methods used and the effects of such assessments on resource development projects.

Department(s): School of Environmental Design and Rural Development

Elective Courses

Students are to select their electives from the following knowledge and skills courses. This list of electives is modified from time to time by the RPD Graduate Program Committee, and the student should contact the Graduate Program Committee for the current list of available electives. An RPD core course from outside your required program can also be taken as an elective. Two electives may be selected from other courses offered within SEDRD (e.g. CDE or LARC) or by other University departments and not included below.

EDRD*6000 Qualitative Analysis in Rural Development U [0.50]

EDRD*6050 Farming Systems Analysis and Development U [0.50]

EDRD*6100 Disaster Planning and Management U [0.50]

EDRD*6630 Regional Planning U [0.50]

EDRD*6690 Program Evaluation U [0.50]

RPD*6070 Project Development: Principles, Procedures, and Selected Methods U [0.50]
This course introduces students to the principles, procedures and methods in developing a project. It examines the project cycle: identification, preparation, appraisal, implementation/supervision, monitoring and evaluation. It gives an understanding of the major methods involved and teaches selected methods. The focus is on the international, rural context and on small non-farm projects: small industries, small physical infrastructure and social projects.

Department(s): School of Environmental Design and Rural Development

RPD*6080 Environment and Development: Biophysical Resources and Sustainable Development in Rural Environments U [0.50]
This course will examine the problems and potential for ecologically sustainable development in the context of rural development planning particularly in the Third World environments. The course critically examines the strategic planning approaches and methods which involve the interaction between social systems and natural ecosystems in the context of planned intervention and change in rural environments.

Department(s): School of Environmental Design and Rural Development

RPD*6220 Planning and Development Policy Analysis U [0.50]
Planning and development policy has experienced a significant evolution. This course examines the history of policy, and the theory, methods and processes of policy development and governance in planning and management of environment and resources.

Department(s): School of Environmental Design and Rural Development

RPD*6280 Advanced Planning Practice W [0.50]
This course explores current issues, techniques, legislation and processes that are relevant to rural planning practice. A number of specific municipal (local and regional) rural planning examples will be presented. Comparisons between different jurisdictions will be reviewed. Students will be engaged in project-based learning.

Prerequisite(s): RPD*6250

Department(s): School of Environmental Design and Rural Development

RPD*6290 Special Topics in Rural Planning and Development U [0.50]
Selected study topics focus on the nature of rural planning and development issues and/or practices in Canadian and/or International small communities and rural environments. Among the topics which may be addressed are: rural land use planning, ecological restoration, gender analysis in development planning, GIS in agricultural development, micro-credit, physical/site planning and design, project management.

Restriction(s): Instructor consent required.

Department(s): School of Environmental Design and Rural Development

RPD*6310 Environmental Impact Assessment U [0.50]
This course deals with the role of environmental impact assessments and statements in the planning, development and operation of resource projects. Topics discussed include the philosophical and institutional basis for environmental impact assessments, methods used and the effects of such assessments on resource development projects.

Department(s): School of Environmental Design and Rural Development
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<tr>
<td>RPD*6320</td>
<td>Water Resource Management U [0.50]</td>
<td>The course provides an assessment of the processes and principles which underlie comprehensive water resource planning and integrated basin management. It also undertakes to evaluate current practice in the context of integrated planning. There is extensive use of Canadian and international practice.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>RPD*6370</td>
<td>Economic Development Planning and Management for Rural Communities U [0.50]</td>
<td>Theories and perspectives of local economic development, particularly community-based planning for rural economic development. Economic development within a community development framework, and challenges of sustainable development. Interdisciplinary perspectives and alternative approaches to professional planning practice, strategic planning, management and organizational design/development issues. Alternative economic concepts and perspectives are critically examined. Includes international case studies.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>RPD*6390</td>
<td>Rural Social Planning U [0.50]</td>
<td>This course will provide students who have an interest in social development with an avenue for linking that interest to the policy, planning and intervention process.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>RPD*6410</td>
<td>Readings in Rural Planning U [0.50]</td>
<td>A program of supervised independent study related to the student's area of concentration. Nature and content of the readings course are agreed upon between the student and the instructor, and are subject to the approval of the student's advisory committee and graduate committee.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>RPD*6450</td>
<td>Recreation and Tourism Planning and Development U [0.50]</td>
<td>This course is intended to instruct the student in the principles of planning for recreation and tourism development. Emphasis is placed on the economic and social benefits and costs that accrue from tourism and recreation development. Planning principles are applied to this context.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
</tbody>
</table>
Rural Studies

Administrative Staff

Director, School of Environmental Design and Rural Development (SEDRD)
Wayne Caldwell (101 Landscape Architecture, Ext. 56420)
wccaldwel@uoguelph.ca

Graduate Coordinator
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Graduate Secretary
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srhall@uoguelph.ca

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Wayne Caldwell
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Robert Corry
BLA Guelph, MLA Minnesota, PhD Michigan, ASLA - Associate Professor, SEDRD
F. Harry Cummings
BA Western, MA, PhD Clark - Professor, SEDRD
John Devlin
BA Dalhousie, MA Calgary, MA Carleton, PhD Guelph - Associate Professor, SEDRD
Glen C. Filson
BA, MEd Saskatchewan, PhD Toronto - Professor, SEDRD
John FitzGibbon
BA McMaster, MSc Wales, PhD McGill - Professor, SEDRD
John FitzSimons
BA Wales, MA McMaster, PhD Western - Associate Professor, SEDRD
Helen Hamby-Odame
BA Toronto, ME.S., PhD York - Associate Professor, SEDRD
Larry Harder
BES Manitoba, MLA Harvard - Associate Professor, SEDRD
Sean Kelly
BLA, MSc Guelph, CSLA, OALA, ASLA, OPPI - Assistant Professor, SEDRD
Karen Landman
BLA, MSc Guelph, PhD Queen’s, OPPI - Associate Professor, SEDRD
Allan C. Lauzon
BA, MSc Guelph, EdTD Toronto - Associate Professor, SEDRD
Jim Mahone
BSc U.S. Coast Guard Academy (Connecticut), PhD Michigan State - Associate Professor, SEDRD
Cecelia Paine
BLA Illinois, MLA Michigan, FCSLA, FASLA, OALA - Professor, SEDRD and Associate Dean of Graduate Studies
Nathan H. Perkins
BLA, MLA Illinois, PhD Wisconsin, FASLA - Associate Professor, SEDRD
Nonita T. Yap
BSc San Carlos (Philippines), MES Dalhousie, PhD Alberta - Professor, SEDRD

Robert D. Brown
BSc, Saskatchewan, MLA, PhD Guelph, FCELA, CSLA, SALA, ASLA - Professor, SEDRD
Wayne Caldwell
BA, MA Western, PhD Waterloo - Professor, SEDRD
Robert Corry
BLA Guelph, MLA Minnesota, PhD Michigan, ASLA - Associate Professor, SEDRD
F. Harry Cummings
BA Western, MA, PhD Clark - Professor, SEDRD
John Devlin
BA Dalhousie, MA Calgary, MA Carleton, PhD Guelph - Associate Professor, SEDRD
Glen C. Filson
BA, MEd Saskatchewan, PhD Toronto - Professor, SEDRD
John FitzGibbon
BA McMaster, MSc Wales, PhD McGill - Professor, SEDRD
John FitzSimons
BA Wales, MA McMaster, PhD Western - Associate Professor, SEDRD
Helen Hamby-Odame
BA Toronto, ME.S., PhD York - Associate Professor, SEDRD
Larry Harder
BES Manitoba, MLA Harvard - Associate Professor, SEDRD
Sean Kelly
BLA, MSc Guelph, CSLA, OALA, ASLA, OPPI - Assistant Professor, SEDRD
Karen Landman
BLA, MSc Guelph, PhD Queen’s, OPPI - Associate Professor, SEDRD
Allan C. Lauzon
BA, MSc Guelph, EdTD Toronto - Associate Professor, SEDRD
Jim Mahone
BSc U.S. Coast Guard Academy (Connecticut), PhD Michigan State - Associate Professor, SEDRD
Cecelia Paine
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BSc San Carlos (Philippines), MES Dalhousie, PhD Alberta - Professor, SEDRD

PhD Program

Rural Studies core faculty are from within the School of Environmental Design & Rural Development (Capacity Development and Extension, Landscape Architecture, Rural Planning and Development).

The program focuses on two fields: sustainable rural communities and sustainable landscape systems. Sustainable rural communities are characterized by long-term well-being based on the integration of economic, social and environmental factors in their planning and activities. Four sectors of sustainable rural communities have been designated: environment and sustainability, social structure and processes, human resource development, and sustainable rural economic development. The sustainable landscapes system examines structure, process, and change in the rural landscape through research on bio-physical and socio-cultural sectors. A number of different disciplines are represented and an interdisciplinary approach is taken to integrate across subject areas. Students may choose among fields and choose a sector within the field for relatively more-intensive study.

The objective of the PhD program in Rural Studies is to provide opportunities for advanced studies and research on the integration of socio-cultural and bio-physical components for capacity development, design, or planning of landscape systems and rural communities. Graduates are prepared to become leading specialists in addressing sustainable landscapes and rural communities issues. Interdisciplinary research is emphasized, building on the disciplines of capacity development and extension, landscape architecture, and rural planning and development within SEDRD.

Admission Requirements

To be considered for admission, an applicant must have a master's degree (or the equivalent) from a recognized university in a relevant discipline. Master's graduates in a range of humanities, social-science and applied-science disciplines are eligible for consideration for admission. As examples, master's graduates in geography, sociology, planning, landscape architecture, environmental science, capacity development and extension, and international development may be particularly suitable. Applicants who have not completed courses relevant to rural studies or gained experience in rural communities may be required to do so prior to admission or as part of initial phases of the PhD program.

The program's admission policy is governed by the availability of graduate advisors and other resources and by the need to admit applicants from a variety of disciplines and backgrounds. The interaction of students with diverse backgrounds will greatly enhance the multidisciplinary approaches in the program. The program also seeks to achieve the significant participation of women and aboriginal people from North America and international students. The co-ordinator of the program receives applications directly from prospective students or through prospective advisors and ensures that application files are complete for review by the admission committee. The committee then consults with prospective advisors and recommends applicants for admission to the Office of Graduate Studies. Applicants should consult the coordinator for the deadline for admission.

Degree Requirements

Advisory Committee

Each doctoral student has an advisory committee composed of faculty members from a range of disciplines pertinent to the field, specialization and research topic. Each committee consists of at least three members. Committees are broadly based with at least two major disciplines represented by its members. The advisor and the advisory committee provide guidance to allow for the student's intellectual growth in the program.

The advisory committee assesses and approves the thesis-research proposal which is to be prepared by the student by the end of the second year, concurrent with preparation for the qualifying examination.

Course Requirements

The minimum course and credit requirements for the PhD in rural studies consist of a common 2.0-credit core of two integrative 1.0-credit courses (Sustainable Rural Systems, and Integrative Research Methods), a 0.25-credit research seminar, and one elective graduate 0.5-credit course or the RST*6500 Special Topics course. Additional courses may be required by the student's advisory committee. Make-up courses may be required prior to admission to the PhD program or early in the program. All courses will normally be completed prior to the qualifying examination. All or most of the courses should be taken in the first year of study.

To foster the interdisciplinary nature of the program, some courses are team taught. Attention is also paid to the sequencing of courses to promote interdisciplinarity.

Qualifying Examination

The qualifying examination for the PhD program in rural studies assesses the acceptability of the intellectual capability and research potential of students. The examination committee is constituted to represent a range of disciplines pertinent to the field.

The qualifying examination is used to determine if the student has an advanced level of knowledge and competence in the area(s) of specialization related to their research. The areas of specialization typically focus on one of the program fields, however, it is acceptable to have an area of specialization outside of these fields as long as it is agreed upon by the graduate student, Program Co-ordinator, and the Advisory Committee. The qualifying examination has both written and oral components. The written component is based on the common core subject area of the field and the student's selected sector. The oral examination is devoted to discussion of the written materials. The examination evaluates the student's ability to integrate disciplinary knowledge within the field and to undertake interdisciplinary research. The qualifying examination must be completed by the end of semester five.

Courses

Common Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RST*6000</td>
<td>Sustainable Rural Systems</td>
<td>1.00</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
</tbody>
</table>

Sustainable development theory in the rural communities and environment context.
## Integrative Research Methods F-W [1.00]
Research design and evaluation with a focus on measures of sustainability and on interdisciplinary applications.

**Department(s):** School of Environmental Design and Rural Development

## Research Seminar U [0.25]

**Department(s):** School of Environmental Design and Rural Development

### Sector Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>RST*6500</td>
<td>Special Topics U [0.50]</td>
<td></td>
</tr>
<tr>
<td>RPD*6170</td>
<td>Rural Research Methods</td>
<td>[0.50]</td>
</tr>
<tr>
<td>CDE*6260</td>
<td>Research Design</td>
<td>[0.50]</td>
</tr>
<tr>
<td>LARC*6380</td>
<td>Research Seminar</td>
<td>[0.25]</td>
</tr>
</tbody>
</table>
Sociology

The Department of Sociology and Anthropology offers programs of study leading to the degrees of MA and PhD in Sociology. See the Department website at [http://www.sociology.uoguelph.ca/](http://www.sociology.uoguelph.ca/) for additional information.

Administrative Staff

Department Chair
Patrick Parnaby (626 MacKinnon, Ext. 56527) pparnaby@uoguelph.ca

Graduate Coordinator
Vivian Shalla (608 MacKinnon, Ext. 52195) vsalla@uoguelph.ca

Graduate Secretary
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Graduate Faculty

Myrna Dawson
BA York, MA, PhD Toronto - Associate Professor and Canada Research Chair

Elizabeth Finnis
BA McMaster, MA Western, PhD McMaster - Associate Professor

Cecil A. Foster
BA, MA, PhD York - Professor

Andrew Hathaway
BA, MA Calgary, PhD McMaster - Associate Professor

Edward J. Hedican
BA Lakehead, MA McMaster, PhD McGill - Professor

Mervyn Horgan
BA, MA National University of Ireland, PhD York - Assistant Professor

Sally Humphries
BA, MA, PhD York - Associate Professor

Linda Hunter
BA, MA Guelph, PhD York - Assistant Professor

Satsuki Kawano
BA Keio, MA Minnesota, PhD Pittsburgh - Associate Professor

Lisa Kowalchuk
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Belinda Leach
BA Carleton, MA, PhD Toronto - Associate Professor

Madonna R. Maidment
BA, MA Memorial, PhD Carleton - Associate Professor

Thomas (Tad) McIlwraith
BA Toronto, MA UBC, PhD University of New Mexico - Assistant Professor

Mavis Morton
BA Carleton, MA, PhD York - Assistant Professor

William O'Grady
BA, MA Carleton, PhD Toronto - Professor

Patrick Parnaby
BA, MA Queen's, PhD McMaster - Associate Professor

Kerry L. Preibisch
BA, MA Simon Fraser, PhD Reading - Associate Professor

Marta Rohatynskyj
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Vivian Shalla
BA Laurentian, MSc Montreal, PhD Carleton - Associate Professor

Sharada Srinivasan
MA, Tata Institute of Social Sciences, MA, PhD Eramus Univ. Rotterdam, - Assistant Professor

Ron Stansfield
BSc McMaster, BA, MA Toronto, PhD York - Associate Professor

Renée Sylvain
BA Wilfrid Laurier, MA, PhD Toronto - Associate Professor

Jeji Varghese
BSc, MA, PhD Alberta - Assistant Professor

David Walters
BA, MA Western, PhD McMaster - Associate Professor

Anthony R. Winson
BA Western, MA, PhD Toronto - Professor

Carolyn Yule
BA UBC, MA, PhD Toronto - Assistant Professor

Sociology

The doctoral program comprises three fields within the discipline of Sociology that build on current faculty strengths. These fields are:

- Global Agro-Food Systems, Communities and Rural Change
- Work, Gender and Change in a Global Context
- Sociological Criminology

Global Agro-Food Systems, Communities and Rural Change

This area includes rural sociology and rural development (Canada and international), women and gender relations in development, sociology of agriculture and of the rural community, community development, political economy of rural agricultural systems, agro-food systems, environment, subsistence and commodification.

Work, Gender and Change in a Global Context

This area incorporates sociology of work, the workplace, political economy, labour markets, transition from school to work, skills and lifelong learning, technological change, women and work, work and economic restructuring, the labour movement, labour process and social policy.

Criminology and Criminal Justice

This area covers sociology of policing, corrections and penology, violent crime, sociology of law, governance and control, crime prevention, risk, criminological theory, critical criminology, street youth, young offenders, gender and offending, and criminal justice theory.

Application Procedure

Graduate students are admitted each Fall semester (approximately 10 - 15 students). Students are admitted into the program in the Fall semester only. The program is offered on a full-time basis only. The on-line application and application information can be found at [http://www.uoguelph.ca/graduatestudies/apply](http://www.uoguelph.ca/graduatestudies/apply). Program offices should be consulted for admission deadlines.

Admission Requirements

Applicants must possess an Honours BA (4 years) degree or its equivalent with at least a B+ average in the final two years of undergraduate studies. Students who do not meet departmental requirements, e.g., students whose undergraduate degree does not include basic courses in Sociology, may be admitted provisionally and required to complete appropriate make-up courses from offerings in the undergraduate program.

Degree Requirements

Students must either complete a minimum of 2.0 credits and write a thesis or complete a minimum of 4.0 credits (including 1.0 credit in the Major Paper course) and write a major paper. All students are required to master basic theory and methodological skills. This is fulfilled through the successful completion of the courses SOC*6140 and SOC*6070 in the Fall semester and SOC*6130 in the Winter semester.

Students begin their studies in the Fall semester. When you arrive, the graduate coordinator will inform you as to which faculty members, on the basis of their areas of specialization, are likely candidates for membership on your advisory committee. Until you have formed your advisory committee, the graduate coordinator will fill out your evaluation reports. All students are required to pass SOC*6700, Pro-Seminar. This is a two semester course (Fall and Winter) and is graded as SAT/UNSAT. This course is intended to introduce students to the department, the university, and the profession of Sociology.

PhD Program

The doctoral program comprises three fields within the discipline of Sociology that build on current faculty strengths. These fields are:

- Global Agro-Food Systems, Communities and Rural Change
- Work, Gender and Change in a Global Context
- Sociological Criminology

Global Agro-Food Systems, Communities and Rural Change

This field reflects recent sociological interests in food studies and global agro-food systems, resources and the environment, community sustainability, rural-urban linkages, the transnationalization of labour regimes and social movements in the rural context. Students specializing in this field will be encouraged to take a comparative and historical approach, focusing on cross-national and inter-regional studies where possible, and to examine how class, gender, race and ethnicity play out in each particular substantive topic comprising the rural field.
Work, Gender and Change in a Global Context

This field reflects recent sociological interests in changing patterns of work and employment in comparative contexts, labour regimes, industrial and organizational change, organizations and protest, education for work and the regulation of work. These trends are located in the broader processes of globalization, economic restructuring and fundamental shifts in public policy. Students specializing in this field will be encouraged to focus on the dialectical relationship between the configurations of gender, class, race and ethnicity, and the transformation of work.

Sociological Criminology

The field reflects recent sociological interests in homelessness and marginalized peoples, victims against women, homicide, wrongful convictions, crime prevention through environmental design, policing, harm reduction and substance use/abuse, violent offending and victimization, and young offenders.

Degree Requirements

All students in the PhD program are required to successfully complete four courses during the first two semesters of study. Students must also successfully complete two qualifying examinations and a research proposal, and produce and orally defend a dissertation on a topic that has been approved by the advisory committee.

Admission Requirements

Normally, only applicants with a recognized MA degree in Sociology and with high academic standing (80% or higher) in their graduate-level studies will be admitted into the program. Students are expected to have successfully completed Master’s-level courses in sociological theory as well as Master’s-level qualitative and quantitative methodology courses in Sociology. It is also expected that students will have taken courses across the breadth of Sociology.

Admission Procedure

Graduate students are admitted into the program in the Fall semester only. The program is offered on a full-time basis only. Program offices should be consulted for admission deadlines. The on-line application and application information can be found at http://www.uquelph.ca/graduatestudies/apply.

Collaborative Programs

International Development Studies MA and PhD Programs

The Department of Sociology and Anthropology participates in the collaborative International Development Studies (IDS) MA and PhD programs. Please consult the International Development Studies listing for a detailed description of the MA and PhD collaborative programs and the special additional requirements for each of the participating departments. Applications should be submitted directly to the Department of Sociology and Anthropology.

Courses

General

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SOC*6700</td>
<td>Pro-seminar F-W</td>
<td>0.00</td>
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The pro-seminar concerns matters involved in graduate studies and later work as a professional sociologist, including how to form a graduate advisory committee, academic standing, assistantship responsibilities, presentation skills, exploration of careers in sociology, writing grant proposals, reports and articles, and teaching.

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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>SOC*6800</td>
<td>Advanced Topics in Sociology</td>
<td>0.50</td>
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</table>

This course will focus on the foundations of sociological theories and the broader philosophical context of inquiry in sociological research. Students will develop an advanced understanding of the research process through study, analysis and critical assessment of a range of theoretical and methodological approaches and issues.

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<tr>
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<tbody>
<tr>
<td>SOC*6070</td>
<td>Sociological Theory</td>
<td>0.50</td>
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Classical and contemporary theoretical perspectives and their inter-relationships. A central concern will be to develop the student's ability to assess theory critically and to understand how theory and research relate to each other.

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<tr>
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<tr>
<td>SOC*6140</td>
<td>Qualitative Research Methods</td>
<td>0.50</td>
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An examination of the methods of qualitative research, including participant observation and unstructured interviews, as well as the ethical considerations of fieldwork. Other topics, such as comparative and historical methods, may be included.

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<tbody>
<tr>
<td>SOC*6130</td>
<td>Quantitative Research Methods W</td>
<td>0.50</td>
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</table>

The application of multiple regression to data generated by non-experimental research, e.g., survey data and data from other sources (census, archival). In large part a course in theory construction, a thorough grounding in the mechanics and statistical assumptions of multiple regression is followed by its application to the construction of structural equation (or causal) models representing substantive theories in sociology and related disciplines.

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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>SOC*6420</td>
<td>Global Agro-Food Systems, Communities and Rural Change</td>
<td>0.50</td>
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</tbody>
</table>

This course will reflect recent sociological interests in food studies and global agro-food systems, resources and the environment, community sustainability, rural-urban linkages, the transnationalization of labour regimes, and social movements in the rural context. The course will encourage students to take a comparative and historical approach, focusing on cross-national and inter-regional studies where possible, and to examine how class, gender, race and ethnicity play out in each particular substantive topic comprising the rural field.

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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>SOC*6480</td>
<td>Work, Gender and Change in a Global Context</td>
<td>0.50</td>
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</tbody>
</table>

This course will consider some of the theoretical frameworks available for examining work, workers and work places in the context of globalization, economic restructuring, and shifts in public policy. Using case studies of particular work worlds, the course may include topics such as changing patterns of work and employment in comparative contexts, labour regimes, industrial and organizational change, organizations and protest, education for work, and the regulation of work. The course will focus on the dialectical relationship between the configurations of gender, class, race and ethnicity and the transformation of work.

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<tbody>
<tr>
<td>SOC*6350</td>
<td>Society, Crime and Control</td>
<td>0.50</td>
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</table>

This seminar course surveys classical theoretical perspectives and more recent theoretical developments in the sociology of crime. It will examine the assumptions and logical structure of each perspective and justifications of particular criminal justice/public policy responses. The course will also critically assess recent empirical research relevant to each perspective.

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<tbody>
<tr>
<td>SOC*6270</td>
<td>Diversity and Social Equality</td>
<td>0.50</td>
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</table>

This course will examine a range of approaches used in the study of intergroup relations, with special emphasis on struggles over influence and power. Students will acquire a deeper understanding of the complex intersection, as well as the overlap among forms of identity and group mobilization based on ethnic, linguistic, regional, class, gender, racial and other forms of social division. The course may also cover native issues and policies related to multiculturalism, equity and local or regional autonomy.

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<th>Credits</th>
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<tbody>
<tr>
<td>SOC*6460</td>
<td>Gender and Development</td>
<td>0.50</td>
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</table>

Cross-cultural and historical changes in gender relations and the roles/positions of women brought about by industrialization and the development of the world system. Critical examination of the predominant theories of gender relations, in so far as these inform development research and action in societies with different socio-economic systems. Introduction to the latest theories and research in the area of women and development, as well as with social and political actions undertaken by women themselves. This is one of the two alternative core courses for the collaborative International Development Studies program.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SOC*6550</td>
<td>Selected Topics in Theory and Research</td>
<td>0.50</td>
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</table>

This course will be offered with varying content focusing on theory or research.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SOC*6600</td>
<td>Reading Course</td>
<td>0.50</td>
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</tbody>
</table>

A program of directed reading, complemented with the writing of papers or participation in research. Reading courses are arranged by students through their advisors or advisory committees and must be approved by the chair of the department. This course may be repeated provided different content is involved.
SOC*6660 Major Paper U [1.00]
The major paper is an extensive research paper for those who do not elect to complete a thesis. It may be taken over two semesters.

Department(s): Department of Sociology and Anthropology

SOC*6810 Reading Course U [0.50]
A program of supervised independent reading, complemented with the writing of papers or participation in research. Reading courses are arranged by students in consultation with their advisor or advisory committee and must be approved by the chair of the department.

Restriction(s): Students in the PhD program in Sociology only
Department(s): Department of Sociology and Anthropology

SOC*6820 Directed Readings U [0.50]
A program of directed readings related to the student's field of specialization. The nature and content of the course are agreed upon by the student and instructor in consultation with the student's advisor or advisory committee. The course must be approved by the chair of the department.

Restriction(s): Students in the PhD program in Sociology only
Department(s): Department of Sociology and Anthropology
The MFA is intended to represent a high level of professional competence and personal originality in the informed practice of a studio discipline. In response to the numerous and divergent approaches to the making of visual art, the MFA program provides an individually oriented education that is primarily concerned with the development of independent studio work while encouraging a critical awareness of the cultural context and its ideological complexities.

In addition to their intense involvement with studio practice, students will be required to demonstrate their pertinent knowledge and judgment about the visual arts in presentations, discussions, and written papers within the required course work.

Admission Requirements

Admission to the master of fine arts program in studio art may be granted on the recommendation of the School of Fine Art and Music to:

1. the holder of a BFA degree (honours equivalent), or an honours BA (or its equivalent in fine or visual arts); or
2. in exceptional cases, the holder of a degree in another field who has completed a minimum of six one-semester courses in fine or visual art; or
3. a student who has satisfied the requirements for transfer from the provisional-student category.

Specific Application Materials for Admission. Each applicant must submit the following:

1. Documentation of artwork: 20 digital images or 10 minutes DVD. (For formatting information please see the 'GRADUATE STUDIES' section of the School of Fine Art and Music website.)
2. A single-page statement that outlines the applicant's career objectives and reasons for wishing to study in the University of Guelph's master of fine arts program in studio art.
3. Letters of reference from two studio professors. The applicant must have taken a significant proportion of course work from at least one of the professors. An acceptable alternative to one such letter may be from the department chair on behalf of the department in which the applicant has studied, or from a professional in the field who is familiar with the applicant's abilities.

It is highly recommended that applicants complete at least eight semesters of courses in art history, cultural studies, or related areas prior to applying. Serious interest in, and substantial familiarity with contemporary issues in the visual arts is expected.

Degree Requirements

The MFA degree at the University of Guelph requires the attainment of a professional level of studio practice, and a sophisticated awareness of contemporary discourse in visual arts as well as a detailed knowledge of the selected field of specialization. Each degree candidate will complete a thesis. The MFA thesis consists of an exhibition, a brief supporting paper, and an oral examination.

The following are some of the specific degree requirements for the MFA degree in studio art (the complete MFA degree regulations are to be found in the Degree Regulations section of this calendar):

Minimum Duration

The minimum duration is at least four semesters of full-time study.

Prescribed Studies

A total of 10.0 credits is required for the completion of this program. In addition to individually oriented studio courses, students are required to complete four MFA seminars; two graduate courses in art theory and criticism courses; and two teaching practicum courses.

A maximum of two courses outside the School of Fine Art and Music may be substituted for courses in art history, theory and criticism. The courses selected must be acceptable to the school and the Assistant VP of Graduate Studies for graduate credit. All 12 courses.

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A maximum of two courses outside the School of Fine Art and Music may be substituted for courses in art history, theory and criticism. The courses selected must be acceptable to the school and the Assistant VP of Graduate Studies for graduate credit. All 12 courses.
School Regulations

In addition to meeting the university's MFA regulations regarding thesis format, the candidate must submit appropriate visual documentation of the MFA exhibition as well as the supporting critical paper to the director of the School of Fine Art and Music for inclusion in the school's archives.

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINA*6510</td>
<td>Introduction to Graduate Studio F [1.50]</td>
<td>A qualifying open-studio course to determine the student's interests and level of performance. The student will come in contact with a variety of faculty and may choose to work in a number of areas during this period.</td>
<td></td>
</tr>
<tr>
<td>FINA*6515</td>
<td>MFA Studio I W [1.50]</td>
<td>Sustained work at an independent level under the supervision of the chair of the student's advisory committee.</td>
<td></td>
</tr>
<tr>
<td>FINA*6530</td>
<td>MFA Teaching Practicum I F [0.50]</td>
<td>This course will give the MFA student supervised teaching experience in a studio discipline. In addition, a seminar component will consider theoretical and practical issues relevant to the teaching of studio art. Prerequisite: admission to the MFA program.</td>
<td></td>
</tr>
<tr>
<td>FINA*6531</td>
<td>MFA Teaching Practicum II F [0.50]</td>
<td>Continuation of teaching practicum under the guidance of a faculty member. The practicum seminar will consider theoretical and practical issues relevant to the teaching of studio art such as educational goals, course and curriculum planning, academic evaluation, health and safety policies, and appropriate materials and equipment. Prerequisite: FINA*6530</td>
<td></td>
</tr>
<tr>
<td>FINA*6540</td>
<td>MFA Seminar I F [0.50]</td>
<td>Examination of critical issues in the visual arts relevant to studio practice.</td>
<td></td>
</tr>
<tr>
<td>FINA*6545</td>
<td>MFA Seminar II W [0.50]</td>
<td>Continuation of issues examined in FINA*6540.</td>
<td></td>
</tr>
<tr>
<td>FINA*6551</td>
<td>Seminar in Art Theory and Criticism I W [0.50]</td>
<td>Selected topics in art theory and criticism with particular relevance to studio practice.</td>
<td></td>
</tr>
<tr>
<td>FINA*6610</td>
<td>MFA Studio II F [1.50]</td>
<td>Continuation of FINA*6515.</td>
<td></td>
</tr>
<tr>
<td>FINA*6615</td>
<td>MFA Studio III W [1.50]</td>
<td>Continuation of FINA*6610.</td>
<td></td>
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<tr>
<td>FINA*6640</td>
<td>MFA Seminar III F [0.50]</td>
<td>Continuation of FINA*6545.</td>
<td></td>
</tr>
<tr>
<td>FINA*6641</td>
<td>MFA Seminar IV W [0.50]</td>
<td>Continuation of FINA*6640.</td>
<td></td>
</tr>
<tr>
<td>FINA*6650</td>
<td>Individual Study in Art History U [0.50]</td>
<td>Students will pursue special study under the guidance of a faculty member with appropriate expertise.</td>
<td></td>
</tr>
<tr>
<td>FINA*6651</td>
<td>Individual Study in Contemporary Art U [0.50]</td>
<td>Students will pursue special study under the guidance of a faculty member with appropriate expertise.</td>
<td></td>
</tr>
</tbody>
</table>

Additional and Elective Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINA*6550</td>
<td>Selected Topics in Fine Art U [0.50]</td>
<td>Seminar in a fine art topic in a subject to be specified by the instructor.</td>
<td></td>
</tr>
<tr>
<td>FINA*6551</td>
<td>Seminar in Canadian Art U [0.50]</td>
<td>Selected topics in Canadian Art.</td>
<td></td>
</tr>
<tr>
<td>FINA*6554</td>
<td>Seminar in Nineteenth Century Art U [0.50]</td>
<td>Selected topics of the period.</td>
<td></td>
</tr>
<tr>
<td>FINA*6555</td>
<td>Seminar in Twentieth Century Art U [0.50]</td>
<td>Selected topics of the period.</td>
<td></td>
</tr>
<tr>
<td>FINA*6650</td>
<td>Individual Study in Art History U [0.50]</td>
<td>Students will pursue special study under the guidance of a faculty member with appropriate expertise.</td>
<td></td>
</tr>
<tr>
<td>FINA*6651</td>
<td>Individual Study in Contemporary Art U [0.50]</td>
<td>Students will pursue special study under the guidance of a faculty member with appropriate expertise.</td>
<td></td>
</tr>
</tbody>
</table>
Theatre Studies

Administrative Staff

Director
Alan Filewod (425 MacKinnon, Ext. 53268)
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BFA Alberta - Associate Professor

Mark Fortier
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BA Western, MA Toronto, PhD Western - Assistant Professor

Judith Thompson
BA, Queen’s, Cert. National Theatre School - Professor

Ann Wilson
BA, MA, PhD York - Associate Professor and Associate Dean of Arts and Social Science

MA Program

The Masters of Arts Degree in Theatre Studies is a research-based degree that offers students the opportunity of working with award winning theatre scholars and practitioners. The program applies several dynamic approaches to theatre studies that merge theory and practice. Students take five courses, including two mandatory courses and three elective courses. The required courses include i) THST*6220, which provides a context for the discipline and establishes a consistent discourse for students working in the program; and ii) THST*6150, which introduces students to the theory and practice of theatre-historical analysis, and situates selected aspects of theatre history as a practice and an institution. The degree provides opportunities for students to pursue in depth an area of specialized research.

Elective courses are subject to the special interests of faculty research and practice; these courses will rotate regularly among core faculty. For their electives students may take any graduate course offered in English or Theatre Studies, or may apply to take graduate courses in other programs, however, it is strongly recommended that at least two of the three electives come from the Theatre Studies course offerings in the Winter Semester.

Admission Requirements

In addition to the minimum requirements stated elsewhere in the Graduate Calendar, applicants to the MA Program in Theatre Studies would normally be expected to have a baccalaureate degree in an honours program (or equivalent) in drama or literature from a recognized post-secondary institution with at least a high second-class standing (78% or higher) in the last two years of study. Students with degrees with excellent academic records in other related disciplines will also be considered. In very exceptional circumstances, an applicant may lack the required Honours degree but may be assessed as qualified to undertake the MA program in Theatre Studies on the basis of other experience and practice. For details, contact the Graduate Coordinator.

Applicants are not required to write the Graduate Record Examination. Successful applicants will be admitted in the Fall Semester, the Program’s only entry point. Program offices should be consulted for admission deadlines.

Applicants whose first language is not English are required to submit documentation of English language proficiency at the time of application.

Degree Requirements

All entering MA students will register for THST*6220 and THST*6150. These courses will be taken upon entrance, in the student’s first semester. Students may choose between two options for completion of degree requirements:

1. Course Work Option: the required THST*6220 and THST*6150 plus three Theatre Studies elective courses, plus either THST*6500 (approx. 7,500 words) or THST*6280. It is strongly recommended that at least two of the three electives come from Theatre Studies courses offered in the Winter Semester.

2. Thesis Option: the required THST*6220 and THST*6150, plus one Theatre Studies elective course plus an original research-based thesis (approx. 20,000 to 25,000 words)

Both the thesis and the research paper may, with approval, and contingent upon faculty availability, be completed as exercises in creative writing accompanied by critical and theoretical commentary.

Internship Opportunities

All students may apply to the Graduate Studies Committee to include an internship as part of their program as a course, or as a component of the Major Research Paper or thesis. Internships are not guaranteed, and it is the responsibility of students to make arrangements with their hosts and submit a thorough application including a clear statement of how the internship articulates and supports their program of research.

Library Resources

The University of Guelph’s library resources are remarkable for all aspects of the study of drama and theatre, and particularly for archival and special collections in Canadian Theatre, theatre and performance history, theatre festivals, and individual authors. Applicants who wish to work with these collections are especially welcome.

Note

This program is not offered in 2013/2014 but will be reintroduced in 2015.

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>THST*6150</td>
<td>Theatre Historiography F</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>This variable content course introduces students to the theory and practice of theatre historical analysis. The course is required of all students in the Theatre Studies MA Program. Department(s): School of English and Theatre Studies</td>
<td></td>
</tr>
<tr>
<td>THST*6210</td>
<td>Devising W</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>This variable-content course addresses creative practice in the theatre as a site for the production of knowledge. It examines the theoretical and social issues of contemporary theatre practice. Department(s): School of English and Theatre Studies</td>
<td></td>
</tr>
<tr>
<td>THST*6220</td>
<td>Theatre Theory F</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>This variable-content course introduces students to a range of theoretical approaches and to advanced issues and methods within the fields of drama, theatre, and performance studies. The course is required for all students in the Theatre Studies MA Program. Department(s): School of English and Theatre Studies</td>
<td></td>
</tr>
<tr>
<td>THST*6230</td>
<td>Performance and Difference W</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>This variable-content course introduces students to the most recent theoretical and critical international developments in the field of Theatre Studies and investigates sites of cultural diversity and difference. It provides opportunities for culturally specific studies of dramatic literature and performance. Department(s): School of English and Theatre Studies</td>
<td></td>
</tr>
<tr>
<td>THST*6250</td>
<td>Bodies and Space in Performance W</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>This variable-content course introduces students to the social, ethical, phenomenological and environmental dimensions of the interaction of bodies and space in theatre practice and research. It provides a theorized context in which students may address questions of acting, directing, and design as research processes. Department(s): School of English and Theatre Studies</td>
<td></td>
</tr>
<tr>
<td>THST*6280</td>
<td>Independent Reading Course U</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Independent Reading Course Department(s): School of English and Theatre Studies</td>
<td></td>
</tr>
<tr>
<td>THST*6500</td>
<td>Research Paper U</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Department(s): School of English and Theatre Studies</td>
<td></td>
</tr>
<tr>
<td>THST*6801</td>
<td>Reading Course I U</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>An independent study course, the nature and content of which is agreed upon between the individual and the person offering the course. Subject to the approval of the student’s advisory committee and the graduate program committee. Department(s): School of English and Theatre Studies</td>
<td></td>
</tr>
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</table>

March 9, 2015
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Department(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>THST*6802</td>
<td>Reading Course II</td>
<td>An independent study course, the nature and content of which is agreed upon between the individual and the person offering the course. Subject to the approval of the student's advisory committee and the graduate program committee.</td>
<td>School of English and Theatre Studies</td>
</tr>
</tbody>
</table>
Tourism and Hospitality

The School of Hospitality and Tourism offers programs of study leading to the MSc degree and Graduate Diploma. Graduates will appreciate how their practical knowledge, competencies and analytical skills can be applied through research to the identification of optimal solutions and justifiable recommendations for employers, customers or researchers.

Administrative Staff

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Mike Von Massow
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Bruce McAdams
BComm, MA Guelph - Assistant Professor

MSc Program

The objective of the program is to develop a solid academic background and underpinning in the field of tourism, alongside research, critical reasoning, problem solving and data analysis skills. The intention is to equip students with the necessary skills to identify optimal solutions and justifiable recommendations for employers, customers or other researchers. In so doing, graduates will develop demonstrable competence in the assessment of existing literature, research conceptualization and design, quantitative and qualitative research methods and data analysis techniques. Completion of the program can serve as a foundation for the pursuit of a PhD.

Admission Requirements

All students entering the MSc are required to hold an undergraduate Honour’s degree (minimum 2nd class (B+) or equivalent), from a recognized post-secondary institution (see also Graduate Diploma in Tourism Research (GDip) for alternate admission requirements). Applicants also need to have an academic or industry background in tourism, the social sciences, humanities or professional/business related programs in allied areas such as hospitality, travel, human resources, marketing or consumer studies. For applicants who did not major in these areas in their undergraduate degree or diploma, additional prerequisites may be required.

Admission Requirements

Applicants need to have an academic or industry background in tourism, the social sciences, humanities or professional/business related programs in allied areas such as hospitality, travel, human resources, marketing or consumer studies. For applicants who did not major in these areas in their undergraduate degree or diploma, additional prerequisites may be required.

MSc applicants who believe their experiential learning may compensate for a lack of academic standing and thus not meet the University’s minimum requirements may contact the Graduate Coordinator regarding alternative admissions criteria, which normally would require at least 5 years in a research or equivalent position in industry.

Degree Requirements

All students will complete six courses, three core courses and three restricted electives, plus the thesis proposal and defence. The thesis is expected to be sufficiently meritorious to warrant publication in refereed journals within the student’s field and area of specialization. The three core courses cover topics dealing with the theories, methods, contemporary issues, and research applications in tourism and hospitality. The three restricted electives include: one quantitative methods course; one qualitative methods course; and one topic course. All are to be chosen in consultation with the School’s graduate coordinator. It is intended that the topic will be related to and/or lead to the student’s thesis proposal and subsequent research.

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRMH*6100</td>
<td>Foundations of Tourism and Hospitality</td>
<td>0.50</td>
</tr>
<tr>
<td>TRMH*6200</td>
<td>Contemporary Issues in Tourism</td>
<td>0.50</td>
</tr>
<tr>
<td>TRMH*6310</td>
<td>Research Applications in Tourism and Hospitality</td>
<td>0.50</td>
</tr>
<tr>
<td>TRMH*6400</td>
<td>Thesis Proposal</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Restricted Electives

One of the following quantitative research methods courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS*6050</td>
<td>Research Methods in Marketing and Consumer Studies</td>
<td>0.50</td>
</tr>
<tr>
<td>SOC*6130</td>
<td>Quantitative Research Methods</td>
<td>0.50</td>
</tr>
<tr>
<td>PSYC*6060</td>
<td>Research Design and Statistics</td>
<td>0.50</td>
</tr>
<tr>
<td>GEOG*6090</td>
<td>Geographical Research Methods</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Note: Candidates for the MSc who successfully complete at least 2.5 credits of course work, with a minimum 70% overall average grade, and no less than 65% in any single HTM course in the 2.5 credits, may be eligible for to receive a Type 1 Graduate Diploma in Tourism Studies, if they choose to withdraw from the program.

Graduate Diploma Program in Tourism Research

The objective of the Graduate Diploma is to provide highly focused training in tourism research, including theoretical concept assessment, conceptual model development, methodology selection, research design, data analysis, and presentation of results. The intention is to equip students with the necessary skills to identify optimal solutions and justifiable recommendations for employers, customers or other researchers. The diploma program is designed to meet the needs of students who want to extend their knowledge of tourism research beyond the level they obtained while taking their undergraduate degree. It also offers alternate entry criteria and the opportunity to transfer to the MSc, depending on individual academic performance in courses and an application.

Admission Requirements

Applicants are required to have a general degree or diploma with at least a B average over the last four semesters, and/or an acceptable professional designation AND at least 3 years relevant work and research experience in the tourism industry. Applicants should also have a GMAT score of 550 or better or a GRE score of 1200 (Minimum verbal score of 450) or better.

An applicant who believes their experiential learning may compensate for a lack of academic standing and thus not meet the University’s minimum requirements may contact the Graduate Coordinator regarding alternative admissions criteria, which normally would require at least 5 years in a research or equivalent position in industry.

Applicants need to have an academic or industry background in tourism, the social sciences, humanities or professional/business related programs in allied areas such as hospitality, travel, human resources, marketing or consumer studies. For applicants who did not major in these areas in their undergraduate degree or diploma, additional prerequisites may be required.

Diploma Requirements

All students must complete three core courses and three restricted electives. The three core courses cover topics dealing with the theories, methods, contemporary issues, and research applications in tourism and hospitality. The three restricted electives include: one quantitative methods course; one qualitative methods course; and one topic course. All are to be chosen in consultation with the School’s graduate coordinator.

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRMH*6100</td>
<td>Foundations of Tourism and Hospitality</td>
<td>0.50</td>
</tr>
<tr>
<td>TRMH*6200</td>
<td>Contemporary Issues in Tourism</td>
<td>0.50</td>
</tr>
<tr>
<td>TRMH*6310</td>
<td>Research Applications in Tourism and Hospitality</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Restricted Electives

One of the following quantitative research methods courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS*6050</td>
<td>Research Methods in Marketing and Consumer Studies</td>
<td>0.50</td>
</tr>
<tr>
<td>SOC*6130</td>
<td>Quantitative Research Methods</td>
<td>0.50</td>
</tr>
<tr>
<td>PSYC*6060</td>
<td>Research Design and Statistics</td>
<td>0.50</td>
</tr>
<tr>
<td>GEOG*6090</td>
<td>Geographical Research Methods</td>
<td>0.50</td>
</tr>
</tbody>
</table>
ANTH*6140  [0.50]  Qualitative Research Methods
SOC*6140  [0.50]  Qualitative Research Methods

Or with permission
FRAN*6020  [0.50]  Qualitative Methods

plus

One of the following topic courses:

HMT*6300  [0.50]  Hospitality and Tourism Marketing
HMT*6600  [0.50]  International Tourism and Tourism Marketing
TRMH*6250  [0.50]  Tourism and Sustainable Development
TRMH*6270  [0.50]  Data Mining Practicum

Or other courses as appropriate depending on availability

Transfer to MSc in Tourism and Hospitality

Candidates admitted to the graduate diploma who wish to transfer to the MSc once they have commenced their program of study, must achieve a minimum grade of 75% in the three compulsory courses, and no mark less than 70% across all courses.

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRMH*6100</td>
<td>Foundations of Tourism and Hospitality F</td>
<td>[0.50]</td>
</tr>
<tr>
<td>TRMH*6200</td>
<td>Contemporary Issues in Tourism W</td>
<td>[0.50]</td>
</tr>
<tr>
<td>TRMH*6250</td>
<td>Tourism and Sustainable Development F</td>
<td>[0.50]</td>
</tr>
<tr>
<td>TRMH*6270</td>
<td>Data Mining Practicum W</td>
<td>[0.50]</td>
</tr>
<tr>
<td>TRMH*6290</td>
<td>Research Methods for Tourism and Hospitality F</td>
<td>[0.50]</td>
</tr>
<tr>
<td>TRMH*6310</td>
<td>Research Applications in Tourism and Hospitality W</td>
<td>[0.50]</td>
</tr>
<tr>
<td>TRMH*6400</td>
<td>Thesis Proposal F,W,S</td>
<td>[1.00]</td>
</tr>
</tbody>
</table>

The course is designed to discuss theoretical concepts and theories which provide an understanding of societal, managerial and strategic aspects of tourism and hospitality. An emphasis will also be placed on key theories and concepts of relevant disciplines which may affect tourism and hospitality research.

Department(s): School of Hospitality, Food and Tourism Management

The course will acquaint students with the tourism industry. An overview of the scale and scope, involved stakeholders, and the organization of the industry will be examined and critiqued. An emphasis will be placed on the sustainable development and management of tourism resources and organizations.

Prerequisite(s): TRMH*6100
Department(s): School of Hospitality, Food and Tourism Management

The course introduces students to the issues affecting planning and development of tourism by understanding tourism planning and sustainable development. Core elements include a discussion on tourism impacts (economic, social, cultural and environmental), issues of sustainability, carrying capacity, 'eco-tourism' and other 'alternative forms' of tourism.

Department(s): School of Hospitality, Food and Tourism Management

An applied course introducing popular concepts, methods and applications of data mining utilizing data warehoused at the government agencies and user friendly software and cases. This course covers various topics in data mining association rule, clustering, logistic regression, decision tree and artificial neural network.

Prerequisite(s): TRMH*6100 and PSYC*6060
Co-requisite(s): Must take one of these courses ANTH*6140, MCS*6080 or SOC*6140
Department(s): School of Hospitality, Food and Tourism Management

This course looks at selected analytical techniques in tourism and hospitality research, both empirical and subjective, as well the nature of research questions and theory. The course is intended to help students make informed judgements about selected research tools and designs, and draw logical and substantive conclusions.

Department(s): School of Hospitality, Food and Tourism Management

This course is designed to enhance the student's analytical capability, using both basic and advanced analytical techniques and tools of tourism and hospitality research. They learn to critically evaluate, enabling them to make effective judgments, choose proper statistical techniques, and draw logical and substantive conclusions.

Prerequisite(s): TRMH*6100 and PSYC*6060
Co-requisite(s): Must take one of these courses ANTH*6140, MCS*6080 or SOC*6140

Department(s): School of Hospitality, Food and Tourism Management

The students engage in seminars to share experiences and reflections on the research process. This course is a development of the proposal: framing a research question, developing a methodological plan within a challenging interdisciplinary area such as tourism and hospitality, data planning and more.

Prerequisite(s): TRMH*6100, TRMH*6200, TRMH*6310, PSYC*6060 and one of ANTH*6140, MCS*6080 or SOC*6140
Department(s): School of Hospitality, Food and Tourism Management
Toxicology

The interdepartmental collaborative program is the focal point for graduate teaching and research in toxicology. Students wishing to undertake graduate studies at the MSc or PhD level with emphasis on toxicology will be admitted by a participating department and will register in both the participating department and in the collaborative program. The participating academic units include the Departments of Animal and Poultry Science, Biomedical Sciences, Chemistry, Human Health and Nutritional Sciences, Integrative Biology, Mathematics and Statistics, Molecular and Cellular Biology, Pathobiology, Plant Agriculture (Horticulture division) and the School of Environmental Sciences.

Administrative Staff

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Elena Choleris
Associate Professor, Psychology

Beverley Hale
Associate Professor, Land Resource Science

Christopher J. Hall
Professor, Environmental Biology

M. Anthony Hayes
Professor, Pathobiology

Ronald Johnson
Associate Professor, Biomedical Sciences

P. David Josephy
Professor, Molecular and Cellular Biology

Bettina E. Kalisch
Associate Professor, Biomedical Sciences

Niel A. Karrow
Assistant Professor, Animal and Poultry Science

Gordon M. Kirby
Assistant Professor, Biomedical Sciences

James B. Kirkland
Assistant Professor, Human Health and Nutritional Sciences

Hung Lee
Professor, School of Environmental Sciences

Francesco Leri
Assistant Professor, Psychology

Richard A. Manderville
Associate Professor, Chemistry

Linda A. Parker
Professor, Psychology and Canada Research Chair

Leonard Ritter
Professor, School of Environmental Sciences

Cynthia Scott-Dupree
Associate Professor, School of Environmental Sciences

Paul K. Sibley
Assistant Professor, School of Environmental Sciences

Trevor K. Smith
Professor, Animal and Poultry Science

F. James Squires
Professor, Animal and Poultry Science

Jack T. Trevors
Professor, School of Environmental Sciences

Glen J. Van Der Kraak
Professor, Integrative Biology and Associate Dean, Research, CBS

MSc Program

Admission Requirements

MSc students in the collaborative program in toxicology must meet the MSc admission requirements of the participating department in which they are enrolled.

Degree Requirements

MSc students in the collaborative program in toxicology must complete a minimum of 1.50 graduate credits, which must include the toxicology courses TOX*6000 and TOX*6200 and courses required by the participating department in which they are enrolled. TOX*6000 may be waived for students whose undergraduate degree included significant training in toxicology.

PhD Program

Admission Requirements

PhD students in the collaborative program in toxicology must meet the PhD admission requirements of the participating department in which they are enrolled.

Degree Requirements

PhD students in the collaborative program in toxicology must meet all the academic requirements specified by the participating department in which they are enrolled. They must also complete the courses TOX*6000 and TOX*6200 if they, or equivalent courses, were not taken as part of an MSc program.

Courses

<table>
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Department(s)</th>
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<tbody>
<tr>
<td>TOX*6000</td>
<td>Advanced Principles of Toxicology S</td>
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<tr>
<td>TOX*6200</td>
<td>Advanced Topics in Toxicology W</td>
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<td>TOX*6590</td>
<td>Biochemical Toxicology F</td>
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<td>Department of Chemistry and Biochemistry</td>
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Other courses

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<tbody>
<tr>
<td>BIOM*6440</td>
<td>Biomedical Toxicology</td>
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<tr>
<td>BIOM*6480</td>
<td>Pharmacodynamics and Pharmacokinetics</td>
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<td>BIOM*6721</td>
<td>Special Topics in Pharmacology-Toxicology</td>
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<td>BIOM*6722</td>
<td>Special Topics in Biomedical Pharmacology-Toxicology</td>
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<td>CHEM*7310</td>
<td>Selected Topics in Biochemistry</td>
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<tr>
<td>CHEM*7600</td>
<td>Selected Topics in Organic Chemistry</td>
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</table>
Veterinary Science

The Interdepartmental Group in Veterinary Science consists of members of the graduate faculty in the Ontario Veterinary College who are involved in the doctor of veterinary science (DVSc) program. Admission, progress, and certification for graduation of students enrolled in the DVSc program is administered by the respective departments.

Administrative Staff

Associate Dean, Research and Innovation
Dr. Gord Kirby (2638 OVC, Ext. 54948)
gkirby@ovc.uoguelph.ca

Assistant to Associate Dean, Research and Innovation
Barbara Gaudette (2653 OVC, Ext. 54406)
bgaudett@ovc.uoguelph.ca

DVSc Program

The DVSc is a unique post-professional degree. The DVSc program provides advanced discipline training and research at the doctoral level. It involves course and investigational work on an applied problem, together with advanced discipline training. Students enrolled in the program select one of the sixteen specializations (listed below) and register in the appropriate department. The departments and specializations are:

- Biomedical Sciences
- Clinical pharmacology
- Clinical Studies
- Comparative medicine
  Small animal medicine, small animal surgery, large animal medicine, large animal surgery, emergency medicine and critical care, anesthesiology, ophthalmology, cardiology and neurology
- Pathobiology
  Clinical pathology, anatomic pathology, laboratory-animal science, and comparative pathology
- Population Medicine
  Clinical epidemiology, ruminant health management, swine health management and theriogenology

Admission Requirements

The normal basis for admission to DVSc studies is a DVM or equivalent degree that would allow the applicant to be eligible for licence to practice veterinary medicine in Ontario. The applicant must have achieved high academic standing according to the standards of the University of Guelph.

Students who meet the aforementioned requirements and possess either an acceptable graduate diploma, MSc degree, or PhD degree with 'B+' average standing may be admitted and granted credit for two semesters in the DVSc program.

A student enrolled in the graduate diploma program who achieves a superior record and shows a particular aptitude for applied studies may be authorized by the Board of Graduate Studies, on recommendation of the student’s advisory committee, to transfer to the DVSc program without completing the graduate diploma program. This authorization must be granted no later than the end of the second semester of study. The transfer will be effective the following semester.

Degree Requirements

A minimum of 2.50 course credits is required. A qualifying examination must be taken prior to the end of the sixth semester to assess the student's knowledge of the selected area of specialization and the basic sciences supporting this area. Candidates are required to develop investigational skills in their distinctive area of specialization by carrying out an original study, generally related to animal health. The research must make a significant contribution to the area of specialization, be written up as a thesis, and defended. At least nine semesters of full-time study must be devoted to the DVSc program. Additional information on the DVSc program may be found in the calendar description of each participating department.
Other Departments

School of Languages and Literatures

Director:
Daniel Chouinard, 265 MacKinnon, ext. 54891/53883

The School offers the following undergraduate programs:

Département D'Études Françaises
Head: Dr. Frédérique Arroyas, 278 MacKinnon, ext. 52885/53884

Classics
Head: Dr. Padraig O'Cleirigh, 244 MacKinnon, ext. 53156/53883

European Studies
Coordinator: Dr. Dorothy Odartey-Wellington, 276 MacKinnon, ext. 53179/53883

German Studies
Head: Dr. Paola Mayer, 255 MacKinnon, ext. 58562/53883

Italian Studies
Head: Dr. Mary DeCoste, 284 MacKinnon, ext. 53187/53883

Spanish Studies
Head: Dr. Stephen Henighan, 274 MacKinnon, ext. 54489/53884

The School of Languages and Literatures presently offers a program in French for graduate students. Graduate students who are required by their departments to fulfill a language requirement other than French should consult the Undergraduate Calendar. Classes in German, Greek, Italian, Latin, and Spanish are all available. Any graduate student who considers their language ability sufficient to meet departmental requirements may submit to a test, in the first week of the Fall or Winter semester. Requests should reach the Head of the program involved at least two weeks before the test. In the case of a pass, the School will report to the Assistant VP of Graduate Studies that the student has successfully passed a reading test in the language, and the student's record is annotated to that effect. Grades are not shown.

Examinations are offered in French, German, Greek, Italian, Latin, and Spanish, and others may be considered. Several members of the faculty in the School are members of the graduate faculty of other departments and participate in their graduate programs as follows:

Frédérique Arroyas
BA, MA, PhD Western Ontario - Associate Professor

Daniel Chouinard
BS, MA, PhD (Montreal) for SLAPSIE (MA in English/SETS) - Assistant Professor

Dawn M. Cornelio
BA, MA, PhD Connecticut - Associate Professor

Stephen Henighan
BA (Swarthmore), MA (C'DIA), PhD (Oxford) (MA in English/SETS) - Associate Professor

Margot Irvine
BA, MA, PhD Toronto - Assistant Professor

Padraig O'Cleirigh
BA, MA National Univ. of Ireland, PhD (Cornell) (MA/PhD in History) - Associate Professor

Dana Paramskas
BSL, MSL (Georgetown), PhD (Laval) (MA in English and Drama/SETS) - Professor

Joubert Satyre
BA State University Haiti, MEd, PhD Montreal - Associate Professor

Alain Thomas
BA York, MA, PhD Toronto - Associate Professor

Music

Director of the School of Fine Art and Music
John D. Kissick (Zavitz 203, Ext. 56930)

The Music program does not presently offer programs for graduate students.