

2008-2009 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2008-2009 academic years, including the Summer Semester 2008, the Fall Semester 2008 and the Winter Semester 2009.

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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The logo for the University of Guelph, featuring the text "UNIVERSITY of GUELPH" in a stylized font.The tagline "CHANGING LIVES IMPROVING LIFE" in a bold, sans-serif font, set against a yellow background.

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Disclaimer

The Office of Graduate Program Services 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, 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.

Introduction

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/DBLaws/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 <http://www.uoguelph.ca/registrar/registrar/index.cfm?index>.

Statistics Canada - Notification of Disclosure

For further information, please see Statistics Canada's web site at <http://www.statcan.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 Graduate Program Services.

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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Environmental Biology

The Department of Environmental Biology offers programs of study leading to MSc and PhD degrees. Graduate studies in this department are designed to train people to work independently and imaginatively with a high level of technical skill and scientific acumen in various areas of environmental biology.

Administrative Staff

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Jonathan Newman (1106 Bovey, Ext. 52147)
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Graduate Faculty

Madhur Anand

BSc, PhD Western Ontario - Associate Professor

Greg J. Boland

BSc, MSc Acadia, PhD Guelph - Professor

Michael A. Dixon

BSc, MSc Mount Allison, PhD Edinburgh - Professor

Paul H. Goodwin

BS Villanova, MSc Minnesota, PhD California (Davis) - Professor

Andrew M. Gordon

BScF New Brunswick, PhD Alaska - Professor

Ernesto Guzman

DVM Mexico, MSc, PhD California (Davis) - Professor

J. Christopher Hall

BSc, MSc Guelph, PhD Alberta - Professor

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BSc Toronto, MPM, PhD Simon Fraser - Associate Professor

Thomas Hsiang

BSc, MSc British Columbia, PhD Washington - Professor

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BSc, PhD Guelph - Assistant Professor

Peter G. Kevan

BSc McGill, PhD Alberta - Professor

Christian H. Krupke

BSc Guelph, MPN Simon Fraser, PhD Washington - Assistant Professor

Hung Lee

BSc British Columbia, PhD McGill - Professor

Steven N. Liss

BSc Western, MSc PhD Saskatchewan - Professor

Steven A. Marshall

BSc (Agr) Guelph, MSc Carleton, PhD Guelph - Professor

Jonathan A. Newman

BA, PhD State Univ. of New York - Professor and Chair

Gard W. Otis

BS Duke, PhD Kansas - Professor

Leonard Ritter

BSc, MSc Montreal, PhD Queen's - Professor

Jonathan M. Schmidt

BSc, PhD Toronto - Associate Professor

Cynthia D. Scott-Dupree

BSc Brandon, MPM, PhD Simon Fraser - Professor and Associate Chair

Paul K. Sibley

BSc, MSc Guelph, PhD Waterloo - Associate Professor

Keith R. Solomon

BSc, MSc Rhodes, PhD Illinois - Professor

Jack T. Trevors

BSc, MSc Acadia, PhD Waterloo - Professor

MSc Program

The MSc program has five areas of specialization: entomology, environmental microbiology and biotechnology, environmental toxicology, plant and forest systems and plant pathology.

- Entomology emphasizes systematics, ecology, physiology, behaviour and insect pest management strategies as they relate to toxicology, insecticide resistance management, agro-ecosystem impact on non-target beneficial insects, climate change, and biological, genetic and cultural control tactics.
- Environmental microbiology and biotechnology emphasizes the physiology, ecology and biochemistry of microorganisms with potential for environmental or biotechnological applications. It also includes studies on microbial pathogen detection, biofuels and bioproducts, and environmental applications of microbial forensics, recombinant antibodies, and in planta expression of antibodies.
- Environmental toxicology examines how terrestrial and aquatic organisms interact with toxic compounds in the environment, describes the methods and tools needed to assess environmental impacts, and emphasizes practical management solutions to address environmental problems.
- Plant and forest systems examines the ecological interactions in complex ecosystems ranging from forest and aquatic systems to controlled environments such as greenhouses, growth chambers and life support systems for humans in space. Emphasis is placed on carbon dynamics, nutrient cycling, ecological modeling, environmental sensor technology, atmosphere management and environmental remediation.
- Plant pathology emphasizes the ecology and genetics of plant pathogens, plant disease resistance and epidemiology, the genomics and molecular biology of plant-pathogen interactions, and the development of new plant disease management strategies, such as the use of chemical, cultural and biological control agents.

Admission Requirements

The Department's admission standard for the MSc program is higher than the minimum standard set by the Faculty of Graduate Studies. Admission to the MSc program requires a four-year, honours science degree with a minimum 'B' (75%) average during the final two years (4 semesters) of full time undergraduate study. The University minimum is 'B-' (70%). Students who meet the minimum university requirement (70%) but not the departmental requirement (75%) may be considered for admission with provisional status. Students on provisional status must obtain a B average in at least two graduate courses during their first two semesters of study to continue in the program.

Degree Requirements

A candidate for the MSc degree is expected to have a general knowledge of fundamental aspects of biology and detailed knowledge of the specialty area. The specialty area will normally be one of the areas in which the Department of Environmental Biology is prepared to offer a graduate degree. In addition, students are encouraged to obtain a knowledge of both theoretical and applied aspects of their specialty area.

Before the end of the student's first semester, the advisory committee will meet informally with the student to discuss the student's background, interests and knowledge in the proposed research area. The advisory committee will then establish a program of prescribed courses (at least 1.5 credits of graduate level courses) and, if required, additional courses. All MSc candidates must complete a thesis. A statement of the objectives of the thesis research program should be prepared as early as possible.

A normal MSc program requires six semesters. Programs involving field work may require seven or eight semesters. The number of courses per semester should not normally exceed four. Among these would be courses that are core requirements of the undergraduate specialty and represent the candidate's deficiencies.

Graduate students must take the Seminar, ENVB*6710 course, unless exempted from taking this course by the advisory committee. Exemptions are subject to approval by the Graduate Education Committee.

PhD Program

The PhD program emphasizes the same major areas of specialization as the MSc program.

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 'B' (75%) in their postgraduate studies. Students who meet the minimum university requirement (70%) but not the departmental requirement (75%) may be considered for admission with provisional status. Students on provisional status must obtain a B average in at least two graduate courses during their first two semesters of study to continue in the program.

Degree Requirements

A candidate for the PhD degree is expected to have a general knowledge of fundamental aspects of biology and detailed knowledge of the specialty area. The specialty area will normally be one of the areas in which the Department of Environmental Biology is prepared to offer a graduate degree. In addition, students are encouraged to obtain a knowledge of both the theoretical and applied aspects of their specialty area.

Before the end of the student's first semester the advisory committee will meet informally with the student to discuss the student's background, interests and knowledge in the proposed research area. The advisory committee will then establish a program of prescribed courses and, if necessary, additional courses.

All PhD candidates must complete a thesis. A statement of the objectives of the thesis research program should be prepared as early as possible. A PhD program normally requires 9 to 11 semesters. The number of courses per semester should not normally

exceed four. Graduate students must take the Seminar, ENVB*6710 course, unless exempted from taking this course by the advisory committee. Exemptions are subject to approval by the Graduate Education Committee.

Interdepartmental Programs

Toxicology MSc/PhD Collaborative Program

The Department of Environmental Biology participates in the MSc/PhD program in toxicology. Professors Hall, Kevan, Lee, Ritter, Scott-Dupree, Sibley, Solomon, and Trevors are members of the Toxicology Interdepartmental Group. The faculty members' research and teaching expertise includes aspects of toxicology; they may serve as advisers for MSc and PhD students.

Please consult the Toxicology listing <http://www.uoguelph.ca/toxicology/> for a detailed description of the MSc/PhD collaborative program.

Collaborative International Development Studies MSc Collaborative Program

The Department of Environmental Biology participates in the MSc program in Collaborative International Development Studies. Professors Gordon, Kevan, and Otis are faculty members who are currently participating in the program.

Please consult the Collaborative International Development Studies listing <http://www.uoguelph.ca/cids/graduate/index.shtml> for a detailed description of this program.

Courses

ENVB*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 defenses 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 ENVB*6040 or PBIO*4000

ENVB*6060 Topics in Phytopathology W [0.50]

Current topics and emerging issues in phytopathology and plant health will be examined through presentations, discussions and group projects. Emphasis will be placed on ecology, population biology and genetics of plant pathogens and other microorganisms, and their application to current practices in plant health.

ENVB*6080 Plant Disease Epidemiology and Management W [0.50]

Epidemiology and management of plant diseases caused by fungi, viruses, and bacteria. (Offered in alternate years.)

ENVB*6180 Physiology and Biochemistry of Herbicides W [0.50]

Chemical and biological fate of herbicides in soil. Physical, morphological and physiological factors influencing herbicidal selectivity and modes of action. (Offered in alternate years.)

ENVB*6190 Environmental Microbial Technology W [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. (Offered in alternate odd years.)

Restriction(s): Undergraduate degree in microbiology or related discipline.

ENVB*6340 Colloquium in Insect Systematics W [0.25]

Weekly discussions and seminars dealing with current topics in systematic entomology.

ENVB*6370 Physiology of Insects F [0.50]

Students will be assigned a library exercise and will select a laboratory project in their own area of interest. Emphasis will be placed on techniques and familiarity with current literature.

ENVB*6451 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.

ENVB*6452 Topics in Environmental Biology F,W,S [0.50]

See ENVB*6451

ENVB*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.)

ENVB*6530 Ecotoxicological Risk Characterization W [0.50]

A biologically based advanced course that will give students working knowledge of current procedures and techniques for ecotoxicological risk characterization. The course material will cover the topics: problem definition, concentration-response characterization, exposure characterization, and risk assessment and risk-management decision making. Department of Environmental Biology.

Restriction(s): Credit may be obtained for only one of TOX*6530, ENVB*6530, ENVB*4550 and TOX*4550

ENVB*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.

Restriction(s): Credit may be obtained for only one of ENVB*6540 and ENVB*4100

ENVB*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 ENVB*4240.

ENVB*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.

ENVB*6620 Management and Biology of the Honey Bee F [0.50]

An in-depth treatment of advanced topics related to honey bees, including management techniques such as wintering bees, queen rearing and instrumental insemination, comb-honey production, genetics and breeding of honey bees, caste determination, and social behaviour of honey bees. Discussion sections will focus on recent research.

ENVB*6710 Seminar F-W [0.25]

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 their proposed studies. Students are expected to take this course in the second or third semester of their study.