

2007-2008 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2007-2008 academic years, including the Summer Semester 2007, the Fall Semester 2007 and the Winter Semester 2008.

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

Contact Information:



University of Guelph
Guelph, Ontario, Canada
N1G 2W1
519-824-4120

Revision Information:	
May 25, 2007	Initial Publication
August 21, 2007	Revision I
October 23, 2007	Revision II
February 7, 2008	Revision III



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>.

Table of Contents

Microbiology	112
MSc Program	112
PhD Program	112
Interdepartmental Programs	113
Courses	113

Microbiology

The Microbiology Graduate Program offers MSc and PhD degrees. The four major areas of emphasis and the faculty associated with those areas are:

- **Microbial Physiology and Structure** -- Beveridge, Clarke, Forsberg, Krell, Lam, Meng, Mutharia, Seah, van der Merwe, Whitfield, Wood
- **Pathogenesis and Immunity** -- Kaushik, Lam, Lo, Mutharia, Seah, Stevenson, Whitfield, Wood
- **Virology** -- Krell, Meng
- **Biotechnology** -- Beveridge, Clarke, Forsberg, Kaushik, Krell, Lam, Lo, Mutharia, Seah, Stevenson, Whitfield, van der Merwe

As a result of the reorganization in the College of Biological Science, there is a further field of **Biochemistry**. This is described in detail under the Molecular Biology and Genetics Graduate Program. The faculty associated with this research area are: Brauer, Coppolino, Dawson, Graether, Josephy, Keates, Kimber, Mangroo, Merrill, Sharom

Interdepartmental programs are available for students wishing to specialize in toxicology, biophysics and aquaculture.

Administrative Staff

Chair

Chris Whitfield (Science Complex, Ext. 53361)
cwhitfie@uoguelph.ca

Graduate Co-ordinator

Reggie Lo (3250 Science Complex, Ext. 53363)
rlo@uoguelph.ca

Graduate Secretary

Carol V. Schlaht (1250 Science Complex, Ext. 53815)
cschlaht@uoguelph.ca

Graduate Faculty

Terry J. Beveridge

BSc, MSc Toronto, PhD Western Ontario - Professor

Manfred Brauer

BSc Calgary, MSc, PhD Wisconsin - Associate Professor

Anthony J. Clarke

MSc, PhD Waterloo - Professor

Marc Coppolino

BSc Waterloo, MSc, PhD Toronto - Assistant Professor

John Dawson

BSc Wilfrid Laurier, PhD Alberta - Assistant Professor

Cecil W. Forsberg

BSA, MSc Saskatchewan, PhD McGill - Professor

Steffen Graether

BSc, MSc, PhD Queen's - Assistant Professor

David Josephy

BSc Toronto, PhD British Columbia - Professor

Azad Kaushik

BVSc, MVSc Haryana, DSc Inst. Pasteur - Associate Professor

Robert Keates

BA Cambridge, PhD Glasgow - Associate Professor

Matthew Kimber

BSc, PhD Toronto - Assistant Professor

Peter J. Krell

BSc, MSc Carleton, PhD Dalhousie - Professor

Joseph S.L. Lam

BSc, PhD Calgary - Professor

Reggie Y.C. Lo

BSc, PhD Alberta - Professor

Devakanand Mangroo

BSc, PhD McMaster - Associate Professor

Baozhong Meng

BSc, MSc Hebei Agricultural Univ. (China), PhD Cornell - Assistant Professor

Rod Merrill

BSc Lethbridge, PhD Ottawa - Professor

Lucy M. Mutharia

BSc, MSc Nairobi, PhD British Columbia - Associate Professor

Stephen Y.K. Seah

BSc, MSc National University of Singapore, PhD Sheffield - Assistant Professor

Frances Sharom

BSc Guelph, PhD Western Ontario - Professor

Roselynn M.W. Stevenson

BSc, PhD Manitoba - Associate Professor

George van der Merwe

BSc, MSc, PhD Stellenbosch (South Africa) - Assistant Professor

Christopher Whitfield

BSc Newcastle, PhD Edinburgh - Professor and Chair

Janet M. Wood

BSc Victoria, PhD Edinburgh - Professor

MSc Program

Admission Requirements

The minimum requirement for admission to the MSc program is a baccalaureate in an honours science program, or the equivalent, from a recognized university or college. The applicant should have achieved an average standing of at least second class honours ('B' or 73%) during the last two undergraduate years. Admission to the program is not restricted to those holding an honours baccalaureate degree in microbiology.

Admission Process

There are two parts to the application process (see steps below). Before submitting an application, you are strongly encouraged to view the "[Before you Apply](#)" section on the CBS Graduate Opportunities webpage for further details. This is a two-step self-administered application process. First you must complete an online "submission summary" and second, assemble all required documentation (listed below) and forward the complete package to the ADR Office, Laurie Winn, CBS Graduate Admissions Secretary, Room 256, Axelrod Building (moving to Science Complex effective August 1, 2007), University of Guelph, Guelph, Ontario Canada N1G 2W1.

For further information, contact the CBS Graduate Admissions Secretary at lwinn@uoguelph.ca.

Degree Requirements

Students must complete at least the minimum university course credit requirements including the departmental seminar requirements. The MSc thesis is intended to give the student training and experience in:

- a comprehensive library search on a specific topic related to the research;
- research techniques;
- the design of experiments in collaboration with the research advisor;
- the interpretation of data, and
- writing for scientific publication.

The thesis research should involve experimentation not previously reported in the literature and should lead to a complete study. Whenever possible, the results should yield publishable data, but this is not an absolute requirement for the completion of an MSc program.

In the case of a student considering transfer from the MSc program to the PhD program, it is important that the research project be one which can be expanded in scope and challenge if the transfer is approved.

PhD Program

Admission Requirements

Admission to the PhD program normally requires at least honours ('B' or a 73% average), in a recognized baccalaureate program as well as a recognized MSc degree. Transfer from the MSc program to the PhD program will be considered for a student who has achieved excellent standing at the honours baccalaureate level, and who has demonstrated a superior performance and particular aptitude for research during the first three semesters of the MSc program. In exceptional cases, students with an 'A-', (or a minimum average of 80%) standing in a baccalaureate program and a demonstrated aptitude for research may be granted direct entry into the PhD program.

Admission Process

There are two parts to the application process (see steps below). Before submitting an application, you are strongly encouraged to view the "[Before you Apply](#)" section on the CBS Graduate Opportunities webpage for further details. This is a two-step self-administered application process. First you must complete an online "submission summary" and second, assemble all required documentation (listed below) and forward the complete package to the ADR Office, Laurie Winn, CBS Graduate Admissions Secretary, Room 256, Axelrod Building (moving to Science Complex effective August 1, 2007), University of Guelph, Guelph, Ontario Canada N1G 2W1.

For further information, contact the CBS Graduate Admissions Secretary at lwinn@uoguelph.ca.

Degree Requirements

Course requirements are specified by the student's advisory committee and include the seminars. The qualifying examination should be completed no later than the end of the third semester for students entering after completing the MSc degree and the fifth semester for students entering directly after completing a baccalaureate degree. For students transferring from the MSc to the PhD degree, the examination will be completed before the end of the semester following that in which the transfer was approved.

The PhD research project is intended to give the student further, more intensive experience than that of an MSc program. In addition, the student must develop the ability to generate

innovative research ideas and implement them through carefully designed experiments. The student is expected to develop and demonstrate a high degree of scholarship and expertise in the chosen specialty, and to exert critical judgement. The research must also yield results which, in the opinion of the examination committee, warrant publication in reputable scientific journals appropriate to the area of specialization.

Interdepartmental Programs

MSc (Aquaculture) Interdepartmental Program

The Department participates in the master of science in aquaculture program. Professor Stevenson is a member of the Aquaculture Interdepartmental Group. Her research and teaching expertise includes aspects of aquaculture; she may serve as advisor for MSc (Aquaculture) students. Please consult the Aquaculture listing for a detailed description of the MSc (Aquaculture) interdepartmental program.

Biophysics MSc/PhD Program

Several members of the Microbiology graduate faculty also participate in the graduate program in Biophysics. Professors Beveridge, Brauer, Coppolino, Dawson, Graether, Keates, Kimber, Mangroo, Merrill, Sharom, Whitfield and Wood are members of the Biophysics Interdepartmental Group. These faculty members' research and teaching expertise includes aspects of biophysics; they may serve as advisors for MSc and PhD students in biophysics. Please consult the Biophysics listing for a detailed description of the graduate programs offered by the Biophysics Interdepartmental Group.

Courses

Physiology, Structure and Genetics

MICR*6040 Advanced Microbial Physiology W [0.50]

A study of molecular structure-function relationships fundamental to the survival and growth of bacteria. Topics for study will be selected from the literature on bacterial cytology, bioenergetics, metabolism, enzymology and adaptation.

MICR*6070 Bacterial Structures and Virulence F [0.50]

A study of the roles of bacterial surface structures (LPS, capsules, flagella, fimbriae, outer membrane proteins) in the virulence of bacteria. (Jointly offered by the Departments of Molecular and Cellular Biology, and Pathobiology)

MICR*6070 Bacterial Structures and Virulence F [0.50]

A study of the roles of bacterial surface structures (LPS, capsules, flagella, fimbriae, outer membrane proteins) in the virulence of bacteria. (Jointly offered by the Departments of Molecular and Cellular Biology, and Pathobiology)

MICR*6500 Microbial Genetics W [0.50]

A study of recent research developments on the mechanisms of regulation of gene expression, DNA metabolism and genome analysis of microorganisms. (Offered in even-numbered years)

Virology

MICR*6130 Molecular Biology of Viruses W [0.50]

Replication strategies of virus genomes including prototypes of different animal, plant and (some) bacterial virus families; mechanism and control of viral gene expression; tumour virology; genetically engineered virus vaccines.

MICR*6130 Molecular Biology of Viruses W [0.50]

Replication strategies of virus genomes including prototypes of different animal, plant and (some) bacterial virus families; mechanism and control of viral gene expression; tumour virology; genetically engineered virus vaccines.

Pathogenesis

MICR*6500 Microbial Genetics W [0.50]

A study of recent research developments on the mechanisms of regulation of gene expression, DNA metabolism and genome analysis of microorganisms. (Offered in even-numbered years)

MICR*6070 Bacterial Structures and Virulence F [0.50]

A study of the roles of bacterial surface structures (LPS, capsules, flagella, fimbriae, outer membrane proteins) in the virulence of bacteria. (Jointly offered by the Departments of Molecular and Cellular Biology, and Pathobiology)

MICR*6070 Bacterial Structures and Virulence F [0.50]

A study of the roles of bacterial surface structures (LPS, capsules, flagella, fimbriae, outer membrane proteins) in the virulence of bacteria. (Jointly offered by the Departments of Molecular and Cellular Biology, and Pathobiology)

MICR*6423 Advances in Immunology and Immunochemical Techniques W [0.50]

Concepts and current knowledge of the diversity of immune response, experimental systems used in studying immunology, antigen-antibody reaction methods, monoclonal antibodies, antibody engineering, hypersensitivity reactions, autoimmunity, adhesion molecules and homing of cells of the immune system.

General

MICR*6950 Selected Topics in Microbiology U [0.50]

This course, offered on an irregular basis, provides opportunities for graduate students to study special topics of mutual interest under the guidance of graduate faculty members with pertinent expertise. Proposed course descriptions are considered by the Department of Molecular and Cellular Biology on an ad hoc basis.

MICR*6540 Introductory Seminar F,W,S [0.25]

A literature review of a selected area of microbiological research concluding with a written research proposal, and a seminar on the information which is presented within the first two semesters of the program. The course is required for MSc students, but is optional for PhD students who have taken an equivalent course.

MICR*6590 Advanced Seminar F,W [0.25]

Public seminars on current microbiological or allied research topics. MSc students give one seminar while Ph.D. students give two seminars. The topics must be on subjects other than the student's area of research.

Additional courses within the Department of Molecular and Cellular Biology can be found under the course descriptions for the Botany graduate program and the Molecular Biology and Genetics graduate program.