

2006-2007 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2006-2007 academic years, including the Summer Semester 2006, the Fall Semester 2006, the Winter Semester 2007 and the Summer 2007.

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](#).

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- The Association of Universities and Colleges of Canada

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Revision Information:	
May 9, 2006	Initial Publication
February 8, 2007	Revision I



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.

Table of Contents

Microbiology	107
MSc Program	107
PhD Program	107
Interdepartmental Programs	107
Courses	108

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, Preston, Seah, van der Merwe, Whitfield, Wood
- **Pathogenesis and Immunity** -- Kaushik, Lam, Lo, Mutharia, Preston, 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.

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John Dawson

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BA Cambridge, PhD Glasgow - Associate Professor

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BSc, MSc Carleton, PhD Dalhousie - Professor

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BSc, PhD Calgary - Professor

Reggie Y.C. Lo

BSc, PhD Alberta - Professor

Devakanand Mangroo

BSc, PhD McMaster - Assistant 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

Andrew Preston

BA, D.Phil. Oxford - Assistant Professor

Stephen Y.K. Seah

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Frances Sharom

BSc Guelph, PhD Western Ontario - Professor

Rosalynn 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.

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.

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, Kimber, Keates, 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*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.

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*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.