

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](#).

The University is a full member of:

- The Association of Universities and Colleges of Canada

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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.

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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

Director and Graduate Co-ordinator

Frances J. Sharom (Molecular and Cellular Biology, Ext. 52247)
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Graduate Faculty

Madhur Anand

BSc, PhD Western Ontario - Associate Professor, Environmental Biology

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Assistant Professor, Mathematics and Statistics

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James H. Davis

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James Dickey

Assistant Professor, Human Health and Nutritional Sciences

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Todd Gillis

Assistant Professor, Integrative Biology

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Christopher G. Gray

Professor Emeritus, Physics

George Harauz

Professor, Molecular and Cellular Biology

Mark Hurtig

Professor, Clinical Studies

Kenneth R. Jeffrey

Professor Emeritus, Physics

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Matthew S. Kimber

Assistant Professor, Molecular and Cellular Biology

Stefan W. Kycia

Assistant Professor, Physics

Vladimir Ladizhansky

Assistant Professor, Physics

Bill Langford

Professor Emeritus, Mathematics and Statistics

Anna T. Lawniczak

Professor, Mathematics and Statistics

Michael I. Lindinger

Associate Professor, Human Health and Nutritional Sciences

Jacek Lipkowski

February 8, 2007

Professor, Chemistry

Dev Mangroo

Assistant Professor, Molecular and Cellular Biology

A. Rodney Merrill

Professor, Molecular and Cellular Biology

Michele Oliver

Assistant Professor, Engineering

K. Peter Pauls

Professor, Plant Agriculture

Peter Purslow

Professor, Food Science

Glen Pyle

Assistant Professor, Biomedical Sciences

Frances J. Sharom

Professor, Molecular and Cellular Biology

E. Donald Stevens

Professor, Integrative Biology

Jeffrey J. Thomason

Professor, Biomedical Sciences

Bruno Tomberli

Research Associate, Physics

Jack T. Trevors

Professor, Environmental Biology

Christopher Whitfield

Professor, Molecular and Cellular Biology

Alan Willms

Assistant Professor, Mathematics and Statistics

Janet M. Wood

Professor, Molecular and Cellular Biology

Rickey Y. Yada

Professor, Food Science

Simon Yang

Associate Professor, Engineering

Graduate Faculty from Brock University

Alan Bown

Professor, Biological Sciences

Douglas Bruce

Professor, Biological Sciences

A. Joffre Mercier

Professor, Biological Sciences

Sandra Peters

Assistant Professor, Physical Education and Kinesiology

Edward Sternin

Associate Professor, Physics

Graduate Faculty from the University of Toronto at Mississauga

Scott Prosser

Assistant Professor, Chemical and Physical Sciences

Graduate Faculty from McMaster University

Richard Epanand

Professor, Biomedical Sciences

Graduate Faculty from University of Waterloo

Elizabeth Meiering

Professor, Chemistry

Graduate Faculty from Wilfrid Laurier University

Ross E. Cressman

Professor, Mathematics

Masoud Jelokhani-Niaraki

Assistant Professor, Chemistry

Additional Members of the Program

John Katsaras

National Research Council of Canada, Chalk River ON

Martine Monette

Bruker Canada, Milton ON

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.

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*6000. 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*6000. 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.

Courses

BIOP*6000 Concepts in Biophysics W [0.50]

This course will emphasize basic concepts in molecular, cellular and structural biophysics arising from key journal publications and their impact on present day research trends.

BIOP*6010 Biophysics Seminar U [0.00]

Public research seminar presented by all students in the Biophysics program. MSc students are required to present a seminar within 4 semesters after entering the program. PhD students are required to present a seminar within 4 semesters after entering the program, and at yearly intervals thereafter. Students are required to attend all seminars presented during the semester in which they are registered for the course.

BIOP*6950 Advanced Topics in Biophysics U [0.50]

This course provides opportunities for graduate students to study special topics in contemporary biophysical research under the guidance of graduate faculty members with pertinent expertise. Proposed course descriptions are considered by the Director of the Biophysics program on an ad hoc basis, and the course will be offered according to demand.

PHYS*7510 Cellular Biophysics U [0.50]

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.

PHYS*7520 Molecular Biophysics U [0.50]

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.

PHYS*7540 Selected Topics in Experimental Biophysics U [0.50]

Offered on demand

PHYS*7570 Special Topics in Biophysics U [0.50]

Offered on demand

Courses in Related Subjects:

Biomedical Sciences

BIOM*6110	0.5	Advanced Microscopy for Biomedical Sciences
BIOM*6160	0.5	Cellular Biology
BIOM*6190	0.5	Tissue Culture Techniques in Biomedical Sciences

Chemistry

CHEM*7360	0.5	Regulation in Biological Systems
CHEM*7370	0.5	Enzymes
CHEM*7380	0.5	Cell Membranes and Cell Surfaces
CHEM*7310-7330	0.5	Selected Topics in Biochemistry

Computing and Information Science

CIS*6040	0.5	Advanced Image Analysis
CIS*6050	0.5	Advanced Neural Networks: Dynamical Recurrent Networks
CIS*6060	0.5	Bioinformatics
CIS*6080	0.5	Genetic Algorithms
CIS*6420	0.5	Artificial Neural Networks

Engineering

ENGG*6070	0.5	Medical Imaging
ENGG*6130	0.5	Physical Properties of Biomaterials
ENGG*6150	0.5	Bioinstrumentation
ENGG*6560	0.5	Advanced Digital Signal Processing

Human Biology and Nutritional Sciences

HBNS*6020	0.5	Biodynamics
HBNS*6030	0.5	Applied Ergonomics
HBNS*6440	0.5	Nutrition, Gene Expression and Cell Signalling

Mathematics and Statistics

MATH*6051	0.5	Mathematical Modelling
MATH*6071	0.5	Biomathematics
STAT*6761	0.5	Survival Analysis
STAT*6850	0.5	Advanced Biometry
STAT*6950	0.5	Statistical Methods for the Life Sciences
STAT*6960	0.5	Design of Experiments and Data Analysis for the Life SciencesM

Microbiology

MICR*6040	0.5	Advanced Microbial Physiology
MICR*6070	0.5	Bacterial Structures and Virulence
MICR*6423	0.5	Advances in Immunology and Immunochemical Techniques
MICR*6500	0.5	Microbial Genetics

Molecular and Cellular Biology

MBG*6060	0.5	Topics in Cell Biology and Genetics
MBG*6100	0.5	High Resolution Microscopy for Molecular Biologists
MCB*6110	0.5	Protein Structural Biology and Bioinformatics
MCB*6210	0.5	Structure and Function of Biological Membranes

Physics

PHYS*7010	0.5	Quantum Mechanics I
PHYS*7020	0.5	Quantum Mechanics II
PHYS*7040	0.5	Statistical Physics I
PHYS*7050	0.5	Statistical Physics II