

2004-2006 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2004-2006 academic years, including the Summer Semester 2005, the Fall Semester 2005 and the Winter Semester 2006.

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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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

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Assistant Professor, Mathematics and Statistics

Terry Beveridge

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David Chiu

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Marc Coppolino

Assistant Professor, Molecular and Cellular Biology

James H. Davis

Professor, Physics

John Dawson

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Assistant Professor, Human Health and Nutritional Sciences

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Assistant Professor, Integrative Biology

Todd Gillis

Assistant Professor, Integrative Biology

Saul Goldman

Professor Emeritus, Chemistry

Christopher G. Gray

Professor Emeritus, Physics

George Harauz

Professor, Molecular and Cellular Biology

Mark Hurtig

Professor, Clinical Studies

Kenneth R. Jeffrey

Professor Emeritus, Physics

Robert A.B. Keates

Associate Professor, Molecular and Cellular Biology

Matthew S. Kimber

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Stefan W. Kycia

Assistant Professor, Physics

Vladimir Ladizhansky

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Bill Langford

Professor Emeritus, Mathematics and Statistics

Anna T. Lawniczak

Professor, Mathematics and Statistics

Michael I. Lindinger

Associate Professor, Human Health and Nutritional Sciences

Dev Mangroo

Assistant Professor, Molecular and Cellular Biology

A. Rodney Merrill

Professor, Molecular and Cellular Biology

Michele Oliver

Assistant Professor, Engineering

K. Peter Pauls

2004-2006 University of Guelph Graduate Calendar

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

William McIlroy

Associate Professor, Physical Therapy

Graduate Faculty from McMaster University

Richard Epanand

Professor, Biomedical Sciences

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. 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. A total of 1.0 graduate course credits are required, one of which is usually BIOP*6000. 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 seminar presented by all PhD students in the Biophysics program. This seminar is to be presented within four semesters from entry to the program. The course is optional for MSc students.

Prerequisite(s): Prerequisite BIOP*6000.

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*7300	0.5	Proteins and Nucleic Acids
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
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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	0.05	Biodynamics
HBNS*6030	0.05	Applied Ergonomics
HBNS*6130	0.05	Advanced Skeletal and Muscle Metabolism in Humans
HBNS*6700	0.05	Nutrition Exercise and Metabolism

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 Sciences

Microbiology

MICR*6040	0.5	Advanced Microbial Physiology
MICR*6070	0.5	Bacterial Structures and Virulence
MICR*6423	0.5	Monoclonal Antibodies and Antibody Engineering
MICR*6500	0.5	Microbial Genetics

Molecular and Cellular Biology

MBG*6020	0.5	Topics in Molecular Biology and Biotechnology
MBG*6050	0.5	Recombinant DNA Technology
MBG*6060	0.5	Topics in Cell Biology and Genetics
MBG*6100	0.5	High Resolution Microscopy for Molecular Biologists

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