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 Program Coordinator Hermann Eberl (MacN 508, Ext. 62622) heberl@uoguelph.ca Graduate Program Assistant Janice Ilic (207 MacNaughton, Ext. 58176) big@uoguelph.ca

Graduate Faculty

This list may include Regular Graduate Faculty, Associated Graduate Faculty and/or Graduate Faculty from other universities.

Josef D. Ackerman B.Sc. Toronto, MA SUNY, PhD Cornell - Professor Graduate Faculty

Madhur Anand B.Sc., PhD Western - Professor Graduate Faculty

France-Isabelle Auzanneau Maitrise, DEA, PhD Paris XI-Orsay - Professor Graduate Faculty

Leah Bent B.Sc., M.Sc. Guelph, PhD British Columbia - Professor Graduate Faculty

Leonid S. Brown

M.Sc., PhD Moscow State - Professor and Associate Dean (Graduate Studies and Research), College of Engineering and Physical Sciences Graduate Faculty

Stephen H. M. Brown BHK, MHK Windsor, PhD Waterloo - Associate Professor Graduate Faculty

John Dawson B.Sc. Wilfrid Laurier, PhD Alberta - Professor and Associate Dean (Academic), College of Biological Sciences Graduate Faculty

John R. Dutcher B.Sc. Dalhousie, M.Sc. British Columbia, PhD Simon Fraser - Professor Graduate Faculty

Animesh Dutta B.Sc. Bangladesh, M.Eng. Thailand, PhD Dalhousie, P.Eng - Professor Graduate Faculty

Hermann J. Eberl Dipl. Math (M.Sc.), PhD Munich Univ. of Tech. - Professor Graduate Faculty

Khashayar Ghandi

B.Sc. Shiraz (Iran), M.Sc. Tehran (Iran), PhD Simon Fraser University -Professor Graduate Faculty

Todd E. Gillis B.Sc., M.Sc. Guelph, PhD Simon Fraser - Professor Graduate Faculty

Steffen P. Graether

B.Sc., M.Sc., PhD Queen's - Professor Graduate Faculty

Amy L. Greer

B.Sc., Mount Allison, M.Sc., Trent, PhD Arizona State - Associate Professor, Trent University Associated Graduate Faculty

Marc Habash

B.Sc. Toronto, M.Sc. Western, PhD Guelph - Associate Professor Graduate Faculty

Lorraine C. Jadeski B.Sc. Guelph, M.Sc. Waterloo, PhD Western - Associate Professor Graduate Faculty

Cezar Khursigara B.Sc. Ryerson, PhD McGill - Professor Graduate Faculty

Matthew S. Kimber B.Sc., PhD Toronto - Professor Graduate Faculty

Stefan W. Kycia B.Sc. McGill; MS Pennsylvania; PhD Iowa - Associate Professor and Interim Chair Graduate Faculty

Vladimir Ladizhansky

BS Moscow Institute of Physics and Technology; MS, PhD Weizmann Institute of Science (Rehovot, Israel) - Professor Graduate Faculty

Huiyan Li

BEng Harbin, MASc Victoria, PhD McGill - Assistant Professor Graduate Faculty

Jacek Lipkowski

M.Sc., PhD, D.Sc. Warsaw - Professor Emeritus Associated Graduate Faculty

Alejandro G. Marangoni

B.Sc. McGill, PhD Guelph - Professor Graduate Faculty

Genevieve S. Newton

B.Sc. Laurentian, DC Chicago, M.Sc., PhD Guelph - Scientific Director, FRINGE, Online Education for Medical Professionals Associated Graduate Faculty

Derek O'Flaherty

B.Sc., PhD Concordia - Assistant Professor

Graduate Faculty

Joanne M. O'Meara

B.Sc., PhD McMaster - Professor Graduate Faculty

Michele L. Oliver

BPE McMaster, MPE, M.Sc., PhD New Brunswick, P.Eng. - Professor Graduate Faculty

K. Peter Pauls

B.Sc., M.Sc., PhD Waterloo - Retired Faculty, Plant Agriculture, University of Guelph Associated Graduate Faculty

Erica Pensini

B.Sc., M.A.Sc. Milano, PhD Toronto, P.Eng. - Associate Professor Graduate Faculty

W. Glen Pyle

B.Sc. Guelph, PhD Tennessee - Professor Graduate Faculty

Scott Ryan

B.Sc. Memorial, PhD Ottawa - Associate Professor, University of Calgary Associated Graduate Faculty

William R. Smith

BASc, MASc Toronto, M.Sc. PhD Waterloo - University Professor Emeritus

Associated Graduate Faculty

John Z. Srbely

B.Sc. Laurentian, DC Canadian Memorial Chiropractic College, PhD Guelph - Associate Professor Graduate Faculty

Lori A. Vallis

B.Sc., MA Ottawa, PhD Waterloo - Professor Graduate Faculty

Robert Wickham

B.Sc. Toronto, PhD Chicago - Associate Professor Graduate Faculty

Allan Willms

B.Math., M.Math. Waterloo, PhD Cornell - Professor Graduate Faculty

Simon X. Yang

B.Sc. Peking, M.Sc. Sinica, M.Sc. Houston, PhD Alberta, P.Eng. -Professor Graduate Faculty

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.

Program 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 Concepts in Biophysics. In addition, all students are required to complete the seminar course BIOP*6010 Biophysics Seminar. 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.

Program 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 Concepts in Biophysics. 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 Concepts in Biophysics. In addition, all students are required to complete the non-credit seminar course, BIOP*6010 Biophysics Seminar. 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 their 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 Winter Only [0.50]

This course emphasizes basic concepts from various research topics at the interface of the life and physical sciences, arising from key journal publications and their impact on present day research trends. Restriction(s): Instructor consent required.

Department(s): Dean's Office, College of Engineering and Physical Sciences

Location(s): Guelph

BIOP*6010 Biophysics Seminar Unspecified [0.00]

This public research seminar is based on presentations by all PhD students in the Biophysics program in yearly intervals after passing the qualifying exam and by all MSc students in their second year of studies. Students are required to attend all seminars presented during the semester in which they are registered for the course.

Department(s): Dean's Office, College of Engineering and Physical Sciences

Location(s): Guelph

BIOP*6950 Advanced Topics in Biophysics Unspecified [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. Department(s): Dean's Office, College of Engineering and Physical Sciences

Location(s): Guelph

With approval of the Advisory Committee a student can take courses offered by other departments in Life, Physical and Engineering Sciences. Example courses could be, but not limited to:

Courses in Related Subjects Diamodical Caiana

Title	Credits
Research Methods in Biomedical Sciences	0.50
Cellular Biology	0.50
Title	Credits
Regulation in Biological Systems	0.50
Enzymes	0.50
Cell Membranes and Cell Surfaces	0.50
Selected Topics in Biochemistry	0.50
ation Science	
Title	Credits
Neural Networks	0.50
Bioinformatics	0.50
Genetic Algorithms	0.50
Soft Computing	0.50
Title	Credits
Medical Imaging	0.50
Physical Properties of Biomaterials	0.50
Bio-Instrumentation	0.50
Advanced Digital Signal Processing	0.50
	Title Research Methods in Biomedical Sciences Cellular Biology Title Regulation in Biological Systems Enzymes Cell Membranes and Cell Surfaces Selected Topics in Biochemistry ation Science Title Neural Networks Bioinformatics Genetic Algorithms Soft Computing Title Medical Imaging Physical Properties of Biomaterials Bio-Instrumentation Advanced Digital Signal Processing

Human Health and	Nutritional	Sciences	
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Human Health and Nutritional Sciences						
Code	Title	Credits				
HHNS*6440	Nutrition, Gene Expression and Cell Signalling	0.50				
Mathematics and Sta	atistics					
Code	Title	Credits				
MATH*6051	Mathematical Modelling	0.50				
MATH*6071	Biomathematics	0.50				
STAT*6761	Survival Analysis	0.50				
STAT*6950	Statistical Methods for the Life Sciences	0.50				
Molecular and Cellul	ar Biology					
Code	Title	Credits				
MCB*6310	Advanced Topics in Molecular and Cellular Biology	0.50				
MCB*6370	Protein Structural Biology and Bioinformatics	0.50				
Physics						
Code	Title	Credits				
PHYS*7010	Quantum Mechanics I	0.50				
PHYS*7020	Quantum Mechanics II	0.50				
PHYS*7040	Statistical Physics I	0.50				
PHYS*7050	Statistical Physics II	0.50				