2012-2013 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2012-2013 academic years, including the Fall Semester 2012, the Winter Semester 2013 and the Summer Semester 2013.

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 Studies 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, Public Health Emergencies, 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.gc.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 the Office of Graduate Studies.

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

Bioinformatics

The organization and administration of the graduate program in bioinformatics are the responsibility of the Bioinformatics Graduate Faculty. Bioinformatics is the development and application of computational, mathematical and statistical techniques in order to solve problems in biology.

Administrative Staff

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Steven Rothstein
Professor, Molecular and Cellular Biology

Larry R. Schaeffer
Professor, Animal and Poultry Science

M. Alexander Smith
Assistant Professor, Integrative Biology

George van der Merwe
Associate Professor, Molecular and Cellular Biology

Master of Bioinformatics Program

Admission Requirements

Students may be admitted to the Master of Bioinformatics program from a range of undergraduate programs, including biology, statistics, mathematics, engineering or computer science. To be considered for admission, applicants should meet the minimum requirements of a four-year degree from a recognized post-secondary institution with a minimum 75% average over the last two years of full-time equivalent study and students must have taken at least one course in three or more of the following areas:

- Statistics
- Computer Programming
- Biology
- Mathematics

Applicants should briefly indicate their research interests and, if possible their preferred advisors.

There is no application deadline, but space in the program is limited. Most spaces are filled in March for entry the following September. Prospective students should check the program website for admission procedures and apply as early as possible.

English Proficiency

Students whose first language is not English must provide certification of English proficiency as explained in the Graduate Calendar, Section II. General Regulations, Subsection: Application for Admission.

Degree Requirements

A total of 4.0 credits are required, which must include:

BINF*6110	[0.50]	Genomic Methods for Bioinformatics
BINF*6210	[0.50]	Software Tools for Biological Data Analysis and Organization
BINF*6999	[1.00]	Bioinformatics Master's Project

The advisory committee may require additional courses. An average of 70% or better must be obtained in the prescribed courses. Further information may be obtained from the Director.

Advisory Committee

Students taking the Master of Bioinformatics will have two advisors: a member of graduate faculty from CPES and a member of graduate faculty from a College other than CPES.

Duration of the Program

Students normally take 3 courses per term for two terms (3.0 credits) and complete the Bioinformatics Master's Project (1.0 credit) in a third term. The program typically takes 12 months of full-time study.

Master of Science Program

Admission Requirements

Students may be admitted to the MSc in Bioinformatics program from a range of undergraduate programs, including biology, statistics, mathematics, engineering or computer science. To be considered for admission, applicants should meet the minimum requirements of a four-year degree from a recognized post-secondary institution with a minimum 75% average over the last two years of full-time equivalent study and students must have taken at least one course in three or more of the following areas:

- Statistics
- Computer Programming
- Biology
- Mathematics

Applicants should briefly indicate their research interests and, if possible, their preferred advisors.

There is no application deadline, but space in the program is limited. Most spaces are filled in March for entry the following September. Prospective students should check the program website for admission procedures and apply as early as possible.

English Proficiency

Students whose first language is not English must provide certification of English proficiency as explained in the Graduate Calendar, Section II. General Regulations, Subsection: Application for Admission.

Degree Requirements

A total of 2.0 credits are required, which must include:

BINF*6110	[0.50]	Genomic Methods for Bioinformatics
BINF*6210	[0.50]	Software Tools for Biological Data Analysis and Organization

The advisory committee may require additional courses. An average of 70% or better must be obtained in the prescribed courses. 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 Bioinformatics. Further information may be obtained from the Director.

Advisory Committee

Students taking the MSc in Bioinformatics will have an advisory committee of at least two graduate faculty members. The advisory committee will either:

a. Have two advisors: a member of graduate faculty from CPES and a member of graduate faculty from a College other than CPES; or

b. Have one advisor that is a member of graduate faculty from CPES and an advisory committee member

Duration of the Program

Students normally take 2 courses per term for two terms (2.0 credits) while developing their thesis topic. Then they complete the Bioinformatics Master's Thesis subsequent terms. The program typically takes 12-20 months of full-time study.

Courses

Biological Sciences

ANSC*6370	[0.50]	Quantitative Genetics and Animal Models
IBIO*6060	[0.50]	Special Topics in Evolution
PLNT*6160	[0.50]	Advanced Plant Breeding II
PLNT*6500	[0.50]	Applied Bioinformatics

Computer Science

CIS*6060	[0.50]	Bioinformatics
CIS*6080	[0.50]	Genetic Algorithms
CIS*6120	[0.50]	Uncertainty Reasoning in Knowledge Representation
CIS*6420	[0.50]	Soft Computing

Mathematics and Statistics

MATH*6071	[0.50]	Biomathematics
STAT*6801	[0.50]	Statistical Learning
STAT*6950	[0.50]	Statistical Methods for the Life Sciences
STAT*6960	[0.50]	Design of Experiments and Data Analysis for the Life Sciences

Note

Some courses may not be offered in every semester. Students planning to take a course from the above list should consult with the department offering the course to check for availability and scheduling.

Bioinformatics

BINF*6110 Genomic Methods for Bioinformatics F [0.50]

This course provides an introduction to current and emerging methods used to generate genomic data analyzed in bioinformatics. This may include techniques for DNA sequencing as well as transcriptome, proteome and metabolome analysis. The objective is to develop an appreciation for the challenges of producing data.

Restriction(s): Instructor's Consent

BINF*6210 Software Tools for Biological Data Analysis and Organization F [0.50]

The objective of this course is to familiarize students with the tools for the computational acquisition and analysis of molecular biological data. Lectures will focus on key software for gene expression analyses, biological sequence analysis, and data acquisition and management. Laboratory exercises will guide students through application of tools relevant to topics discussed in lecture.

Prerequisite(s): Introductory molecular biology or genetics course, undergraduate statistics course
Restriction(s): Instructor's Consent

BINF*6410 Algorithms and Programming in Bioinformatics W [0.50]

This course will teach students to develop and use programming tools for bioinformatics. The topics covered present a recourse for bioinformaticians who find that existing software does not satisfy their needs.

Prerequisite(s): BINF*6210

BINF*6420 Biosequence Pattern Analysis W [0.50]

This course is an overview course on different approaches to analyze biological sequences. Basic concepts are introduced, as well as related algorithms.

Prerequisite(s): BINF*6210

BINF*6970 Statistical Bioinformatics W [0.50]

This course presents a selection of advanced approaches for the statistical analysis of data that arise in bioinformatics, especially genomic data. A central theme to this course is the modelling of complex, often high-dimensional, data structures.

Prerequisite(s): Introductory courses in statistics, mathematics and programming
Restriction(s): Instructor's Consent

BINF*6999 Bioinformatics Master's Project F,W,S [1.00]

A major research paper is completed by students in the Master of Bioinformatics program.

Prerequisite(s): BINF*6110, BINF*6210
Restriction(s): Instructor's Consent

Note

Some courses may not be offered every year. Students planning to take a course from the above list should consult with the Graduate Secretary for availability and scheduling.