

2009-2010 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2009-2010 academic years, including the Fall Semester 2009, the Winter Semester 2010 and the Summer Semester 2010.

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

Contact Information:

University of Guelph
Guelph, Ontario, Canada
N1G 2W1
519-824-4120

The logo for the University of Guelph, featuring the text "UNIVERSITY of GUELPH" in a stylized font.The tagline "CHANGING LIVES IMPROVING LIFE" in a bold, sans-serif font, set against a yellow background.

Revision Information:	
June 1, 2009	Initial Publication
September 1, 2009	Revision
November 2, 2009	Revision
January 25, 2010	Revision
March 2, 2010	Revision

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, 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 Graduate Program Services.

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

Plant Agriculture	131
MSc Program	131
PhD Program	131
Interdepartmental Programs	132
Courses	132

Plant Agriculture

The MSc and PhD programs in the Department of Plant Agriculture offer specialization in three broad fields of the Plant Sciences: 1) plant genetics and breeding; 2) plant physiology and biochemistry; and 3) crop production systems.

- **Plant Genetics and Breeding** has long been a key focus of our faculty and students. Through breeding and biotechnology, Guelph researchers have helped society by developing new field-crop, fruit, ornamental and vegetable cultivars that are grown in Canada and worldwide. In addition to developing new plant cultivars, Plant Agriculture faculty and students seek to understand the fundamental mechanisms that enable plant improvements and to discover novel methodologies and technologies that will be the foundation for future advances.
- **Plant Physiology and Biochemistry** is a broad discipline. Faculty and students in this area study the response of plants to environmental change and plant development at the ecosystem, whole plant, and molecular levels. Students in this area investigate ecologically friendly management strategies, studying the underlying molecular and biochemical mechanisms that regulate plant development, and investigate how plant performance can be optimized in the field or enclosed environments.
- **Crop Production Systems** research develops agricultural management strategies. Production systems research includes yield improvements and development of economically and environmentally sound production practices in field and horticultural crops such as ornamentals and turf. Faculty and students in this area assist producers and industry in the control of weeds, insects and plant diseases, and investigate new management protocols for production of high quality crops.

Administrative Staff

Acting Chair

David Wolyn (314 Crop Science Building, Ext. 53386)
dwolyn@uoguelph.ca

Graduate Co-ordinator

Bernard Grodzinski (4243 Bovey Building, Ext. 53439)
bgrodzin@uoguelph.ca

Graduate Secretary

Jean G. Wolting (1105 Bovey Building, Ext. 56077)
jwolting@uoguelph.ca

Graduate Faculty

Gary R. Ablett

BSc Waterloo, MSc, PhD Guelph - Associate Professor

Theo Blom

BSc Wageningen, PhD Guelph - Associate Professor

Stephen R. Bowley

BS, MSc Guelph, PhD Kentucky - Associate Professor

Gale G. Bozzo

BSc, MSc York, PhD Queen's - Assistant Professor

Calvin Chong

BBSc, MSc, PhD McGill - Professor

E. Ann Clark

BS, MS California, PhD Iowa State - Associate Professor

John Cline

BSc Guelph, MSc Michigan State, PhD London UK - Associate Professor

Adam Dale

BSc, PhD Sheffield - Professor

William Deen

BSc, MSc, PhD Guelph - Associate Professor

Hugh J. Earl

BSc, MSc Guelph, PhD Western Ontario - Associate Professor

Larry R. Erickson

BA Western Ontario, BSc, MSc, PhD Guelph - Associate Professor

Duane E. Falk

BSc, MSc Montana State, PhD Guelph - Associate Professor

K. Helen Fisher

BSc, MSc Guelph, PhD Cornell - Associate Professor

Bernard Grodzinski

BSc Toronto, MSc, PhD York, MA Cambridge - Professor and Graduate Co-ordinator

Katerina S. Jordan

BS, MS Maryland, PhD Rhode Island - Assistant Professor

Elizabeth A. Lee

BSc Minnesota, MSc Iowa State, PhD Missouri - Professor

Lewis Lukens

BSc Carleton College, PhD Minnesota - Associate Professor

Eric M. Lyons

BSc Northern Iowa, PhD Pennsylvania State - Assistant Professor

Mary Ruth McDonald

March 2, 2010

BSc, MSc, PhD Guelph - Associate Professor

Alan W. McKeown

BSc, MSc Guelph, PhD Michigan - Associate Professor

Barry Micallef

BSc, MSc Guelph, PhD Wisconsin-Madison - Associate Professor

Amar K. Mohanty

BSc, MSc, PhD Utkal - Professor

Gopi Paliyath

BScEd Mysore, MSc Calicut, PhD Indian Institute of Science - Professor

K. Peter Pauls

BSc, MSc, PhD Waterloo - Professor

Manish Raizada

BSc Western, PhD Stanford - Associate Professor

Istvan Rajcan

BSc Novi Sad, Yugoslavia, PhD Guelph - Professor

Darren E. Robinson

BSc Winnipeg, MSc Manitoba, PhD Guelph - Associate Professor

Praveen K. Saxena

BSc Meerut, MSc Lucknow, PhD Delhi - Professor

Arthur W. Schaafsma

BSc, MSc, PhD Guelph - Professor

Barry J. Shelp

BSc, MSc Brock, PhD Queen's - Professor

Peter Sikkema

BSc, MSc Guelph, PhD Western Ontario - Professor

Jayasankar Subramanian

BSc, MSc TamilNadu Agricultural (India), PhD Florida - Associate Professor

J. Alan Sullivan

BSc, MSc, PhD Guelph - Professor

Clarence J. Swanton

BSc Toronto, MSc Guelph, PhD Western Ontario - Professor

Francois Tardif

BSc, MSc, PhD Laval - Associate Professor

Rene C. Van Acker

BSc, MSc Guelph, PhD Reading - Professor and Associate Dean, OAC

David J. Wolyn

BS Rutgers, MS, PhD Wisconsin - Professor and Acting Chair

MSc Program

The Department of Plant Agriculture offers a MSc program in three broad fields of the Plant Sciences: 1) plant genetics and breeding; 2) plant physiology and biochemistry; and 3) crop production systems. Students conduct basic and/or applied research on topics within these fields.

Admission Requirements

Applicants should have a baccalaureate degree in an honours plant science/biology program, or the equivalent, from a recognized university or college with an average academic standing of at least 'B' during the last two years of full-time study (or equivalent). To assist in identifying a suitable thesis advisor(s), applicants should submit a short statement of research interests. Supportive letters of reference are essential and should outline the applicant's strengths and weaknesses. Students may be admitted in the fall, winter or summer semesters. The University of Guelph requires that applicants from some foreign institutions have a MSc (or equivalent) degree before they are considered for admission to the University of Guelph's MSc program.

Degree Requirements

A program of prescribed courses (at least 1.5 credits of 6000 level courses) and additional courses is established with the student's advisory committee. All MSc candidates must complete a thesis and present a seminar in conjunction with the final oral examination. Students are required to participate in the Seminar PLNT*6400 and in a Departmental Colloquium course dealing with current topics. Students are expected to participate in Departmental events, with particular emphasis on the seminar series and poster day.

PhD Program

The Department of Plant Agriculture offers a PhD program in three broad fields of the Plant Sciences: 1) plant genetics and breeding; 2) plant physiology and biochemistry; and 3) crop production systems. Students conduct research on topics within these fields.

Admission Requirements

The usual requirement for admission into the PhD program is a MSc degree by thesis in a field appropriate to their proposed area of specialization with a minimum 'B' average and supportive letters of reference. Direct admission to the PhD program is permitted to applicants holding an honours baccalaureate degree and demonstrating extraordinary academic and research capabilities. It is also possible for a student to transfer from the MSc without completing the requirements for that degree if the student has an excellent

academic record and has strong research progress that can be expanded to the doctoral level. The request for transfer must be initiated by the student and must be done no earlier than the end of the second semester and no later than the end of the fourth semester. Applicants should submit a statement of research interests, background experiences, and career goals to assist in the identification of an appropriate faculty adviser with the resources necessary to support the thesis research. Students may be admitted in the fall, winter or spring semesters. In some instances, applicants who already hold a MSc may be required to initially register in the MSc program.

Degree Requirements

The major emphasis in the PhD program is on research and the preparation and defense of an acceptable thesis. All PhD candidates must complete a thesis and present a seminar -in conjunction with the final oral examination. Students are required to participate in the Seminar PLNT*6400 and in a Departmental Colloquium course dealing with current topics. There are no other specific course requirements. It is usual for most students, in consultation with their advisory committee, to select some appropriate courses in preparation for the qualifying examination and thesis research. The qualifying examination is in two parts (written and oral) and evaluates the student's knowledge of their field of specialization and related topics. The qualifying examination is taken no later than the fifth semester. For students who have transferred from the MSc program or have been admitted directly to the PhD program from a BSc, the qualifying examination is taken no later than the seventh semester. The advisory committee is required to submit a written evaluation of the student's performance in research and the student's potential as a researcher. Upon completion of the qualifying examination, the student becomes a candidate for the PhD degree.

All students are expected to participate in Departmental events, with particular emphasis on the seminar series and poster day.

Interdepartmental Programs

Toxicology MSc/PhD Collaborative Program

The Department of Plant Agriculture participates in the MSc/PhD program in toxicology. Please consult the Toxicology listing for a detailed description of the MSc/PhD collaborative program.

Courses

Plant Genetics and Breeding

PLNT*6100 Advanced Crop Breeding F [0.25]

The practical application of genetic theory and biological limitations to improving plant populations as germplasm and for cultivar development will be presented and discussed. Sources of variation, selection methods, genotype evaluation and cultivar multiplication will be addressed in lectures and discussions.

PLNT*6120 Protein and Oilseed Crop Breeding F [0.25]

This course will address both theoretical and practical aspects of protein and oilseed crop breeding. Current and emerging breeding methodologies to achieve major agronomic and compositional goals will be examined from the perspective of theoretical, technical and financial efficiencies.

External Course Code(s): Offered in odd years

PLNT*6130 Corn Breeding W [0.25]

Principles of corn breeding with emphasis on germplasm enhancement and methods of improving breeding populations as sources of inbred lines for hybrid programs and for direct use as improved varieties.

External Course Code(s): Offered in even years

PLNT*6150 Plant Breeding -The Profession W [0.25]

The course will address professional aspects of plant breeding including: legal/regulatory issues, ethical issues related to germplasm, and rights and responsibilities related to intellectual property under UPOV and World Patent Organization conventions.

External Course Code(s): Offered in odd years

PLNT*6160 Quantitative Genetic Variation in Crop Populations W [0.25]

Fundamentals of quantitative genetics. Topics will include gene and genotype frequencies, forces affecting equilibrium, small population size, inbreeding, means, variances, covariances and resemblance among relatives. Lecture topics will be expanded through discussion of classic and current papers.

External Course Code(s): Offered in even years

PLNT*6250 Colloquium in Genetics, Biotechnology and Plant Breeding F,W [0.25]

An open discussion course designed to review and critically analyse contemporary issues in plant genetics, biotechnology and breeding.

PLNT*6260 Advanced Crop Genetics W [0.50]

A lecture and discussion course on some of the recent advances in genetics as they pertain to crop improvement. Topics will include: the molecular basis of selected agronomic traits, molecular marker assisted selection, isolation of plant genes and plant transformation systems.

PLNT*6500 Applied Bioinformatics W [0.50]

The goal of this course is to provide an introductory understanding of the databases and methods used in computational molecular biology research. Topics covered will include: reviewing major molecular databases and their structures, constructing sequence alignments, constructing phylogenies, and finding motifs and genes in biological sequences. Lab sessions will include an introduction to Unix and Perl for the biologist and hands-on use of several molecular data analysis programs.

Prerequisite(s): Undergraduate level statistics class (such as STAT*2040 or STAT*2100) and undergraduate level molecular biology class (such as MBG*2020).

Plant Physiology and Biochemistry

PLNT*6010 Physiology of Crop Yield W [0.50]

Physiological and environmental principles as they relate to the growth of crop plants and communities. Plant and environmental characteristics determining transpiration, photosynthesis, leaf growth and reproductive growth and development. Simulation of plant growth.

External Course Code(s): Offered in even years.

PLNT*6110 Postharvest Physiology W [0.50]

Discussion of the physiological effects of controlled and supplemental environments or treatments on horticultural crops. Emphasis is on current problems and research.

External Course Code(s): Offered in odd years.

PLNT*6220 Advanced Studies in Pomology W [0.50]

Discussion of current problems and research on fruit crop production and physiology.

External Course Code(s): Offered in even years

PLNT*6290 Physiological Genetics of Higher Plants F [0.50]

A lecture and discussion course examining classical and molecular genetic investigations for understanding the genetic basis and regulation of physiological processes in plants.

External Course Code(s): Offered in odd years.

PLNT*6320 Metabolic Processes in Crop Plants F [0.50]

A comprehensive examination of the metabolic mechanisms and versatility whereby autotrophic organisms sustain themselves. Emphasis will be placed on our current understanding of the regulation and integration of metabolic processes in plants and their physiological and agricultural significance including available research methodologies.

Prerequisite(s): one undergraduate course in biochemistry
Restriction(s): no auditing without permission of Instructor

PLNT*6490 Colloquium in Physiology of Ornamental Crops F [0.25]

Current topics in the area of floriculture, turfgrass, and woody plant physiology.

External Course Code(s): Offered in even years.

Crop Production Systems

PLNT*6230 Colloquium in Crop Physiology and Management F,W [0.25]

An open discussion and/or workshop course designed to review and critically analyze contemporary issues in crop physiology and management.

PLNT*6240 Colloquium on Weed Management in Agrosystems W [0.25]

An open discussion course designed to review and critically analyze contemporary issues in plant ecology and their relevance to practical weed management systems.

External Course Code(s): Offered in odd years

General

PLNT*6050 Principles and Application of Plant Tissue Culture F [0.50]

The course involves lecture and discussions of fundamental and applied aspects of plant tissue culture. Topics will include the role of tissue culture in understanding plant development, physiology and genetics, and its commercial applications in horticulture and forestry.

External Course Code(s): Offered in odd years.

PLNT*6080 Plant Disease Epidemiology and Management W [0.50]

Epidemiology and management of plant diseases caused by fungi, viruses, and bacteria. (Offered in alternate years.)

PLNT*6170 Statistics in Plant Agriculture W [0.50]

The application of statistical techniques to research in plant agriculture. SAS will be the software used to perform data analysis. Emphasis will be placed on statistical principles, the design of experiments, the testing of hypotheses, and communication of findings to other scientists.

PLNT*6400 Seminar F,W [0.25]

All graduate students present a departmental seminar on their research proposal no later than the second semester. Each student is expected to participate in the seminars of colleagues and faculty.

PLNT*6450 Plant Agriculture International Field Tour U [0.25]

A field course designed to increase student's knowledge of primary field and animal agricultural production systems. To explore the environmental and political issues related to international agriculture and to understand the role of agri-business in the rural economy.

Restriction(s): CROP*4260 if PLNT*6450 is field tour to mid-west USA