2013-2014 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2013-2014 academic years, including the Summer Semester 2013, Fall Semester 2013 and the Winter Semester 2014.

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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Revision Information:

Date	Description
May 6, 2013	Initial Publication
August 19, 2013	Revision
September 20, 2013	Revision
November 1, 2013	Revision
December 1, 2013	Revision
March 7, 2014	Revision
May 13, 2014	Updates for AODA Compliance

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.

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Animal and Poultry Science

The Department of Animal and Poultry Science offers programs of study leading to MSc and PhD degrees. Animals of significance in food production are the department's major interest and research emphasis. The graduate program encompasses four fields:

- **Animal Breeding and Genetics** (quantitative or molecular)
- **Animal Nutrition** (monogastric or ruminant)
- **Animal Physiology** (environmental and reproductive)
- **Animal Behaviour and Welfare**

Administrative Staff

Chair
Andy Robinson (146 ANNU, Ext. 53679)
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Graduate Coordinator
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Graduate Faculty

*Please see the Department's webpage at www.aps.uoguelph.ca for an updated listing of faculty.

Gregoy Bedecarrats
Licence de Biochimie, MSc, Dipl. Rennes (France), PhD McGill - Associate Professor

Dominique P. Bureau
BSc (Agr), MSc Laval, PhD Guelph - Professor

John P. Cant
BSc (Agr) Nova Scotia, MS, PhD California - Professor and Graduate Coordinator

Cornelius F.M. de Lange
BSc, MSc Wageningen, PhD Alberta - Professor

Ming Z. Fan
BS Xinjiang, MS Harbin, PhD Alberta - Professor

James France
BSc Cardiff, MSc, PhD, DSc Hull (United Kingdom), CMath, CSci, FIMA - Professor and Senior Canada Research Chair

Niel A. Karrow
BSc Guelph, MSc, PhD Waterloo - Associate Professor

Julang Li
MSc Changchun Veterinary College (China), PhD Ottawa - Professor

Ira B. Mandell
BS, MS Ohio State, PhD Saskatchewan - Associate Professor

Georgia Mason
BA, PhD Cambridge - Professor

Brian W. McBride
BSc, MSc Guelph, PhD Alberta - Professor

Richard D. Moccia
BSc, MSc Guelph - Professor

Vern R. Osborne
BSc, MSc, PhD Guelph - Associate Professor

J. Andrew B. Robinson
BSc (Agr), MSc Guelph, PhD Cornell - Associate Professor and Chair

Flavio S. Schenkel
BBA, BSc, and MSc Brazil, PhD Guelph - Associate Professor

Trevor K. Smith
BSc British Columbia, MSc Manitoba, PhD Cornell - Professor

E. James Squires
BSc, MSc, PhD Memorial - Professor

Tina M. Widowski
BS, MS, PhD Illinois - Professor

Faculty at Kemptville Campus

Katrina Merkies
BSc, PhD Guelph - Associate Professor

Trevor DeVries
BSc, PhD British Columbia - Associate Professor

Faculty at Campus D'Alfred

Renee Bergeron
BSc, MSc Laval, PhD Illinois - Associate Professor

MSc Program

The MSc program involves advanced courses and the completion of a research project. These are means of developing the skills and intellectual curiosity that may further qualify the student for a leadership role within animal organizations and industries or serve as a prerequisite for doctoral studies. The MSc degree may be completed via two routes: by thesis or by course work and major paper. The MSc by course work and major paper is offered in three areas of specialization: 1) animal breeding and genetics, 2) animal nutrition and metabolism and 3) animal behaviour and welfare.

Admission Requirements

An honours baccalaureate, with a minimum average grade of `B' during the last 2 years of full-time equivalent study. For Canadian degrees, we interpret this as the last 20 semester courses, however we do not split a semester and we will not consider any less than 16 courses.

Degree Requirements

MSc by Thesis

Candidates for the thesis-based MSc degree must successfully complete a prescribed series of courses, conduct a research project, prepare a thesis based on their results and defend this in a final examination. The number of course credits required in this option will be decided by the student's advisory committee in consultation with the student, and may exceed the minimum 1.5 credits required by the Faculty of Graduate Studies. Generally, 4 or 5 courses (1.5-2.0 credits) will be taken, including the mandatory Seminar course, ANSC*6600 (0.0 credit).

MSc by Course Work and Major Paper

Candidates for the MSc degree by course work and major paper option must complete a minimum of 4.0 credits (9 courses). Of these courses, one will be the departmental Seminar course, ANSC*6600 (0.0 credit), and another will be Major Paper in Animal and Poultry Science, ANSC*6900 (1.0 credit). The major paper will be a detailed, critical review of an area of study related to the specialization chosen by the student and should include analyses and interpretations of relevant data. The content of the major paper will be presented to the department in the Seminar course.

At the beginning of the program, the student and student's advisory committee will design the course-work program according to the program guidelines and the aspirations and background of the student. Students will normally choose a minimum of 4 courses in the area of specialization, and a minimum of two courses outside the area of specialization. These latter courses can be offered by departments other than Animal and Poultry Science.

A maximum of one approved senior-level undergraduate course can be included in the list of prescribed courses. Recommended graduate courses in the three areas of specialization are as follows:

Animal Breeding and Genetics

ANSC*6900	[1.00]	Major Paper in Animal and Poultry Science
ANSC*6210	[0.50]	Principles of Selection in Animal Breeding
ANSC*6240	[0.50]	Topics in Animal Genetics and Genomics
ANSC*6370	[0.50]	Quantitative Genetics and Animal Models
ANSC*6390	[0.50]	QTL and Markers
ANSC*6450	[0.50]	Topics in Animal Biotechnology

Animal Nutrition and Metabolism

ANSC*6900	[1.00]	Major Paper in Animal and Poultry Science
ANSC*6010	[0.50]	Topics in Comparative Animal Nutrition
ANSC*6020	[0.50]	Poultry and Swine Nutrition
ANSC*6030	[0.50]	Modelling Metabolic Processes
ANSC*6050	[0.50]	Biometry for Animal Sciences
ANSC*6360	[0.50]	Techniques in Animal Nutrition Research
ANSC*6450	[0.50]	Topics in Animal Biotechnology
ANSC*6460	[0.50]	Lactation Biology
ANSC*6470	[0.50]	Advanced Animal Nutrition and Metabolism I
ANSC*6480	[0.50]	Advanced Animal Nutrition and Metabolism II

Animal Behaviour and Welfare

ANSC*6900	[1.00]	Major Paper in Animal and Poultry Science
ANSC*6440	[0.50]	Advanced Critical Analysis in Applied Ethology
ANSC*6700	[0.50]	Animals in Society: Historical and Global Perspectives on Animal Welfare
ANSC*6710	[0.50]	Assessing Animal Welfare in Practice
ANSC*6720	[0.50]	Scientific Assessment of Affective States in Animals
ANSC*6730	[0.50]	Applied Environmental Physiology: Applications to Animal Care Standards
ANSC*6740	[0.50]	Special Topics in Applied Animal Welfare Science
UNIV*6030	[0.50]	Seminars and Analysis in Animal Behaviour and Welfare

The MSc by course work and major paper degree will require a minimum of three semesters of full-time study (or the equivalent).

PhD Program

The PhD program is research oriented and provides instruction and experiences that develop the student's ability to independently formulate hypotheses and design and execute experiments or conduct observational studies to reach definitive conclusions.

Admission Requirements

Students entering a PhD program should show potential for independent, productive, and original research. A PhD program can be entered by three routes: following completion of an MSc program; following transfer prior to completion of an MSc program; and directly from a bachelor degree.

In general, a minimum average grade of `B' for a completed MSc program plus strong letters of reference are required. Students wishing to be considered for transfer to a PhD program prior to completion of the MSc program must request the transfer before the end of the fourth semester and have an excellent academic record as well as a strong aptitude for research.

Direct admission to the PhD program may be permitted for applicants who hold a bachelor's degree and have an excellent academic history and strong indications of research potential.

Degree Requirements

Satisfactory completion of a PhD program requires a comprehensive knowledge of the area of emphasis and the ability to conduct original research in this area, plus a sound general background in two related areas of study. This competence is demonstrated in a qualifying examination and through the design and execution of a substantial and original research project. Based on this research, a thesis is prepared and defended in a final examination.

The number of courses required for a PhD program will be decided by the student's advisory committee in consultation with the student. The minimum requirement is the Seminar course, ANSC*6600.

Collaborative Programs

Neuroscience MA/MSc/PhD

The Department of Animal and Poultry Science partipates in the MA/MSc/PhD program in neuroscience. Please consult the Neuroscience listing for a detailed description of the MA/MSc/PhD collaborative program.

Toxicology MSc/PhD

The Department of Animal and Poultry Science participates in the MSc/PhD program in toxicology. The research and teaching expertise of these faculty include aspects of toxicology; they may serve as advisors for MSc and PhD students in Toxicology. Students choosing this option must meet the requirements of the Toxicology Collaborative Program, as well as those of their home department. Please consult the Toxicology listing for a detailed description of the MSc/PhD collaborative program.

Courses

Although the courses offered are listed by field, several are relevant to more than one field. Some courses are only offered when there is a certain minimum enrolment.

Animal Breeding and Genetics

ANSC*6210 Principles of Selection in Animal Breeding W [0.50]

Definition of selection goals, prediction of genetic progress and breeding values, and the comparison of selection programs.

ANSC*6240 Topics in Animal Genetics and Genomics F [0.50]

Current literature and classical papers pertaining to quantitative genetics, animal breeding and animal genomics are reviewed in detail through presentation, discussion and critical analysis.

ANSC*6370 Quantitative Genetics and Animal Models F [0.50]

The course covers quantitative genetics theory associated with animal models; linear models applied to genetic evaluation of animals; estimation of genetic parameters for animal models; and computing algorithms for large datasets.

ANSC*6390 QTL and Markers W [0.50]

Advanced training in QTL mapping and selection assisted by genetic markers.

ANSC*6450 Topics in Animal Biotechnology W [0.50]

The impact of recombinant DNA techniques on present and future research in animal science and on the livestock industry is critically appraised.

Animal Nutrition

ANSC*6010 Topics in Comparative Animal Nutrition F [0.50]

Current topics in the feeding and nutrition of agricultural, companion and captive animal species. Emphasis is placed on the influence of nutrients on metabolic integration at tissue, organ and whole-animal levels. A nutritional case study will be conducted to allow students to solve practical feeding problems by applying basic nutritional principles. The course is offered every other year on even years.

ANSC*6020 Poultry and Swine Nutrition W [0.50]

A discussion of current topics in the feeding and nutrition of domestic fowl and swine based on the critical appraisal of selected journal readings.

ANSC*6030 Modelling Metabolic Processes F [0.50]

Building and testing of mathematical models of metabolic processes using continuous simulation software to assist in weekly assignments. Choice of model based on students' research interests (e.g. protein synthesis, nutrient uptake, rumen fermentation). Term project to reproduce model from scientific knowledge.

ANSC*6360 Techniques in Animal Nutrition Research W [0.50]

Theory and/or practices of techniques to evaluate feedstuffs and determine nutrient utilization in poultry, swine and ruminants is covered through lectures, short laboratories and a major project.

ANSC*6470 Advanced Animal Nutrition and Metabolism I F [0.50]

A systematic review of key aspects of energy, protein, amino acid and carbohydrate utilization and metabolism in farm animals.

ANSC*6480 Advanced Animal Nutrition and Metabolism II W [0.50]

A systematic review of key aspects of lipid, vitamin and mineral utilization and metabolism in farm animals.

Animal Physiology

ANSC*6400 Mammalian Reproduction W [0.50]

Discussions and applications of methodology for collection and examination of gametes and embryos and for measurements of hormones in biological fluids. (Odd years only.)

ANSC*6440 Advanced Critical Analysis in Applied Ethology F [0.50]

Students explore the process of scientific inquiry and experimental design within the context of applied ethology research. Discussions include the peer review process, critical analyses and applications of methods for applied animal behaviour research.

ANSC*6460 Lactation Biology F [0.50]

An in-depth systems analysis of lactation,comparing the cow, pig, rat, human and seal. Mammary development from conception through to lactogenesis, lactation and involution will be covered. Hypotheses of regulation of the biochemical pathways of milk synthesis will be tested in relation to experimental observations.

ANSC*6250 Growth and Metabolism W [0.50]

Animal growth and metabolism are considered at the cellular level in a manner that extends beyond the basic disciplines of biometrics and biochemistry with attention focused on the main carcass components — muscle, fat and bone.

Animal Behaviour and Welfare

ANSC*6700 Animals in Society: Historical and Global Perspectives on Animal Welfare F [0.50]

A seminar course covering society's duties to animals. Students will learn about the major ethical theories that deal with society's duties towards animals, the main scientific approaches to animal welfare, and the relationship of science to ethics. A brief history of human-animal relationships will be covered and cultural differences described. Students will use this to analyze some current issues.

ANSC*6710 Assessing Animal Welfare in Practice W,S [0.50]

A lecture/seminar course covering the principles of applied animal welfare assessment. Students will learn what influences an animal welfare assessment and will understand the components necessary to create an effective and targeted animal welfare program for industry or regulatory application.

Prerequisite(s): ANSC*6700
External Course Code(s): Winter offering on-campus, Summer offering Distance Education.

ANSC*6730 Applied Environmental Physiology: Applications to Animal Care Standards W [0.50]

A lecture/seminar course covering the principles of applied environmental physiology including temperature regulation, space requirements, animal responses to light and other aspects of the physical environment. Students pursue a topic in depth to develop or update recommended codes of practice and resource-based standards.

ANSC*6720 Scientific Assessment of Affective States in Animals W [0.50]

Graduate students will explore the biology and validity of behavioural and physiological techniques used in animal welfare assessment of such phenomenon as: sympathetic activation, HPA functioning, stereotypic behaviour and preference responses. A combination of lecture, instructor-led discussion and student-led discussion will explore these areas of animal welfare assessment.

ANSC*6740 Special Topics in Applied Animal Welfare Science S [0.50]

A lecture/seminar course covering in depth topics in applied animal welfare science. The course will review the scientific research into the welfare of a specific animal species or a specific animal welfare problem common across species, focusing on the main threats to welfare, relevant indicators of welfare, and possible solutions to improve welfare.

UNIV*6030 [0.50] Seminars and Analysis in Animal Behaviour and Welfare

General

ANSC*6050 Biometry for Animal Sciences F [0.50]

For students involved in animal research. The course will provide outlines of appropriate presentation and analysis of experimental data with emphasis on different analytical techniques.

ANSC*6100 Special Project F,W,S [0.50]

Supervised program of study in some aspect of animal and poultry science that can involve an experimental project and/or detailed analysis of the literature.

ANSC*6600 Seminar F,W [0.00]

This course is required for successful completion of MSc and PhD programs. The major findings of the thesis or major paper are presented to the department.

ANSC*6900 Major Paper in Animal and Poultry Science F,W,S [1.00]

A detailed, critical review of an area of study related to the specialization of students in the MSc by course work and major paper option that includes analysis and interpretation of relevant data.