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

Pathobiology

The Department of Pathobiology offers programs in Veterinary Pathology, Comparative Pathology, Veterinary Infectious Diseases, and Immunology.

The department offers programs of study leading to MSc and PhD degrees and a Graduate Diploma. The department also participates in the inter-departmental Doctor of Veterinary Science (DVSc) program.

Fields of Study

The Department of Pathobiology provides graduate programs in the following fields:

- **Comparative Pathology**
  - Avian pathology
  - Fish pathology
  - Wildlife and zoo animal medicine and pathology
  - Laboratory animal science
- **Immunology**
- **Veterinary Infectious Diseases**
  - Veterinary bacteriology
  - Veterinary parasitology
  - Veterinary virology
- **Veterinary Pathology**
  - Anatomic pathology
  - Clinical pathology

Administrative Staff

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MSc Program

The primary objective of the MSc program is to provide students with training in conceptual and laboratory aspects of research, combined with advanced training in a field of knowledge relating to manifestations, basic mechanisms and host resistance for diseases of vertebrates.

Admission Requirements

Applicants should have either a an honours degree in biological sciences with at least a 'B' average during the final 2 years of the program, or a DVM (or equivalent) degree with at least a 'B' average over the four years of the program. In either case, performance in relevant biomedical science courses, (e.g. microbiology, immunology, biochemistry, molecular biology, etc.) at a level above the minimum 'B' average is normally expected. Admission requires a statement of the applicant's interests and objectives and supportive letters of reference. An appropriate faculty advisor must be identified, as well as potential sources of funds for research and for provision of a stipend for the student. Applications may be submitted at any time. Initial enrolment can be in the Fall, Winter or Summer semesters, with a preference for the Fall.

Degree Requirements

Students must complete at least 1.5 credits of prescribed courses with at least a 'B ' average,and must satisfactorily write and defend a research thesis. Prescribed courses and additional courses are selected by the student in consultation with the advisor and advisory committee based on the student's background and their research and career objectives. The departmental Graduate Seminar course PABI*6440 is prescribed for all MSc students. The thesis research is planned by the student in consultation with the advisor. Research plans and progress must be approved by the advisory committee. The thesis defence includes a seminar presentation and a final oral examination by a committee of graduate faculty members.

See also the MSc Degree Regulations in the Graduate Calendar.

PhD Program

The PhD program is designed primarily for students who aspire to a career involving research on the biology of mechanisms of diseases in vertebrates. The program provides advanced training in conceptual and laboratory aspects of independent research, combined with advanced training in one or more fields of knowledge. The major emphasis is on the generation and critical evaluation of scientific knowledge relating to the causes, mechanisms and/or consequences of diseases affecting a particular species, organ system or biological process or to the understanding of host resistance and basic mechanisms of health or disease in vertebrates. DVM (or equivalent) graduates may obtain some of the practical experience required for specialty certification in veterinary anatomic pathology, clinical pathology, laboratory animal science, microbiology or parasitology.

Admission Requirements

The usual requirement for admission to the PhD program is the completion of an approved MSc degree with a minimum 'B+' average and strongly supportive letters from referees familiar with the background of the applicant. Performance in relevant biomedical science courses, (e.g. microbiology, immunology, biochemistry, molecular biology, etc) at a level above the 'B+' average is normally expected. Students may apply for admission into the PhD program before completing the MSc program, providing that they have a minimum 'A' average and a demonstrated capacity for independent research. Some students with demonstrated potential for independent research and a superior academic record during their baccalaureate or DVM programs may be admitted directly into the PhD program.

Admission requires a statement of the applicant's interests and objectives and supportive letters of reference. An appropriate faculty advisor must be identified, as well as potential sources of funds for research and provision of a stipend for the student. Applications may be submitted at any time. Initial enrolment can be in the Fall, Winter or Summer semesters, with a preference for the Fall.

Degree Requirements

Students must have successfully completed the department's graduate seminar course, PABI*6440, and have obtained at least a 'B ' average in all courses prescribed by the advisory committee. There are no other specific course requirements. Prescribed courses and additional courses are selected by the student in consultation with the advisor and advisory committee based on the student's background, their research and career objectives.

Students are required to satisfactorily complete a qualifying examination before the end of the fifth semester if they possess an MSc degree, or before the end of the seventh semester if they possess an honours baccalaureate or DVM degree. The qualifying examination is conducted by a committee of graduate faculty members with expertise in the areas of study, and includes written and oral components. The qualifying examination covers a breadth of knowledge of topics related to the student's research area, and depth of knowledge within this research area. To successfully complete the examination, students must have a broad general understanding of one of the departmental fields of study, and a current and detailed understanding of one or two additional areas in their field of study. The advisory committee identifies selected areas of study by the end of the second semester. In addition, the advisory committee is required to confirm that the student has demonstrated both ability and promise in research. This is based on performance in the research project and in courses and other academic activities.

The thesis research is planned by the student in consultation with the advisor. The proposed thesis research is developed and defended as part of the course PABI*6440, Graduate Seminar in Pathobiology. Research plans and progress must be approved by the advisory committee. The program is completed withthe satisfactory presentation and defence of a thesis, which includes a seminar presentation and a final oral examination by a committee that includes an external examiner and members of the graduate faculty.

See also the Degree Regulations in the Graduate Calendar.

DVSc Program

The Department of Pathobiology participates in the DVSc program which provides advanced training in a specialty discipline of veterinary medicine, combined with course work and a thesis-based research project. Specialty training is offered in the areas of veterinary anatomic pathology, veterinary clinical pathology, veterinary clinical microbiology, laboratory animal science, wildlife and zoo animal medicine and pathology, avian medicine and pathology, and fish pathology. The research project addresses an applied aspect of an important disease problem in vertebrates. The program provides practical training towards specialty certification in veterinary anatomic pathology, veterinary clinical pathology, laboratory animal science, veterinary clinical microbiology or veterinary parasitology. Refer to the Degree Regulations in the Graduate calendar for more information.

Admission Requirements

Applicants require a DVM (or equivalent) degree with high academic standing from a program that provides eligibility for the practice of veterinary medicine in Ontario. Alternatively, applicants with a DVM (or equivalent) degree can be admitted after completion of an acceptable graduate diploma, MSc, or PhD degree with an upper 'B' average. Admission requires the identification of a faculty advisor and a source of personal support for the student. If these have not been arranged by the applicant, a statement of the applicant's interests and objectives and supportive letters of reference are required to assist with the identification of an appropriate faculty advisor and potential sources of funds for research and student stipend. Several stipends for DVSc candidates are available intermittently for training in some disciplines. As these funds become available, stipends are awarded to the most qualified applicant(s) based on completed applications for admission to the DVSc program. Applications may be submitted at any time. Initial enrolment can be in the Fall, Winter or Summer semesters.

Degree Requirements

The degree requires a minimum of nine semesters of full-time study; the completion of at least 2.5 credits in courses prescribed by the student's advisory committee including completion of the department's graduate seminar course, with an overall average of at least 'B-', and satisfactory completion of a qualifying examination, thesis and final oral examination.

See also the Degree Regulations in the Graduate Calendar.

Graduate Diploma Program

The objective of the diploma program is to provide advanced practical training in a field of veterinary pathology to veterinarians working in industry, government or in private practice. The program emphasizes practical and course-based applied training in anatomic pathology, clinical pathology, avian medicine and pathology, laboratory animal science,or wildlife and zoo animal pathology. The Diploma program does not normally result in eligibility for specialty certification.

Admission Requirements

Applicants require a DVM (or equivalent) degree with acceptable academic standing. Admission requires the prior identification of a faculty advisor and a source of personal support for the student.

Degree Requirements

The Graduate Diploma requires three semesters of full time study and completion of 1.5 credits of prescribed courses, including 0.5 credits in an applied course and no more than 0.5 credits in a Special Topics course. The remaining credits may be in the defined area of study, as prescribed by the faculty advisor. Diploma students must satisfactorily pass a final oral comprehensive examination on knowledge in their field of study. It will be conducted by faculty members in the Department of Pathobiology. There is no thesis, but students are required to write a paper that the advisor considers ready for submission to a peer reviewed scientific journal.

See also the Graduate Diploma Regulations of the Faculty of Graduate Studies.

Courses

General

PABI*6440 Graduate Seminar in Pathobiology S,F,W [0.50]

Following discussions of approaches to scientific research and communication, students will develop and submit a thorough written critical review of the literature on an agreed upon topic, and a detailed research proposal in the same topic area. This material will also be presented in the form of a public seminar.

PABI*6960 Special Topics in Pathobiology F,W,S [0.50]

In-depth independent study of subjects related to student's principal area of interest. Major paper(s), laboratory studies, and/or written and oral examination, with or without seminar preparation.

Restriction(s): Instructor's signature required

Comparative Pathology

PABI*6050 Applied Avian Pathology I F [0.50]

Examination and interpretation of gross and microscopic lesions of domestic poultry.

Restriction(s): Instructor's signature required

PABI*6060 Applied Avian Pathology II W [0.50]

A continuation of PABI*6050, emphasizing seasonal differences in diseases as well as diseases more commonly associated with winter conditions.

Restriction(s): Instructor's signature required

PABI*6070 Applied Avian Pathology III S [0.50]

A continuation of PABI*6060, emphasizing seasonal differences in diseases as well as diseases more commonly associated with summer conditions.

Restriction(s): Instructor's signature required

PABI*6221 Comparative Veterinary Pathology I U [0.50]

Pathological changes associated with diseases of amphibia, reptiles, wild and captive non-domestic birds, and wild mammals including fur-bearers. (Even numbered years)

Restriction(s): Instuctor's signature required

PABI*6222 Comparative Veterinary Pathology II U [0.50]

Pathological changes associated with diseases of poultry and pet birds, fish and various laboratory animals. (Even numbered years)

Restriction(s): Instructor's signature required

PABI*6630 Applied Comparative Pathology I S,F,W [0.50]

Introductory course in the diagnostic pathology of mammals, birds, reptiles, amphibians, and fish. Cases may be restricted by animal taxa or context (e.g., free-ranging Canadian wildlife, zoological collections, aquaculture). The three Applied Comparative Pathology courses build in expected level of accomplishment.

Restriction(s): Instructor's signature required

PABI*6640 Applied Comparative Pathology II S,F,W [0.50]

Intermediate course in the diagnostic pathology of mammals, birds, reptiles, amphibians, and fish. Cases may be restricted by animal taxa or context (e.g., free-ranging Canadian wildlife, zoological collections, aquaculture). The three Applied Comparative Pathology courses build in expected level of accomplishment.

Restriction(s): Instructor's signature required

PABI*6650 Applied Comparative Pathology III S,F,W [0.50]

Advanced course in the diagnostic pathology of mammals, birds, reptiles, amphibians, and fish. Cases may be restricted by animal taxa or context (e.g., free-ranging Canadian wildlife, zoological collections, aquaculture). The three Applied Comparative Pathology courses build in expected level of accomplishment.

Restriction(s): Instructor's signature required

PABI*6700 Laboratory Animal Science U [0.50]

Basic information on various aspects of laboratory animal science, including IACUC function, regulatory oversight, ethics, historical review of animal research, animal modelsand alternatives, experimental design and considerations, biology, management and usesof common species in research.

Restriction(s): Instructor's signature required

PABI*6710 Applied Laboratory Animal Science I U [0.50]

This course will emphasize practical aspects of laboratory animal science including research protocol review, writing and reviewing standard operating procedures, animal monitoring, pathology procedures, and case management.

Restriction(s): Instructor's signature required

PABI*6720 Applied Laboratory Animal Science II U [0.50]

Continuation of I with emphasis on biohazard and personnel safety, monitoring for disease, quality control and diagnostic procedures.

Restriction(s): Instructor's signature required

PABI*6730 Applied Laboratory Animal Science III U [0.50]

Continuation of I and II, with emphasis on a comparison of programs and procedures in other facilities in Canada, nonhuman primate medicine, and surgical, clinical and necropsy procedures.

Restriction(s): Instructor's signature required

PABI*6740 Avian Diseases U [0.50]

Detailed study of recent concepts of preventive medicine, diagnosis and therapeutics as applied to clinical recognition and control of avian diseases.

Restriction(s): Instructor's signature required

Immunology

PABI*6100 Immunobiology F [0.50]

Major areas of immunology, including initiation, regulation, receptors, genetics, immune system development and function.

PABI*6190 Topics in Immunology W [0.50]

Aspects of immune and non-specific host resistance, diagnostic immunology and immune-mediated disease.

Veterinary Infectious Diseases

PABI*6000 Bacterial Pathogenesis F [0.50]

An overview of key concepts in bacterial pathogenesis with emphasis on veterinary and zoonotic pathogens.

PABI*6180 Clinical Bacteriology U [0.50]

Current techniques and approaches in diagnostic bacteriology.

PABI*6330 Viral Diseases F [0.50]

A study of important viral diseases of animals, with emphasis on etiology, host responses, diagnosis and control. (Odd numbered years)

PABI*6350 Molecular Epidemiology of Bacterial Diseases W [0.50]

This is a basic introduction to molecular epidemiology of bacterial diseases. It provides an understanding of molecular epidemiology methodologies and of their use for improving our understanding of infectious diseases epidemiology and control.

Prerequisite(s): STAT*2040 Statistics I
Restriction(s): Lab component: limited number of participants and WHIMIS certificate compulsory.

PABI*6550 Epidemiology of Zoonoses W [0.50]

Characterization and distribution of diseases common to people and animals.

Prerequisite(s): MCB*6330

MCB*6330 [0.50] Molecular Biology of Viruses

Veterinary Pathology

PABI*6030 Applied Clinical Pathology I F,W,S [0.50]

Introduction to laboratory procedures and interpretation of data arising from hematology, cytology, clinical chemistry, urinalysis and hemostatis analysis of clinical material (Intended for students training in clinical pathology.)

Restriction(s): Instructor's signature required

PABI*6040 Applied Clinical Pathology II U [0.50]

A continuation of PABI*6030 with greater depth in the interpretation of data and increased understanding of ancillary diagnostic methods applied in clinical case material. (Intended for students in training in clinical pathology).

Restriction(s): Instructor's signature required

PABI*6041 Applied Clinical Pathology III U [0.50]

A continuation of PABI*6040 with independent and comprehensive interpretation of diagnostic test results, and analysis of laboratory quality assurance quality control procedures. (Intended for students training in clinical pathology)

Restriction(s): Instructor's signature required

PABI*6080 Diagnostic Pathology I - Domestic Animals S,F,W [0.50]

An introductory course of diagnostic pathology with emphasis on the common and uncommon diseases of the whole body and respiratory, urinary and digestive (including liver and pancreas) systems. (Intended for students in training in anatomic pathology.)

Restriction(s): Instructor's signature required

PABI*6090 Diagnostic Pathology II - Domestic Animals S,F,W [0.50]

An intermediate course that builds on the skills acquired in PABI*6080 and further enhances diagnostic veterinary pathology skills to include diseases of the nervous, endocrine and musculoskeletal systems. (Intended for students training in anatomic pathology.)

Restriction(s): Instructor's signature required

PABI*6091 Diagnostic Pathology III - Domestic Animals S,F,W [0.50]

An advanced course that builds on the skills acquired in PABI*6090 and further enhances diagnostic veterinary pathology skills to include diseases of all organ systems. (Intended for students training in anatomic pathology.)

Restriction(s): Instructor's signature required

PABI*6104 Mechanisms of Disease W [0.50]

Molecular, cellular and tissue processes involved in the pathogenesis of adaptive, degenerative, inflammatory, infectious, proliferative and neoplastic diseases.

PABI*6105 Integrative Pathology U [0.50]

Basic and interpretive tissue and biochemical concepts of disease in the liver, pancreas, kidney, endocrine and hemolymphatic systems. (Even-numbered years)

Restriction(s): Instructor's signature required

PABI*6110 Pathology I W [0.50]

Disease processes of the respiratory, integumentary, reproductive and skeletal systems. (Even-numbered years)

Restriction(s): Instructor's signature required

PABI*6130 Pathology II W [0.50]

Disease processes of the alimentary, central nervous, cardiovascular and muscular systems and special senses. (Odd-numbered years)

Restriction(s): Instructor's signature required

PABI*6300 Clinical Pathology I U [0.50]

Principles and applications of veterinary hematology and cytology, with emphasis on the hematopoietic systems.

Restriction(s): Instructor's signature required

PABI*6320 Clinical Pathology II W [0.50]

Principles and applications of veterinary hematology and cytology, with emphasis on the hematopoietic system.

Restriction(s): Instructor's signature required