2004-2006 Graduate Calendar

The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2004-2006 academic years, including the Summer Semester 2005, the Fall Semester 2005 and the Winter Semester 2006.

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
http://www.uoguelph.ca

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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, 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.

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Pathobiology

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

There are four graduate degree programs. 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: Hunter, Smith; Fish pathology: Lumsden; Zoo animal/wildlife pathology: Barker, Hunter, Smith; Laboratory animal medicine: Turner
- **Immunology:** Mallard, Sharif, Shewen, Wilkie.
- **Veterinary Infectious Diseases**

  Veterinary bacteriology: Boerlin, Gyles, MacInnes, Prescott; Veterinary parasitology: Barta, Peregrine; Veterinary Virology: Nagy, Yoo.
- **Veterinary Pathology**

  Anatomic pathology: Barker, Caswell, Foster, Hayes, McCutcheon, Stalker; Clinical pathology: Bienzle, Jacobs, Wood.

The DVSc is offered in applied areas of microbiology, immunology or pathology. The diploma program is offered in applied areas of pathology.

Administrative Staff

Chair
John Prescott (2141 O.V.C., Ext. 54453)
jprescott@uoguelph.ca

Graduate Co-ordinator
Janet MacInnes (12058 O.V.C., Ext. 54731)
macinnes@uoguelph.ca

Graduate Secretary - Admissions
Donna Kangas (2144 O.V.C., Ext. 54725)
dkangas@ovc.uoguelph.ca

Graduate Faculty

Ian K. Barker
DVM, MSc Guelph, PhD Melbourne - Professor

John R. Barta
BSc, PhD Toronto - Professor

Dorothee Bienzle
DVM, MSc Guelph, PhD McMaster, Dipl ACVP - Assistant Professor

Patrick Boerlin
DVM, PhD Bern - Associate Professor

Jeff Caswell
DVM, DVSc Guelph, PhD Saskatchewen, Dipl ACVP - Assistant Professor

Robert A. Foster
BVSc Queensland, PhD James Cook Univ. of North Queensland, MRCVS, Dipl ACVP - Associate Professor

Jeffrey T. Gray
BS, MS Nebraska, PhD Iowa State - Associate Professor

Carlton L. Gyles
DVM Toronto, MSc, PhD Guelph - Professor

M. Anthony Hayes
BVSc Melbourne, PhD Saskatchewan, Dipl ACVP - Professor

D. Bruce Hunter
DVM, MSc Saskatchewan - Associate Professor

Robert M. Jacobs
BSc Toronto, DVM, PhD Guelph, Dipl ACVP - Professor

John S. Lumsden
BSc, DVM, MSc, PhD Guelph - Associate Professor

Janet I. MacInnes
BSc Victoria, PhD Western Ontario - Associate Professor

Bonnie A. Mallard
BSc, MSc, PhD Guelph - Professor

L. Jill McCutcheon
BSc, DVM Guelph, PhD Washington State - Professor

Éva Nagy
DVM, PhD, DSc Budapest - Associate Professor

Andrew S. Peregrine
BVMS(Hons.), PhD, DVM Glasgow - Associate Professor

John F. Prescott
MA, VetMB, PhD Cambridge - Professor and Chair

Shayan Sharif
DVM Tehran, PhD Guelph - Assistant Professor

Patricia E. Shewen
BSc, DVM, MSc, PhD Guelph - Professor

Dale A. Smith
DVM, DVSc Guelph - Professor

Margaret J. Stalker
BSc Queen's, DVM Saskatchewan, PhD Guelph, Dipl ACVP - Assistant Professor

Patricia V. Turner
BSc McMaster, MSc Dalhousie, DVM, DVSc Guelph, Dipl ACLAM - Associate Professor

Bruce N. Wilkie
DVM Guelph, PhD Cornell - Professor

R. Darren Wood
DVM Prince Edward Island, DVSc Guelph - Assistant Professor

Dongwan Yoo
DVM, MSc Seoul, PhD Ottawa - Associate Professor

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 to diseases of vertebrates. DVM (or equivalent) graduates may obtain some of the practical experience required for specialty certification in veterinary anatomic pathology, clinical pathology, microbiology or parasitology.

Admission Requirements

Applicants should have either a DVM (or equivalent) degree with at least a 'B' average over the four years of the program, or an honours degree in biological sciences with at least a 'B' average during the final 2 years. 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 the prior identification of a faculty advisor and a source of financial support for the student. Supportive letters of reference, based on sound knowledge of the applicant, are essential. Applicants should submit a one-page statement of research interests and career goals in order to assist in the identification of a faculty advisor who has the facilities and funding necessary to support the thesis research, and who can provide a stipend if the student is not independently supported. Applications may be submitted at any time. Students may be admitted 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, research and career objectives. The departmental Graduate Seminar course 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 of the Faculty of Graduate Studies.

PhD Program

The PhD program is designed primarily for students whose career aspirations are towards the independent research on the manifestations, basic mechanisms and host resistance to diseases of vertebrates. The primary objective is to provide advanced training in conceptual and laboratory aspects of independent research, combined with advanced training in one or more appropriate 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, 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 strong 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 the identification of a faculty advisor and a source of financial 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 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 completed the department's graduate seminar course, 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, and 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 only 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 in-depth understanding of one or two additional areas. 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 on the research project, and on the writing of a research proposal on a subject proposed by the student and approved by the advisory committee. PhD students in semesters six to nine are required to make a 25 minute presentation as part of the Departmental Seminar Series.

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 program is completed with the 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 several members of the graduate faculty.

See also the PhD Degree Regulations of the Faculty of Graduate Studies.

DVSc Program

The Department of Pathobiology participates in the DVSc program which provides a balance of advanced training in a discipline in veterinary medicine, combined with a thesis-research project. The program emphasizes diagnostic and health management aspects of veterinary anatomic pathology, veterinary clinical pathology, veterinary clinical microbiology, clinical immunology, laboratory animal science, wildlife and zoo animal pathology, avian medicine and pathology, and fish pathology. The research project addresses an applied aspect of a significant disease problem in vertebrates. The program provides practical training towards specialty certification in veterinary anatomic pathology, clinical pathology, veterinary clinical microbiology or veterinary parasitology. Refer to the Veterinary Science section of the 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 serving the Veterinary Teaching Hospital. 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; completion of department's graduate seminar course, the completion of at least 2.5 credits in other courses prescribed by the student's advisory committee with an overall average of at least 'B-', and satisfactory completion of a qualifying examination, thesis and final oral examination.

See also the DVSc Degree Regulations of the Faculty of Graduate Studies.

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.

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 diploma requires three semesters of full-time study, and satisfactory completion of at least 1.5 credits in applied pathology courses and 0.5 credits in other graduate courses, including the graduate seminar 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 general knowledge in the 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*6400 Seminar F,W,S [0.00]

A thesis research plan to be presented orally to the department by the third week of the third semester.

PABI*6960 Special Topics in Pathobiology F,W,S [0.00]

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

Comparative Pathology

PABI*6050 Applied Avian Pathology I F [0.50]

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

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 and early spring conditions.

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 late spring and summer conditions.

PABI*6221 Comparative Veterinary Pathology I W [0.50]

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

PABI*6222 Comparative Veterinary Pathology II F [0.50]

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

PABI*6630 Applied Comparative Pathology I F [0.50]

A study of problems in, as well as the examination of, lesions found in diseases of fish and wildlife, including amphibia and reptiles, drawn from naturally occurring cases assigned for detailed investigation. The student may be required to prepare a critical review of a specific disease entity.

PABI*6640 Applied Comparative Pathology II W [0.50]

A continuation of PABI*6630 emphasizing seasonal differences in diseases as well as diseases more commonly associated with winter and early spring conditions.

PABI*6650 Applied Comparative Pathology III F [0.50]

A continuation of PABI*6640 emphasizing seasonal difference in diseases as well as diseases more commonly associated with late spring and summer conditions.

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 models and alternatives, experimental design and considerations, biology, management and uses of common species in research.

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

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

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.

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.

PABI*6740 Avian Diseases W [0.50]

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

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]

Pathogenic bacteria with particular reference to pathogenesis, immunology, epidemiology and control.

PABI*6180 Clinical Bacteriology W [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.

PABI*6350 Molecular Epidemiology of Bacterial Diseases U [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*6420 Diagnostic Parasitology F [0.50]

Study of the laboratory diagnosis of parasites of domestic animals. (even numbered years)

MICR*6070 Bacterial Structures and Virulence F [0.50]

A study of the roles of bacterial surface structures (LPS, capsules, flagella, fimbriae, outer membrane proteins) in the virulence of bacteria. (Jointly offered by the Departments of Microbiology and Pathobiology.)

MICR*6130 Molecular Biology of Viruses W [0.50]

Replication strategies of virus genomes including prototypes of different animal, plant and (some) bacterial virus families; mechanism and control of viral gene expression; tumour virology; genetically engineered virus vaccines

Restriction(s): Credit can NOT be obtained for both MICR*4130 and MICR*6130.

MICR*6500 Microbial Genetics W [0.50]

A study of recent research developments on the mechanisms of regulation of gene expression, DNA metabolism and genome analysis of microorganisms. (Offered in even-numbered years.)

Veterinary Pathology

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

Preparation and description of materials, and interpretation of data involved in hematology, cytology, and clinical chemistry from clinical cases. (Intended for students majoring in clinical pathology.)

PABI*6040 Applied Clinical Pathology II U [0.50]

A continuation of PABI*6030 with greater depth in the interpretation of data involved in hematology, cytology and clinical chemistry from clinical cases (Intended for students majoring in clinical pathology).

PABI*6041 Applied Clinical Pathology III U [0.50]

A continuation of PABI*6040 with greater depth in the interpretation of data involved in hematology, cytology and clinical chemistry from clinical cases (Intended for students majoring in clinical pathology).

PABI*6080 Diagnostic Pathology I - Domestic Mammals F [0.50]

Examination and interpretation of gross and microscopic lesions of animal diseases.

PABI*6090 Diagnostic Pathology II - Domestic Mammals W [0.50]

A continuation of PABI*6080, emphasizing seasonal differences in diseases as well as diseases more commonly associated with winter and early spring conditions.

PABI*6091 Diagnostic Pathology III - Domestic Mammals S [0.50]

A continuation of PABI*6090, emphasizing seasonal differences in diseases as well as diseases more commonly associated with late spring and summer conditions.

PABI*6104 Mechanisms of Disease F [0.50]

Molecular, cellular and tissue processes involved in the pathogenesis of adaptive, degenerative, inflammatory, proliferative and neoplastic diseases. (odd numbered years)

PABI*6105 Integrative Pathology F [0.50]

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

PABI*6110 Pathology I W [0.50]

Disease processes of the respiratory, integumentary, reproductive and skeletal systems. (Disease processes of the respiratory, integumentary, reproductive and skeletal systems.

PABI*6130 Pathology II W [0.50]

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

PABI*6300 Clinical Pathology I W [0.50]

A study of diagnostic hematology and cytology, with emphasis on the hematopoietic system. (even numbered years)

PABI*6320 Clinical Pathology II W [0.50]

Clinical biochemistry of selected organ systems including the renal, hepatic, pancreatic and endocrine organ systems. (odd numbered years)