

# 2019-2020 Graduate Calendar

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The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2019-2020 academic year, including the Summer Semester 2019, Fall Semester 2019 and the Winter Semester 2020.

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:

- Universities of Canada

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## Disclaimer

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The Office of Graduate and Postdoctoral 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

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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

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## Collection, Use and Disclosure of Personal Information

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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](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 Advanced Education and Skills Development, 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 <https://www.uoguelph.ca/registrar/>

## Statistics Canada - Notification of Disclosure

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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

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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

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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

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Students are responsible for maintaining a current mailing address with the University. Address changes can be made, in writing, through Registrarial Services.

## Name Changes

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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, their 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

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The University undertakes to protect the privacy of each student and the confidentiality of their 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 <https://www.uoguelph.ca/secretariat/office-services/university-secretariat/university-policies>.

# Learning Outcomes

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## Graduate Degree Learning Outcomes

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On May 27, 2013, the University of Guelph Senate approved the following five University-wide Learning Outcomes as the basis from which to guide the development of graduate degree programs, specializations and courses:

1. Critical and Creative Thinking
2. Literacy
3. Global Understanding
4. Communication
5. Professional and Ethical Behaviour

These learning outcomes are also intended to serve as a framework through which our educational expectations are clear to students and the broader public; and to inform the process of outcomes assessment through the quality assurance process (regular reviews) of programs and departments.

An on-line guide to the learning outcomes, links to the associated skills, and detailed rubrics designed to support the development and assessment of additional program and discipline-specific outcomes, are available for reference on the [Learning Outcomes website](#)

### Critical and Creative Thinking

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Critical and creative thinking is a concept in which one applies logical principles, after much inquiry and analysis, to solve problems with a high degree of innovation, divergent thinking and risk taking. Those mastering this outcome show evidence of integrating knowledge and applying this knowledge across disciplinary boundaries. Depth and breadth of understanding of disciplines is essential to this outcome. At the graduate level, originality in the application of knowledge (master's) and undertaking of research (doctoral) is expected.

In addition, Critical and Creative Thinking includes, but is not limited to, the following outcomes: Independent Inquiry and Analysis; Problem Solving; Creativity; and Depth and Breadth of Understanding.

### Literacy

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Literacy is the ability to extract information from a variety of resources, assess the quality and validity of the material, and use it to discover new knowledge. The comfort in using quantitative literacy also exists in this definition, as does using technology effectively and developing visual literacy.

In addition, Literacy includes, but is not limited to, the following outcomes: Information Literacy, Quantitative Literacy, Technological Literacy, and Visual Literacy.

### Global Understanding

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Global understanding encompasses the knowledge of cultural similarities and differences, the context (historical, geographical, political and environmental) from which these arise, and how they are manifest in modern society. Global understanding is exercised as civic engagement, intercultural competence and the ability to understand an academic discipline outside of the domestic context.

In addition, Global Understanding includes, but is not limited to, the following outcomes: Global Understanding, Sense of Historical Development, Civic Knowledge and Engagement, and Intercultural Competence.

### Communication

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Communication is the ability to interact effectively with a variety of individuals and groups, and convey information successfully in a variety of formats including oral and written communication. Communication also comprises attentiveness and listening, as well as reading comprehension. It includes the ability to communicate and synthesize information, arguments, and analyses accurately and reliably.

In addition, Communication includes, but is not limited to, the following outcomes: Oral Communication, Written Communication, Reading Comprehension, and Integrative Communication.

### Professional and Ethical Behaviour

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Professional and ethical behaviour requires the ability to accomplish the tasks at hand with proficient skills in teamwork and leadership, while remembering ethical reasoning behind all decisions. The ability for organizational and time management skills is essential in bringing together all aspects of managing self and others. Academic integrity is central to mastery in this outcome. At the graduate level, intellectual independence is needed for professional and academic development and engagement.

In addition, Professional and Ethical Behaviour includes, but is not limited to, the following outcomes: Teamwork, Ethical Reasoning, Leadership, Personal Organization and Time Management, and Intellectual Independence.

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## Clinical Studies

The Department of Clinical Studies offers graduate programs leading to MSc and DVSc degrees and the graduate diploma.

### Administrative Staff

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### Graduate Faculty

#### Anthony C.G. Abrams-Ogg

BA Alberta, DVM Saskatchewan, DVSc Guelph, Dipl. ACVIM - Professor

#### Luis Arroyo

DVM Nacional, DVSc, PhD Guelph - Associate Professor

#### Shane Bateman

DVM, DVSc, DVSc, Dipl. ACVECC - Associate Professor

#### Hugues Beaufreire

DVM Lyon, PhD Louisiana - Assistant Professor

#### Alexa Bersenas

BSc, DVM, MSc Guelph, Dipl. ACVECC - Associate Professor

#### Sauna Blois

BSc, Mount Allison, DVM Prince Edward Island, DVSc Guelph, Dipl. ACVIM - Associate Professor

#### Brigitte Brisson

DMV Montreal, DVSc Guelph, Dipl. ACVS - Professor

#### Heather Chalmers

BSc, DVM, PhD Guelph, Dipl. ACVR - Associate Professor

#### Alice Defarges

DVM France (Alfort), MSc Montreal, Dipl. ACVIM - Assistant Professor

#### Sonja Fonfara

DVM, Dr med vet, PhD, CertVC, Dipl. ECVIM - Associate Professor

#### Luis Gaitero

DVM, Diplomate ECVN - Associate Professor

#### Thomas Gibson

BSc Guelph, BEd Windsor, DVM, DVSc Guelph, Dipl. ACVS, Dipl. ACVSMR - Associate Professor and Graduate Program Coordinator

#### Joanne Hewson

DVM, PhD Guelph, Dipl. ACVIM (LA) - Associate Professor

#### Samuel Hocker

BS Illinois, DVM, MS Kansas - Assistant Professor

#### Mark M. Hurtig

DVM Guelph, MVSc Saskatchewan, Dipl. ACVS - Professor

#### Fiona James

HBSc Toronto, MSc Western, DVM, DVSc Guelph, Dipl. ACVIM - Assistant Professor

#### Carolyn L. Kerr

DVM, DVSc Guelph, PhD Western, Dipl. ACVAA - Professor and Chair

#### Judith Koenig

DVM, MSc Vet. Medicine (Austria), DVSc Guelph, Dipl. ACVS/ECVS - Associate Professor

#### Noel Moens

DVM Liege (Belgium), MSc Saskatchewan, Dipl. ACVS/ECVS - Associate Professor

#### Anthony Mutsaers

DVM Guelph, PhD Toronto, Dipl. ACVIM - Assistant Professor

#### Stephanie Nykamp

DVM, MSc Western, Dipl. ACVR - Associate Professor & Associate Dean, Clinical Program

#### Michelle Oblak

DVM, DVSc Guelph, Dipl. ACVS - Assistant Professor

#### Chantale Pinard

DVM Guelph, MS Kansas State, Dipl. ACVO - Associate Professor

#### Andrea Sanchez Lazaro

DVM Murcia, DVSc Guelph - Assistant Professor

#### Melissa Sinclair

DVM Prince Edward Island, DVSc Guelph, Dipl. ACVAA - Associate Professor

#### Ameet Singh

BSc Mount Allison, DVM Atlantic Veterinary College, DVSc Guelph, Dipl. ACVS - Assistant Professor

#### Elizabeth A. Stone

BA Scripps College, DVM California (Davis), MS Georgia, MPP Duke - Professor

#### Donald Trout

BS, DVM Washington State, PhD California, Dipl. ACVS - Associate Professor

#### Alexander Valverde

DVM Nacional (Costa Rica), DVSc Guelph, Dipl. ACVAA - Associate Professor

#### Adronie Verbrugghe

BSc, DVM, PhD Ghent, Dipl. ECVN - Assistant Professor

#### J. Paul Woods

DVM Guelph, MS Wisconsin, Dipl. ACVIM (Internal Medicine, Oncology) - Professor

#### Alexander Zur Linden

BSc Simon Fraser, DVM Saskatchewan DACVR - Assistant Professor

### Associated Graduate Faculty

#### Sarah Abood

BSc, DVM Michigan, PhD Ohio - Assistant Professor, Contractually Limited Faculty, Clinical Studies, University of Guelph

#### Nicola Cribb

VetMB, MA Cambridge, DVSc Guelph, Dipl. ACVS - Assistant Professor, Large Animal Surgery, OVC, University of Guelph

#### Lynne O'Sullivan

DVM Prince Edward Island, DVSc Guelph, Dipl. ACVIM - Associate Professor, Atlantic Veterinary College

### MSc Program

#### Admission Requirements

Candidates must have either an honours baccalaureate degree or a DVM degree; licensure to practice veterinary medicine in Ontario is not required.

#### Program Requirements

Students enrol in one of two study options: 1) thesis, or 2) course work and major research paper.

#### Thesis

The thesis option provides focused research training in areas related to veterinary medicine. Research projects may examine aspects of clinical practice or concepts but are not considered discipline or specialty training. Candidates are accepted based on adequate background preparation and availability of an advisor in the area of interest. Applicants should contact potential faculty advisors with established research programs listed in the [department website](#)

Positions are generally not funded by the researcher. Qualified applicants need to provide their own living expenses and tuition funds, or obtain a scholarship or sponsorship by an organization.

We do not offer a clinical Master of Science program.

The program involves a minimum of 3 courses, a research project and writing of a thesis. Candidates are required to carry out an independent experimental study and produce a thesis. Three graduate level courses are required.

#### Course Work and Major Research Project (MRP)

The course work plus major project option will comprise a minimum of 4.5 credits, including six 0.5-credit graduate courses and a mandatory 1.0 credit, 2-semester major project course. The major project course will be supervised by the student's advisory committee, and will consist of a literature review, participation in a clinical research project or retrospective study, preparation of a manuscript suitable for publication in a peer-reviewed scientific journal, and presentation in a Departmental seminar. A mark will be assigned by the advisory committee, based on the manuscript and oral presentation.

There will be no required courses beyond the 1.0 credit project course. The remaining courses will be chosen from courses currently provided by the Department of Clinical Studies and other Ontario Veterinary College Departments, and will be tailored to the student's particular research interests. It is anticipated that most courses will be taken from within the Department. Undergraduate courses will not normally be eligible for credit toward this program. Course selection will be made by the student in consultation with the advisory committee, and will be approved by the departmental Graduate Studies and Research Committee. This option will normally require a minimum of 3 semesters of full-time study.

## DVSc Program

The DVSc degree is offered in large animal surgery, small animal surgery, large animal medicine, small animal medicine, anaesthesiology, cardiology, neurology, ophthalmology, dermatology and radiology, depending upon availability. The program provides advanced academic preparation in both clinical training and research and is a unique post-professional doctoral-level degree. The DVSc differs from PhD training by emphasizing the development of both research and applied skills in the various areas of clinical specialization appropriate for preparation for specialty Board certification.

Doctor of Veterinary Science positions are usually funded positions, and are usually advertised and selected through the American Association of Veterinary Clinicians' website at [www.virmp.org](http://www.virmp.org) which can be accessed in early October. Completed applications are due to us by December 1st each year, announcements made in early March and the start date is mid-July. Occasionally specialty training positions become available and are advertised on our website, as well as in the Canadian Veterinary Journal. This program involves one-third of the time taking a minimum of 5 graduate courses, conducting a research project and writing a thesis on the research, and two-thirds of the time in applied clinical practice. Applicants must be eligible to be licensed by the College of Veterinarians of Ontario.

The DVSc is currently an interdepartmental program and receives input from all academic departments in the Ontario Veterinary College (OVC): Biomedical Sciences, Clinical Studies, Pathobiology and Population Medicine.

### Admission Requirements

A doctor of veterinary medicine (DVM) or equivalent which would allow the applicant to be eligible for licensure to practice veterinary medicine in Ontario. In addition a completed internship or equivalent is usually required.

### Program Requirements

Candidates are required to develop investigative skills in their chosen area of specialization by carrying out an original study, generally related to animal health. The results of the research must make a significant contribution to the candidate's area of specialization and be written up as a thesis. Five graduate level courses are required.

## Graduate Diploma Program

The diploma program in clinical studies was introduced to provide appropriate postgraduate discipline training for veterinarians who wish to improve their expertise in a specific area. It entails a full-time three-semester program for candidates who are veterinarians with limited time for graduate study but who desire to upgrade their knowledge and skills. The program requires the completion of formal graduate courses and extensive participation in the care of animals admitted to the Veterinary Teaching Hospital.

Clinical instruction is done using a service team concept, wherein a graduate diploma student interacts with DVSc students and faculty advisors. It is expected that graduates will return to private practice with enhanced clinical skills, or progress into MSc or internship programs.

Candidates are accepted based on adequate background preparation and availability of an advisor in the area of interest. Applicants should contact potential faculty advisors listed in the department website. This program is not intended to upgrade general knowledge to North American standards nor is this program intended to prepare foreign graduates for national board exams.

### Admission Requirements

Admission to a postgraduate diploma program as a regular student may be granted, on recommendation of the department, to the holder of a recognized DVM degree (or equivalent) with at least 'B-' standing during the final two years of study.

### Program Requirements

The student is assigned an advisor who is responsible for the planning and regular review of the program of the candidate. A thesis is not required. Both undergraduate and graduate courses may be taken and, when appropriate for the student, a review manuscript suitable for publication in a refereed scientific journal is prepared. For some students, a heavier course load is substituted for the manuscript requirement.

## Collaborative Specializations

Faculty in Clinical Studies also participate in the collaborative specialization in Neuroscience.

## Courses

### Medicine

#### CLIN\*6010 Clinical Medicine F [0.50]

These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty commonly occurring in the Fall (F), Winter (W), and Summer (S) semesters respectively.

*Department(s):* Department of Clinical Studies

#### CLIN\*6030 Clinical Medicine W [0.50]

These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty commonly occurring in the Fall (F), Winter (W), and Summer (S) semesters respectively.

*Department(s):* Department of Clinical Studies

#### CLIN\*6031 Clinical Medicine S [0.50]

These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty commonly occurring in the Fall (F), Winter (W), and Summer (S) semesters respectively.

*Department(s):* Department of Clinical Studies

#### CLIN\*6190 Neurology F [0.50]

Basic principles of lesion localization in the domestic species with discussions of diagnostic problems in veterinary neurology. Offered alternate years.

*Restriction(s):* Instructor consent required.

*Department(s):* Department of Clinical Studies

#### CLIN\*6200 Concepts and Application of Infection Control U [0.50]

This course will involve principles of infection control in veterinary hospitals, drawing heavily from information from human medicine and evaluating human information in a veterinary context.

*Department(s):* Department of Clinical Studies

#### CLIN\*6380 Electrocardiography in Domestic Animals F,W,S [0.50]

This course will deal with the study of the electrocardiography of the cat, dog, cow and horse. Students will review the mechanisms of arrhythmogenesis and the role of anti-arrhythmic agents in the control of arrhythmogenesis.

*Department(s):* Department of Clinical Studies

#### CLIN\*6550 Small Animal Internal Medicine I U [0.50]

This is a graduate course designed for DVSc students and residents pursuing further study in the area. The basis of the course is the acquisition and application of knowledge of the pathophysiologic mechanisms of disease. The subject area(s) will be one or two organ systems, which will not be repeated in either CLIN\*6550 or CLIN\*6560 over a 3-year period.

*Department(s):* Department of Clinical Studies

#### CLIN\*6560 Small Animal Internal Medicine II U [0.50]

This is a graduate course designed for DVSc students and residents pursuing further study in the area. The basis of the course is the acquisition and application of knowledge of the pathophysiologic mechanisms of disease. The subject area(s) will be one or two organ systems, which will not be repeated in either CLIN\*6550 or CLIN\*6560 over a 3-year period.

*Department(s):* Department of Clinical Studies

#### CLIN\*6570 Large Animal Internal Medicine I W [0.50]

Advanced study in general medicine and pathophysiologic principles of disorders of the gastrointestinal and urinary systems in ruminants, swine and horses. Offered every third year.

*Department(s):* Department of Clinical Studies

#### CLIN\*6580 Large Animal Internal Medicine II W [0.50]

Advanced study in general medicine and the pathophysiologic principles of disorders of the cardiovascular, respiratory and musculo-skeletal systems of ruminants and horses. Offered every third year.

*Department(s):* Department of Clinical Studies

#### CLIN\*6590 Large Animal Internal Medicine III W [0.50]

Advanced study in general medicine and the pathophysiologic principles of neonatal disorders and disorders of the nervous system, skin and general systemic disorders. Offered every third year.

*Department(s):* Department of Clinical Studies

#### CLIN\*6661 Respiratory Physiology & Pathophysiology U [0.50]

This is a graduate course designed for veterinarians pursuing advanced training in residency and DVSc programs. The course will cover normal respiratory anatomy, physiology and pulmonary function. A focus on respiratory pathophysiology will include respiratory failure, oxygen therapy and positive pressure ventilation. (Offered every three years).

*Department(s):* Department of Clinical Studies

<b>CLIN*6670 Structure &amp; Function of Animal Skin F,W,S [0.50]</b>
A review of structure and function of skin in veterinary dermatology including the epidermis, dermis, subcutis and adnexal tissue. Application of knowledge in a clinical setting will follow with attention to modalities that will improve the epidermal barrier
<i>Restriction(s):</i> Instructor consent required.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6680 Readings in Cardiology I F,W,S [0.50]</b>
Original articles, review articles and textbook chapters dealing with the most recent concepts of pathophysiology, diagnostic procedures and therapeutic advancements will be reviewed, analyzed and discussed.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6690 Readings in Cardiology II F,W,S [0.50]</b>
Readings in Cardiology II will be a continuation of the format of Readings in Cardiology I with further readings in clinical cardiology.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6960 Special Topics: Zoological Med F,W [0.50]</b>
Preparation for the ACZM examination and based on the published ACZM examination reading list. Students will prepare reading assignments that will be discussed during scheduled time. Each semester will focus on a specific taxon group. A mock examination will be provided on an ACZM sub-specialty (typically birds, reptiles, wildlife, terrestrial mammals or aquatic medicine).
<i>Restriction(s):</i> Instructor consent required.
<i>Department(s):</i> Department of Clinical Studies

## Surgery

<b>CLIN*6170 Clinical Surgery F [0.50]</b>
These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty occurring in Fall (F), Winter (W), and Summer (S) semesters respectively. The student is required to prepare a paper for publication in a recognized peer review journal based on clinical case material presented to the teaching hospital. As an alternative, the paper can be an in-depth review article on a clinically relevant topic.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6180 Clinical Surgery W [0.50]</b>
These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty occurring in Fall (F), Winter (W), and Summer (S) semesters respectively. The student is required to prepare a paper for publication in a recognized peer review journal based on clinical case material presented to the teaching hospital. As an alternative, the paper can be an in-depth review article on a clinically relevant topic.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6181 Clinical Surgery S [0.50]</b>
These are in-service clinical training courses based on case material presented to the student in the Veterinary Teaching Hospital. Under supervision, the student is expected to take primary responsibility for case management including decisions related to diagnosis, therapy and client/referring veterinarian communications. Case material studied in each course reflects a different clinical subspecialty occurring in Fall (F), Winter (W), and Summer (S) semesters respectively. The student is required to prepare a paper for publication in a recognized peer review journal based on clinical case material presented to the teaching hospital. As an alternative, the paper can be an in-depth review article on a clinically relevant topic.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6270 Applied Surgical Principles U [0.25]</b>
General surgical principles associated with surgical and related treatment of various body systems. This is an applied course with laboratory and written components. Prerequisite: must have prior surgical training.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6310 Advanced Equine Veterinary Orthopaedics U [0.50]</b>
This course will provide the student with an in-depth understanding of orthopaedic practice and will facilitate revision of materials to prepare board certification.
<i>Prerequisite(s):</i> DVM or BSc
<i>Department(s):</i> Department of Clinical Studies

<b>CLIN*6600 Equine Soft Tissue Surgery I F,W,S [0.50]</b>
Based on required reference reading, every other week discussion will cover advanced soft tissue procedures performed in equine surgery. Guest lectures on selected topics will be presented. Laboratory will be given.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6610 Equine Soft Tissue Surgery II F,W,S [0.50]</b>
Based on required reference reading, every other week discussion will cover advanced soft tissue procedures performed in equine surgery. Guest lectures on selected topics will be presented. Laboratory will be given.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6620 Ruminant Surgery W [0.50]</b>
Through lectures/seminars, medical and surgical laboratories, and detailed case discussions, this course provides practical experience in ruminant medical, radiological and surgical procedures and in problem-solving related to ruminant practice.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6700 Pathophysiology in Small Animal Surgery I F,W,S [0.50]</b>
Based on required reference reading, weekly discussions will cover the disease mechanisms involved in medical problems commonly encountered in small animal surgical practice. Guest lectures on selected topics will be presented.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6710 Pathophysiology in Small Animal Surgery II F,W,S [0.50]</b>
Based on required reference reading, weekly discussions will cover the disease mechanisms involved in medical problems commonly encountered in small animal surgical practice. Guest lectures on selected topics will be presented.
<i>Department(s):</i> Department of Clinical Studies

## Anesthesiology

<b>CLIN*6420 Anesthesiology I S [0.50]</b>
A course in advanced veterinary anesthesia and allied topics such as fluid, acid-base, and electrolyte balance, shock therapy, and cardio pulmonary resuscitation.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6440 Anesthesiology II F,W,S [0.50]</b>
A discussion, reading and investigative course on research methods in comparative anesthesiology.
<i>Prerequisite(s):</i> CLIN*6420 is normally a prerequisite
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6460 Anesthesiology III: Species Specific and Coexisting Disease Considerations F-W [0.50]</b>
A course in advanced veterinary anesthesia that focuses on the scientific literature related to the anesthesia of specific species and veterinary patients with varying underlying diseases.
<i>Prerequisite(s):</i> DVM; CLIN*6420 and CLIN*6440
<i>Department(s):</i> Department of Clinical Studies

## Radiology

<b>CLIN*6330 Advanced Principles of Diagnostic Imaging U [0.50]</b>
This course is intended for students pursuing a career in veterinary radiology. Using a lecture-discussion format, the science of x-ray production and the fundamentals of other diagnostic imaging modalities will be presented. The specific applications of these techniques to research and clinical situations will be investigated.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6350 Advanced Radiology I F,W,S [0.50]</b>
Radiographic changes seen in diseases of the thorax and abdomen are demonstrated by using radiographs. Contrast and special studies are included where applicable.
<i>Department(s):</i> Department of Clinical Studies
<b>CLIN*6370 Advanced Radiology II F [0.50]</b>
A continuation of CLIN*6350, covering radiographic abnormalities of the neurological and skeletal systems.
<i>Department(s):</i> Department of Clinical Studies
<b>General</b>
<b>CLIN*6910 Professional Veterinary Communication Competencies F-W [0.50]</b>
This course assists learners in developing professional competencies in several critical areas of professional veterinary practice: 1) the veterinary-patient-client relationship; 2) the preparation and delivery of professional seminars; and 3) clinical teaching in small groups.
<i>Restriction(s):</i> Students in Clinical Studies
<i>Department(s):</i> Department of Clinical Studies



**CLIN\*6920 Veterinary Clinical Practice I F [0.50]**

These are in-service clinical training courses for intern/graduate-diploma students based on case material presented to the Veterinary Teaching Hospital. Under supervision, the intern/graduate-diploma student, as part of a service team with a faculty clinician, is expected to hone their diagnostic, therapeutic and surgical skills, and gain experience with animal restraint and nursing care. They will also develop a problem-oriented approach to health management and disease. Case material studied in each course reflects the clinical problems commonly occurring in the Fall, Winter and Summer semesters respectively.

*Restriction(s):* Instructor consent required.

*Department(s):* Department of Clinical Studies

**CLIN\*6930 Veterinary Clinical Practice II W [0.50]**

These are in-service clinical training courses for intern/graduate-diploma students based on case material presented to the Veterinary Teaching Hospital. Under supervision, the intern/graduate-diploma student, as part of a service team with a faculty clinician, is expected to hone their diagnostic, therapeutic and surgical skills, and gain experience with animal restraint and nursing care. They will also develop a problem-oriented approach to health management and disease. Case material studied in each course reflects the clinical problems commonly occurring in the Fall, Winter and Summer semesters respectively.

*Restriction(s):* Instructor consent required.

*Department(s):* Department of Clinical Studies

**CLIN\*6940 Veterinary Clinical Practice III S [0.50]**

These are in-service clinical training courses for intern/graduate-diploma students based on case material presented to the Veterinary Teaching Hospital. Under supervision, the intern/graduate-diploma student, as part of a service team with a faculty clinician, is expected to hone their diagnostic, therapeutic and surgical skills, and gain experience with animal restraint and nursing care. They will also develop a problem-oriented approach to health management and disease. Case material studied in each course reflects the clinical problems commonly occurring in the Fall, Winter and Summer semesters respectively.

*Restriction(s):* Instructor consent required.

*Department(s):* Department of Clinical Studies

**CLIN\*6950 Special Topics in Clinical Studies F,W,S [0.50]**

*Department(s):* Department of Clinical Studies

**CLIN\*6990 Project in Clinical Studies F,W,S [1.00]**

This course involves participation in a clinical research project or clinical retrospective study. A review of the relevant literature will be performed. A manuscript suitable for publication in a peer-reviewed journal will be prepared, and the study will be presented in a departmental seminar.

*Restriction(s):* Only available to students enrolled in the MSc by Coursework Program.

*Department(s):* Department of Clinical Studies