

VETERINARY PATHOBIOLOGY (VPTH)

VPTH 5500 One Health Study Design Seminar

This seminar course will introduce students to One Health approaches that address critical local, regional and global health problems. Students will work in interdisciplinary teams to review case studies and analyze past and current literature where One Health approaches have been applied. The course is specifically designed to foster the development of skills that allow students to think and communicate across professional disciplines. It will also help students develop transdisciplinary connections that might serve them in their professional futures. Students will be assigned a transdisciplinary team. Grading will be based on team-led presentations and analysis of literature, participation in discussion, and a final capstone project (One Health in Practice Plan) in the form of both a paper and presentation. Also Offered As: VPTH 6500
6 Credit Hours

VPTH 6340 Microbial Pathogenesis

The goal of this course is to provide the student with a conceptual framework regarding the mechanisms of microbial pathogenesis. A range of host-microbe interactions will be studied to illustrate how different microbes breach host lines of defense and lead to infections. Transmission, etiological diagnosis, as well as prophylactic and therapeutic approaches against infectious agents will be discussed with examples related to viral and bacterial pathogens, including zoonotic and Category A select agents.
2 Credit Hours

VPTH 6350 Introduction to Fish Diseases

This course is intended to introduce veterinary students to the biology and medicine of teleost fish. The first few lectures will provide a foundation in the classification, gross anatomy and immunology of fish, including practical laboratory classes. The remainder of the course will be more clinically oriented, and will present the most prevalent diseases of fish, emphasizing both the pathology and etiology of the diseases. In addition, the course will also focus on health maintenance through the control of water quality and treatment of diseases in fish. This part of the course will include some practical laboratory demonstrations. Grades will be determined on the basis of class participation and a 5-6 page research paper on a topic of the students choice.
2 Credit Hours

VPTH 6370 Capstone Proseminar in Animal Welfare and Behavior

This semester long (6 credit) online course for students enrolled in the MSc in Animal Welfare and Behavior is designed to guide students in their development of their capstone Master's project. It will provide students with the skills to refine and communicate their research questions and goals, engage in scholarly discussion in an interdisciplinary setting and the opportunity to deepen their knowledge of cutting edge research in their area of interest. Through structured synchronous meetings with mentors and peers and opportunities to attend virtual seminars across campuses, the Proseminar course also exposes students to a network of future mentors and colleagues who may play important roles in their career development. The course culminates in a written proposal describing a research question and hypothesis with a scholarly introduction to the topic and an annotated bibliography.
6 Credit Hours

VPTH 6410 Laboratory Animal Medicine

Note: This course is encouraged as a prerequisite for VPTH 789 ULAR - Laboratory Animal Medicine Clinical Rotation. This course is designed to provide further information about laboratory animal medicine to those students with a potential interest in the field. Issues of pain and distress, facility design, regulatory issues, and special procedures involving rodents and rabbits are addressed. Students will also be introduced to the mechanism of an Institutional Animal Care and Use Committee and will be primary participants in a "mock" meeting with visiting members of the committee here at Penn and actual research protocols. Grades will be determined by class participation and a short paper on a topic relevant to laboratory animal medicine.
2 Credit Hours

VPTH 6500 One Health Study Design Seminar

This seminar course will introduce students to One Health approaches that address critical local, regional and global health problems. Students will work in interdisciplinary teams to review case studies and analyze past and current literature where One Health approaches have been applied. The course is specifically designed to foster the development of skills that allow students to think and communicate across professional disciplines. It will also help students develop transdisciplinary connections that might serve them in their professional futures. Students will be assigned a transdisciplinary team. Grading will be based on team-led presentations and analysis of literature, participation in discussion, and a final capstone project (One Health in Practice Plan) in the form of both a paper and presentation. Also Offered As: VPTH 5500
6 Credit Hours

VPTH 7005 Diagnostic Services

This rotation consists of exposure to the Diagnostic Services of MUR-VHUP and this provided by the Pennsylvania Animal Diagnostic Laboratory System (PADLS) at New Bolton Center - namely clinical pathology, anatomic pathology (necropsy service), parasitology, and microbiology. The rotation is focused on development of clinical pathology and necropsy skills and will include a practicum of necropsy technique. A portion of the rotation is also focused on biopsy, parasitology and microbiology.
9 Credit Hours

VPTH 7105 Small Animal Diagnostic Services

The course in the Small Animal Section consists of exposure to the Diagnostic Services of MJR-VHUP, namely clinical pathology, anatomic pathology (necropsy service), parasitology and microbiology. The course is focused on development of clinical pathology and necropsy skills and will include a practicum of necropsy technique. A portion of the rotation is also focused on biopsy, parasitology and microbiology. Furthermore, students will be exposed large animal necropsy by spending time at PADLS at New Bolton Center. The bioanalytical pathology portion, which comprises clinical pathology, parasitology and microbiology, will be divided into microscopy, discussion, and online interactive lesson sections. During the microscopy section, students will work with the supervising clinical pathologist or resident in the evaluation, interpretation, and reporting of cytologic specimens and blood film reviews. Discussions involving parasitology and microbiology will also include treatment options and best practices. Online lessons include work in parasitology, clinical pathology and microbiology. Students are also required to perform necropsies, write necropsy reports and to familiarize themselves with the pathophysiology, histopathology and the clinical manifestations of various disorders encountered. Participation of students in presentation and discussion of cases is required. Students will be evaluated based upon enthusiasm, effort, ambition, and advancement in pathology knowledge as evaluated through the directed group discussions, necropsies, microscopy sessions and clinical competency outcomes assessments. A short paper is required. 9 Credit Hours

VPTH 7115 Farm Animal Pathology-NBC

The course will provide students with experience in farm animal and companion animal autopsies and biopsies including interpretation of gross and microscopic lesions in the context of clinical history, and proper collection of samples for histology and ancillary diagnostics (e.g. microbiology, parasitology, cytology and toxicology). Students will participate in the diagnostic services provided by the Pennsylvania Animal Diagnostic Laboratory System (PADLS) at New Bolton Center. Multiple species commonly encountered at our diagnostic laboratory (horses, cattle and small ruminants, swine, camelids and cervids, small animals and exotics) will be utilized to illustrate the pathogenesis of infectious and non-infectious disease, and the principles of gross and microscopic description with formulation of morphologic diagnoses. Students will be evaluated based upon enthusiasm, effort, ambition, and advancement in pathology knowledge as evaluated through diagnostic autopsy technique, directed group discussions, microscopy sessions and clinical competency outcomes assessments. A short paper providing a succinct scientific review of a select topic pertaining to large animal pathology is required. Although gross pathology will be emphasized, exposure to histopathology and occasionally cytology will be included. Although there is no lecture component to this course, there is a web-based introduction to VPTH 711 Diagnostic Services and VPTH 771 Diagnostic Services Elective, which students must review prior to the start of their rotation. Students may find this introduction by logging in to <https://learn.vet.upenn.edu> with their Penn Key and Vet Domain password.

Also Offered As: VPTH 7715
9 Credit Hours

VPTH 7185 Poultry Production Medicine-NBC

This course is designed to provide students with a working knowledge of the management and production of poultry from hatchery to processing. The course will involve multiple field trips to a hatchery, grow out pullet house, layer house, breeder house, processing plant and a feed mill. There will also conduct necropsies on cases submitted to the diagnostic laboratory and learn the diagnostic procedures such as serology, virology and PCR testing. 8 Credit Hours

VPTH 7705 Small Animal Diagnostic Services

The course in the Small Animal Section consists of exposure to the Diagnostic Services of MJR-VHUP, namely clinical pathology, anatomic pathology (necropsy service), parasitology and microbiology. The course is focused on development of clinical pathology and necropsy skills and will include a practicum of necropsy technique. A portion of the rotation is also focused on biopsy, parasitology and microbiology. Furthermore, students will be exposed large animal necropsy by spending time at PADLS at New Bolton Center. The bioanalytical pathology portion, which comprises clinical pathology, parasitology and microbiology, will be divided into microscopy, discussion, and online interactive lesson sections. During the microscopy section, students will work with the supervising clinical pathologist or resident in the evaluation, interpretation, and reporting of cytologic specimens and blood film reviews. Discussions involving parasitology and microbiology will also include treatment options and best practices. Online lessons include work in parasitology, clinical pathology and microbiology. Students are also required to perform necropsies, write necropsy reports and to familiarize themselves with the pathophysiology, histopathology and the clinical manifestations of various disorders encountered. Participation of students in presentation and discussion of cases is required. Students will be evaluated based upon enthusiasm, effort, ambition, and advancement in pathology knowledge as evaluated through the directed group discussions, necropsies, microscopy sessions and clinical competency outcomes assessments. A short paper is required. 9 Credit Hours

VPTH 7715 Farm Animal Pathology-NBC

The course will provide students with experience in farm animal and companion animal autopsies and biopsies including interpretation of gross and microscopic lesions in the context of clinical history, and proper collection of samples for histology and ancillary diagnostics (e.g. microbiology, parasitology, cytology and toxicology). Students will participate in the diagnostic services provided by the Pennsylvania Animal Diagnostic Laboratory System (PADLS) at New Bolton Center. Multiple species commonly encountered at our diagnostic laboratory (horses, cattle and small ruminants, swine, camelids and cervids, small animals and exotics) will be utilized to illustrate the pathogenesis of infectious and non-infectious disease, and the principles of gross and microscopic description with formulation of morphologic diagnoses. Students will be evaluated based upon enthusiasm, effort, ambition, and advancement in pathology knowledge as evaluated through diagnostic autopsy technique, directed group discussions, microscopy sessions and clinical competency outcomes assessments. A short paper providing a succinct scientific review of a select topic pertaining to large animal pathology is required. Although gross pathology will be emphasized, exposure to histopathology and occasionally cytology will be included. Although there is no lecture component to this course, there is a web-based introduction to VPTH 711 Diagnostic Services and VPTH 771 Diagnostic Services Elective, which students must review prior to the start of their rotation. Students may find this introduction by logging in to <https://learn.vet.upenn.edu> with their Penn Key and Vet Domain password.

Also Offered As: VPTH 7115

9 Credit Hours

VPTH 7805 Poultry Production Medicine-NBC

This course is designed to provide students with a working knowledge of the management and production of poultry from hatchery to processing. The course will involve multiple field trips to a hatchery, grow out pullet house, layer house, breeder house, processing plant and a feed mill. There will also conduct necropsies on cases submitted to the diagnostic laboratory and learn the diagnostic procedures such as serology, virology and PCR testing.

8 Credit Hours

VPTH 7895 Lab Animal/Comparative Medicine

This rotation will provide an opportunity to work with the wide variety of animal species used in biomedical research at the University of Pennsylvania, including nonhuman primates, small rodents, guinea pigs, rabbits, dogs, cats, pigs, and sheep. The students will participate in all aspects of the care and treatment of these animals across the facilities at the University of Pennsylvania. Participation may include handling, husbandry, diagnosis, treatment, anesthesia, and assistance with surgery. Students will perform daily rounds with the clinical veterinarians and other staff members. The student may have the opportunity to observe on-going interdisciplinary research programs including cardiopulmonary bypass, organ transplantation, gene therapy, device implantations, and metabolic disease progression. Students will participate in clinical rounds, didactic training classes, and related seminars and journal clubs as scheduled. Participation in necropsies of clinical cases, sentinel animals, and study animals is expected. A brief assignment on aspects of lab animal medicine will be required prior to completion of the rotation. Depending upon scheduling, the students will have an opportunity to attend a meeting of the Institutional Animal Care and Use Committee. A recent (within 6 months) negative skin test against tuberculosis is required by the first day of the rotation.

8 Credit Hours

VPTH 7900 Small Animal Pathology Holiday Rotation

This is an elective rotation similar to the necropsy component of the Diagnostic Services Rotation, VPTH 710,770. The rotation consists of practicum spent in performing necropsies and interpreting findings. Students are required to perform necropsies, write necropsy reports and to familiarize themselves with the pathophysiology, histopathology and the clinical manifestations of various disorders encountered. There will be two one-week rotations over the Holiday period, each for 2 credits. Each rotation will consist of half of the Holiday period and will not meet on either Christmas Day (week one) or New Years Day (week two). There is no clinical pathology, parasitology or microbiology component to this rotation. No paper is required for this rotation.

2 Credit Hours