

# VETERINARY CLINICAL STUDIES AND ADVANCED MEDICINE - PHILADELPHIA (VCSP)

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## **VCSP 6320 Diagnosis of Common Veterinary Intoxications**

The diagnosis of poisoning in small animals has become an important part of Veterinary Medicine. All parts of Veterinary education are used in making diagnoses and formulating treatment of the poisoned animal patient. Thus, the course involves the integration of preclinical and clinical subjects, rather than simply the study of toxicology. The instructors will provide detailed descriptions of cases from the Emergency Service files, integrated with the more typically academic aspects of toxicology. A variety of common toxins will be discussed including ethylene glycol, lead, zinc, organophosphates, rodenticide anticoagulants, cholecalciferol and non-steroidal anti-inflammatory drugs. The format for this course will be creative and include interactive lectures and discussions. The major emphasis of the course will be the clinical diagnosis and clinical management of intoxicated patients utilizing basic physiological and pharmacologic principles.

2 Credit Hours

## **VCSP 6330 Fundamentals of Animal Behavior**

This course is foundational for students enrolling in the Animal Welfare and Behavior Certificate Program and provides students with the fundamental tools to interpret the behavior of small (companion) and large (farm) animals, poultry, and laboratory animals. Specifically, the course will cover the anatomy and physiology that regulate behavior, its modification through learning, and animal cognition. The evolution and individual development of a behavior, including the analysis of its mechanism, adaptive value, ontogeny, and phylogeny. The ecology of domestic and laboratory animals: environmental needs, body care, locomotion and exploration. The social behavior of domestic and laboratory animals: affiliative and aggressive behavior, body language. The ingestive (feeding and drinking) behavior of domestic and laboratory animals. The reproductive and maternal behavior of domestic and laboratory animals.

6 Credit Hours

## **VCSP 6340 Emergency Preparedness and Response**

Emergency preparedness and response integrates core professional competencies including communication, collaboration, management, lifelong learning, scholarship, promoting the value of research, leadership, diversity and multicultural awareness, and adapting to changing environments. The organization of this course emphasizes the clinically relevant aspects of public health in the context of emergency preparedness. The importance of emergency preparedness/response and public health is especially evident in the time of the Covid-19 pandemic, and this course should help emphasize the importance of understanding these concepts in a clinical setting for any graduating veterinarian. The course will help prepare students for approaching a patient from the population or response levels. This is relevant to all practitioners, as emergency preparedness and response is currently an asset in private practice as well as sheltering or public health settings. Lectures/discussions are via zoom. Students may complete this course remotely as long as they have internet access and they can participate in discussions via camera and audio. This course will also be offered during the same rotation block/summer period as the Student Shelter Opportunities summer elective course and Shelter Animal Medicine elective course and can be taken by itself or with those other courses.

3 Credit Hours

## **VCSP 6350 Avian Medicine and Surgery**

The goal of this course is to provide an introduction to companion avian medicine by reviewing the natural history and species identification of common pet psittacines, handling and clinical techniques, avian husbandry and nutritional disease, clinically-relevant anatomy, common diseases, avian therapeutics, avian radiology, clinical pathology, with an introduction to avian behavior. This course is designed to cover NAVLE focused material as a review and to equip future avian veterinarians with clinically-relevant resources that will enable them to become practice ready after graduation.

2 Credit Hours

## **VCSP 6360 Reptile and Amphibian Medicine and Surgery**

The goal of this course is to provide an introduction to companion reptile medicine by reviewing the natural history and species identification of common pet reptiles, handling and clinical techniques, reptile and amphibian husbandry, clinically-relevant anatomy, clinical pathology, diagnostic imaging common, infectious diseases, and therapeutics. This course is designed to cover NAVLE focused material as a review and it is designed to equip future reptile and amphibian veterinarians with clinically-relevant resources that will enable them to become practice ready after graduation.

2 Credit Hours

## **VCSP 6380 Legal Issues for Veterinarians**

Course is a broad overview of the legal issues veterinarians face on a daily basis, including legal constraints on practice; overview of laws regulating animals (including laws specific to Pennsylvania); divorce and custody battles; illegal drug compounding; internet pharmacies; lemon laws; pet health insurance; vaccination and liability; negotiating and understanding the employment relationship; veterinary malpractice and state board investigations; responding to client complaints; importance of medical records/informed consents; and, applied professional ethics with clients and colleagues including study of social media. A course hand-out will be provided. Testing of students will be through the use of 2 homework assignments. Attendance mandatory.

2 Credit Hours

### **VCSP 6390 Animals & Society**

This course is a foundational course for students enrolling in the Animal Welfare Certificate Program. It will describe the changing roles and status of animals in society, and examine the history of human-animal relationships through the lens of subsistence hunting, animal domestication, farming and pastoralism, animal research, and pet keeping. The historical development of ambivalent/oppositional attitudes to animal exploitation will also be described and discussed, and the remarkable diversity of contemporary human-animal relationships and their impacts on animal welfare will be explored across cultures and contexts. The influence of science, government, business, and non-governmental organizations in defining and influencing animal-related laws and policies will also be addressed.

6 Credit Hours

### **VCSP 6440 Zoo Animal Welfare**

Zoos and aquariums house an amazing diversity of animal species, each with unique physical, behavioural, physiological, and nutritional needs. The complexities of successfully managing these species in a captive environment are mirrored by the complexities of assessing animal welfare. In this half-credit course, we will explore how definitions of animal welfare apply to wild animals in zoos and aquariums. Based on an understanding of what animal welfare is, and the different ways it can be measured in zoos and aquariums, the course will describe strategies that are used to address animal welfare issues in these captive conditions. These strategies will include the use of environmental enrichment, the application of positive reinforcement training, effective exhibit design, and leveraging available research on captive wild species. While the principles of animal welfare remain consistent across different captive animal settings (e.g., labs, farms, zoos, and shelters), it is especially important to understand the specific needs of individual species in zoos and aquariums as a way to meet their behavioural needs. This requires effective networking approaches within the scientific and animal care communities to gather knowledge and build effective collaborations, and this course will touch on best practices for building and maintaining effective professional networks. In their final project, students will use their understanding of welfare and principles of environmental enrichment to design an enrichment initiative for a chosen zoo/aquarium species that will have the potential to significantly improve their welfare if implemented in a captive environment. Students will present their designs, and the rationale for their effectiveness to the class.

Prerequisite: VCSP 6330 AND VCSP 6390 AND VCSN 6390 AND VCSN 6500

3 Credit Hours

### **VCSP 6450 Canine Functional Musculoskeletal Anatomy**

This elective course for third- and fourth-year veterinary students bridges foundational anatomy education with clinical application, focusing on evaluating, diagnosing, and treating canine musculoskeletal conditions. Students will integrate dissection, static and dynamic examinations, and diagnostic imaging to simultaneously learn normal and pathological anatomy. A combination of lectures and hands-on laboratories will develop skills in visual assessment, palpation, imaging and patient handling techniques. The course culminates with clinical case studies, where students will formulate diagnoses and create treatment plans, including home exercise programs.

2 Credit Hours

### **VCSP 6451 Canine Functional Musculoskeletal Anatomy Lecture Course**

This elective course for third- and fourth-year veterinary students bridges foundational anatomy education with clinical application, focusing on evaluating, diagnosing, and treating canine musculoskeletal conditions. Students will learn to apply foundational anatomy knowledge to performing static and dynamic examinations as well as basic musculoskeletal diagnostic imaging. The course culminates with clinical case studies, where students will formulate diagnoses and create treatment plans, including home exercise programs.

1 Credit Hour

### **VCSP 6460 Small Animal Surgery and Anesthesia**

This course will explore selected topics of advanced soft tissue and orthopedic surgical procedures in dogs and cats. Topics will include oral surgery, thoracic and abdominal surgery, reconstructive surgery, minimally invasive surgery, joint surgery, fracture fixation, and veterinary rehabilitation. Practical laboratory sessions will reinforce lecture material. Students will perform gastrointestinal surgical procedures on models. Laboratories will be held where students will perform local anesthetic techniques and various orthopedic and soft tissue procedures on canine cadavers. Letter grades will be assigned, based on performance on post-laboratory assessments and a final exam. Minimum: none/ Maximum Enrollment: 80. If a lottery is required, 4th year students will receive priority over 3rd year students. After class year, students will be prioritized by major, with SA majors receiving preference.

5 Credit Hours

### **VCSP 6470 Small Animal Surgery/Anesthesia Laboratory**

The class is divided into 2 groups. Building on the Core Anesthesia and Surgery laboratory course, this course provides the student with experience as assistant surgeon, surgeon and anesthetist while performing exploratory laparotomy and hysterectomy in cats. The cats are provided by an animal shelter and are returned to the shelter for adoption following surgery. Students enrolled in the course, working in teams of three, are responsible for examination and veterinary care (under supervision) at least daily while the cats are at the Veterinary School. There are two additional laboratory sessions. One is a session during which enterotomy, intestinal anastomosis and other soft-tissue procedures will be performed by each student on tissues. The other is an orthopedic procedure session during which pinning and plating techniques are performed by each student on models.

2 Credit Hours

### **VCSP 6480 Small Animal Anesthesia**

This discussion course will stress the application of physiology, pharmacology, clinical pharmacology, and economics to the clinical administration of anesthesia. Minimum: none/Maximum Enrollment: 40 - If a lottery is required, preference will be given to small animal majors, followed by mixed animal majors. Offered during Rotation 16

1 Credit Hour

**VCSP 6490 Small Animal Emergency and Critical Care Medicine**

The goals of this course are to make the student more comfortable managing both emergent and severely sick animals that require rapid stabilization, intensive care, frequent monitoring, and aggressive therapy to maximize positive outcomes. Animals with life threatening diseases can be some of the most challenging and stressful cases both for veterinarians and pet owners. Therefore, the knowledge and competence to properly diagnose, treat and provide an accurate prognosis helps the animal, client, and veterinarian. This course also introduces students to advanced modalities of treatment such as cardiopulmonary resuscitation, invasive respiratory support options, extracorporeal therapy, and interventional radiology for patients with life-threatening diseases. The course includes 16 hours of lecture and 16 hours of active learning activities and case discussions to reinforce the lecture material. The course is suitable for students that might be interested in emergency and critical care specialization as well as for future general practice or emergency only veterinarians that wish to provide a high level of emergent and intensive care (and understand when to refer) the sickest of small animal patients.

3 Credit Hours

**VCSP 6500 Small Animal Dentistry and Oral Surgery**

Building on the dentistry and oral surgery information presented in the first and second year, the lectures cover the spectrum of dental and oral diseases and procedures seen and practiced in small animals. The course is integrated with dentistry and oral surgery lectures presented in. Although there are normally no laboratory practice sessions included in this course, laboratory practice sessions based on material in this course are included in the Small Animal Dentistry and Oral Surgery clinical rotation (VCSP 8175/VCSP 8775).

2 Credit Hours

**VCSP 6510 Practice Management**

This elective will provide foundational practice management knowledge that students will use as soon as they enter their clinical rotations and begin their first jobs or internships. Whether students plan on being a practice owner, a veterinary practice associate, or aspire to a position in academia or industry, they will learn concepts that will apply in all of those situations. Students should come away from taking this course with an optimistic view of their future in veterinary medicine as a professional and students should feel a stronger and more positive sense of the control they have over their future. The course includes 24 hours of lectures covering multiple topics pertaining to veterinary practice management. The course is suitable for students who might be interested in opening a veterinary practice or who want to understand veterinary practice management. To receive credit for this elective a student will need to submit a paper summarizing the course material and how they will utilize the course content in practice. Grading utilizes a traditional letter grade format.

3 Credit Hours

**VCSP 6520 Introduction to Shelter Animal Medicine**

This course introduces students to the general concepts of shelter medicine by utilizing small group discussion and cases during the lecture sessions, limited off-site self-directed shelter visits, and presentations on projects. Topics covered will include introductions to shelter standards, biosecurity, shelter statistics, cage-side assessments, shelter medicine specialty, outbreak management, evidence-based assessments, behavior, exotics, outreach, etc. Course grades will be determined by required attendance, participation in discussions, a literature review assignment, and shelter protocol project. Students are strongly encouraged to take the shelter medicine rotation. Lectures/discussions are via zoom. Students may complete this course remotely as long as they have internet access and they can participate in discussions via camera and audio. This course will also be offered during the same rotation block/summer period as the Emergency Preparedness and Response elective course and Student Shelter Opportunities summer elective course and can be taken by itself or with those other courses.

2 Credit Hours

**VCSP 6540 Small Animal Critical Care Medicine**

This course offers a comprehensive overview of several key aspects of critical care medicine. Lectures will primarily use a "case-based" approach with discussion of the physiology of organ function and the pathophysiology of disease, and will highlight state-of-the-art concepts for these exciting patients. The final session will be a "hands-on" laboratory in which the students will work with the monitoring instruments that have been discussed during the course. Evaluation will be based on a take home examination.

2 Credit Hours

**VCSP 6550 Introduction to Wildlife Medicine I**

This course is designed to provide students with an overview of the field of wildlife medicine through lectures on current wildlife topics and research given by veterinarians and other professionals working in various aspects of the field. Topics covered may include environmental monitoring, emerging wildlife diseases and One Health, disease surveillance and prevention, disease outbreaks and control, captive propagation and species re-introduction, captive wildlife management, treatment of native wildlife in clinical practice, and wildlife rehabilitation. The course includes nine hours of lectures and six 30-minute sessions where students will be required to ask questions of the speakers relevant to their wildlife work or research. The course is suitable for students who are interested in pursuing wildlife work as a primary career as well as for future general practice veterinarians who wish to be more informed on wildlife careers and related research.

1 Credit Hour

**VCSP 6560 Introduction to Wildlife Medicine II**

This course is designed to provide current information regarding the clinical aspects of wildlife medicine for veterinary students through a lecture and wet lab format. Lecture and/or laboratory topics may include: wildlife diseases; medical management of native mammals, reptiles, and birds; diseases; pathology; physical examination techniques; and introductions to necropsy techniques, fracture immobilization, and emergency care. The course includes nine hours of lectures addressing field investigations of wildlife health, common diseases, toxins, and other health threats impacting wild mesocarnivores, ruminants, birds, herptiles, and fish and/or marine mammals. Wet labs will provide necropsy, comparative anatomy, and sample collection opportunities in a variety of species; special treatment methods used for wild birds and reptiles; and methods for field immobilization. The course is suitable for students interested in pursuing wildlife work as a primary career as well as for future general practice veterinarians who may be presented with wildlife in need of care, or who may choose to provide veterinary services for wildlife rehabilitators.

2 Credit Hours

**VCSP 6570 Aquatic Animal Medicine**

The goal of this course is to give an introduction to aquatic animal medicine by providing students with information regarding the species and their care for pet, aquarium and aquaculture aquatic species. Water quality maintenance, clinical techniques, and common infectious and non-infectious diseases will be reviewed. This course is designed to cover NAVLE focused material as a review and it is designed to equip future aquatics veterinarians with clinically-relevant resources that will enable them to become practice ready after graduation.

2 Credit Hours

**VCSP 6580 Exotic Companion Mammal Medicine and Surgery**

The goal of this course is to provide an introduction to companion small mammals by reviewing the natural history and species identification of common pets, handling and clinical techniques, husbandry, clinically-relevant anatomy, common diseases and emergency triage principles, therapeutics, radiology, clinical pathology, and basic surgery. This course is designed to cover NAVLE focused material as a review and to equip future small mammal veterinarians with clinically-relevant resources that will enable them to become practice ready after graduation.

2 Credit Hours

**VCSP 6590 Small Animal Advanced Cardiology**

This course will build on the core cardiology curriculum by introducing a wider range of topics involving cardiovascular disease, treatment, and research in small animals. In-depth topics include diagnosis and treatment of cardiac arrhythmias, correction of congenital heart defects using minimally invasive catheter-based therapies, echocardiography of feline cardiomyopathy, clinical pathophysiology of degenerative mitral valve disease, and a review of the clinical trial evidence that forms the basis of standard treatment recommendations for congestive heart failure. The course is designed for a relatively small number of students so that discussion and interaction with the instructor(s) is facilitated. The course is suitable for students that might be interested in cardiology specialization or research careers as well as for future general practice veterinarians that wish to provide a high level of cardiac care for their patients.

1 Credit Hour

**VCSP 6600 Advanced Small Animal Electrocardiography and Arrhythmias**

This course will build on the core cardiology curriculum by introducing a wider range of topics involving cardiovascular arrhythmias and interpretation of the electrocardiogram (ECG). In-depth topics include cardiac electrophysiology, diagnosis and treatment of supraventricular and ventricular arrhythmias and disorders of the atrioventricular (AV) and sinoatrial (SA) node, anti-arrhythmia drugs, and artificial cardiac pacing. The course includes 10 hours of lecture/discussion and 6 hours of laboratory. The labs involve small group assessment of clinical cases with cardiac rhythm disorders. The course is particularly suitable for students that might be interested in careers especially focused on small animals, as well as for those with ambitions to pursue specialization involving cardiology, internal medicine, emergency/critical care, or anesthesia.

2 Credit Hours

**VCSP 6640 Student Shelter Opportunities**

This course is an introduction to High Quality High Volume Spay-Neuter (HQHVSN) surgery in the shelter environment and consists of 17 online lecture hours and 3 hours of in-person lecture hours of material that utilizes the Association of Shelter Veterinarians' Veterinary Medical Care Guidelines for Spay-Neuter Programs. Lecture topics, assignments, and pre/post tests are delivered online and include an overview of HQHVSN, patient handling, anesthesia and pain management in the shelter environment, partner protocols, patient monitoring, patient presurgical preparation, basic surgical principles, sterilization of the male and female cat, and sterilization of the male and female dog. In-person lecture and discussion sessions will complement and expand upon online material. The lab component of this course consists of four hours of skills lab and 8 hours in a clinical setting with shelter medicine faculty participating in perioperative activities, which include physical exam, induction, patient preparation, surgery, and recovery. Emphasis in this course is a holistic approach to HQHVSN including pre-clinical skill acquisition that also introduces some concepts of shelter medicine and community programming. Grading is pass/fail. Purchase of an online webtext is required. Curriculum/course to cover high-quality, high-volume surgical and anesthetic principles to properly prepare students for not only these experiences, but give them a better foundation for learning life-long skills and enhancing their surgical experience at Penn via authentic learning experiences. Students will have to complete extensive online learning, assessments, and skills labs for this course. Students will complete webtext material asynchronously in the fall semester and attend three one-hour discussion sessions scheduled around the second year course schedule. In the spring, students will attend one Saturday lab and one Saturday clinic. Dates will be released for the spring at the end of the fall semester.

3 Credit Hours

**VCSP 6641 Student Shelter Opportunities Online**

This course is an introduction to High Quality High Volume Spay-Neuter (HQHVSN) surgery in the shelter environment and consists of 17 asynchronous online lecture hours and 3 hours of Zoom-based synchronous lecture hours of material that utilizes the Association of Shelter Veterinarians' Veterinary Medical Care Guidelines for Spay-Neuter Programs. Lecture topics, assignments, and pre/post tests are delivered online and include an overview of HQHVSN, patient handling, anesthesia and pain management in the shelter environment, partner protocols, patient monitoring, patient pre-surgical preparation, basic surgical principles, sterilization of the male and female cat, and sterilization of the male and female dog. Online lecture and discussion sessions will complement and expand upon online material. There are no lab or in-person clinical components to this course. Emphasis in this course is a holistic approach to HQHVSN including pre-clinical skill acquisition that also introduces some concepts of shelter medicine and community programming. Grading is pass/fail. Purchase of an online webtext is required. Curriculum/course to cover high-quality, high-volume surgical and anesthetic principles to properly prepare students for not only these experiences, but give them a better foundation for learning life-long skills and enhancing their surgical experience at Penn via authentic learning experiences. Students will have to complete extensive online learning and assessments for this course. Students will complete webtext material asynchronously during the summer block and will be required to attend three one-hour discussion synchronous sessions scheduled during the summer online. Dates will be released for the summer session by the end of the spring semester. Students who take the 2nd year elective VCSP6640 may not sign up for this course. Students may complete this course remotely as long as they have internet access and they can participate in discussions via camera and audio. This course will also be offered during the same rotation block/summer period as the Emergency Preparedness and Response elective course and Shelter Animal Medicine elective course and can be taken by itself or with those other courses. 2 Credit Hours

**VCSP 7005 Small Animal Internal Medicine-Foundation**

The Internal Medicine Service involves clinical training in all core medicine disciplines including endocrinology, gastroenterology, hematology, infectious disease, nephrology, oncology and pulmonary medicine. Clinical rotation students will assist doctors in history taking, physical examinations and the medical management of patients presented to the Matthew J. Ryan Veterinary Hospital of the University of Pennsylvania. Emphasis will be placed on problem solving, understanding of pathophysiology and integration and utilization of principles of medicine. As experience is gained, students will assume more responsibility in patient management. Students and staff will participate in daily rounds and conferences. 9 Credit Hours

**VCSP 7105 Small Animal Internal Medicine**

The elective rotation in small animal internal medicine will provide further contact and experience in problems of internal medicine (diseases of the endocrine, gastrointestinal, hematologic, pulmonary, and urogenital systems). Students in the elective rotation will be assigned more complex cases, and they will be expected to assume more responsibility for patient management and decision-making. 6 Credit Hours

**VCSP 7125 Small Animal Intensive Care Medicine Service**

The ICU Service provides an evidenced-based medical approach to the management of critical and often very unstable patients. Since these cases are often very challenging diagnostically, and also very dynamic, they provide an excellent learning experience, with ample opportunity for practicing physical examination skills, one-on-one discussion with the clinicians, and additional background reading. Students have an opportunity to become familiar with use and interpretation of the advanced diagnostic monitoring techniques and therapeutic strategies in the ICU, and are also encouraged to perform and perfect technical skills such as catheterization of blood vessels and urinary bladder, thoraco- and abdominocentesis, etc. During the time in ICU, we encourage integration and a team approach among the students, the ICU clinicians, and the nursing staff. Students on the ICU service start daily at or before 7:00am and stay until their cases are stable and all of the proposed diagnostics have been completed (usually ~6pm). Students are expected to SOAP the cases daily, including weekends, and to be closely involved in decision-making, diagnostics and treatment of ICU patients. Students are internally scheduled to assist in treatments in the Intensive Care Unit; patient care shifts may include evening and overnight responsibilities. Weekend duties are distributed equitably among all assigned students. Afternoon rounds are held daily Monday-Friday at approximately 2pm Student teaching rounds are held most weekdays at approximately 3.30pm, or as soon as afternoon rounds are completed. 9 Credit Hours

**VCSP 7155 Small Animal Cardiology Service**

Students will participate in outpatient and inpatient cardiovascular examinations and treatments. Cardiology outpatient appointments are scheduled Monday through Friday. Cardiology surgical procedures are typically performed every other Wednesday. The Cardiology Service also performs consultations for other departments in the hospital. Cardiology accepts transfers from the Emergency Service every day of the week and assumes primary case responsibility for these patients. The group captain will develop an on-call schedule (seven days/week). The on-call student will assist with any cases transferred from the Emergency Service in the morning and will be on-call after hours in the event of an emergency procedure (e.g. pacemaker implantation). Student responsibilities include obtaining a complete medical history, performing a thorough physical examination with emphasis on the cardiovascular system, helping to facilitate any diagnostic tests, and working on the medical record (client discharge and SOAP notes). The medical record will be reviewed and finalized by the attending cardiologist. After orientation on the first day, students are responsible for recording and interpreting electrocardiograms as well as interpreting thoracic radiographs and pertinent clinical laboratory data. Students assist with performance of echocardiograms and are expected to become familiar with standard echo images and measurements. Students are also expected to summarize pertinent findings in cases under their care (outpatients and inpatients) at daily rounds and be able to discuss their significance. Didactic rounds occur in the morning most days. Specific rounds topics covered include: introduction to echocardiogram, intracardiac pressures and the modified Bernoulli equation, ECG introduction and interpretation, "Can't leave cardio without knowing" questions, and thoracic x-ray cases. A quiz is administered the final day of the service. 8 Credit Hours

**VCSP 7165 Dermatology & Allergy Service**

This service exposes the student to case material presented to the Dermatology and Allergy Clinic at the small animal hospital and may include case material presented to the large animal hospital at New Bolton Center. Special emphasis is given in the discussion of each patient to the etio-pathogenesis, diagnosis, and treatment of disease. The primary objective of this course are to acquire a practical skillset to recognize, diagnose, and treat common dermatologic diseases in animals  
8 Credit Hours

**VCSP 7175 Comprehensive Cancer Care Service**

This service will expose students to a comprehensive approach to clinical oncology in small animals, including cancer diagnosis, staging, treatment, and palliative care. This service is primarily comprised of faculty and staff from Medical Oncology and Radiation Oncology. Other services, such as Interventional Radiology, may also be involved. Students are expected to participate in the care of outpatient and hospitalized cases and in patient care rounds in the morning and afternoon. Weekend duties include morning and afternoon treatments for hospitalized patients. Each student will present and discuss a journal article or relevant tumor topic once during the service.  
9 Credit Hours

**VCSP 7215 Primary Care Services**

This rotation will offer students the opportunity to evaluate cases scheduled with the Primary Care Service (PCS). The Primary Care Service is designed to give students first-hand experience in dealing with common general practice clinical cases and with client communication. The main objective is for students to have the opportunity to be the vet while working under the guidance and supervision of a PCS veterinarian.  
8 Credit Hours

**VCSP 7220 Small Animal Pediatrics/Genetics/Reproduction**

The Small Animal Pediatrics-Genetics-Reproduction Clinic is run under the supervision of two board-certified faculty and two residents and emphasizes the unique care of pediatric patients, the approach and management of hereditary diseases, and reproductive problems. Pediatric and genetics clinics are held on Mondays and Tuesdays, and reproduction appointments are seen any day of the week. In addition to the clinical appointments, there is opportunity to see several unique genetic diseases in dogs and cats and handle the youngest of pediatric patients in the animal colonies, as well as get an appreciation for the specialty diagnostic laboratories. The clinical rotation deals with the initial yet crucial pediatric wellness visits including nutrition, socialization and preventive care and disease issues specific to this age group. The clinic highlights the evaluation of normal development and diagnosis of diseases of puppies and kittens (<1 year). Moreover, kittens and puppies with known or suspected inherited disorders are examined for which genetic counseling or special diagnostic studies are required. It provides experience with routine immunizations, treatment and prevention of parasitism, and nutritional and spay/neuter counseling.  
Also Offered As: VCSP 7820  
2 Credit Hours

**VCSP 7705 Small Animal Internal Medicine**

The elective rotation in small animal internal medicine will provide further contact and experience in problems of internal medicine (diseases of the endocrine, gastrointestinal, hematologic, pulmonary, and urogenital systems). Students in the elective rotation will be assigned more complex cases, and they will be expected to assume more responsibility for patient management and decision-making.  
9 Credit Hours

**VCSP 7725 Small Animal Intensive Care Medicine Service**

The ICU Service provides an evidenced-based medical approach to the management of critical and often very unstable patients. Since these cases are often very challenging diagnostically, and also very dynamic, they provide an excellent learning experience, with ample opportunity for practicing physical examination skills, one-on-one discussion with the clinicians, and additional background reading. Students have an opportunity to become familiar with use and interpretation of the advanced diagnostic monitoring techniques and therapeutic strategies in the ICU, and are also encouraged to perform and perfect technical skills such as catheterization of blood vessels and urinary bladder, thoraco- and abdominocentesis, etc. During the time in ICU, we encourage integration and a team approach among the students, the ICU clinicians, and the nursing staff. Students on the ICU service start daily at or before 7:00am and stay until their cases are stable and all of the proposed diagnostics have been completed (usually ~6pm). Students are expected to SOAP the cases daily, including weekends, and to be closely involved in decision-making, diagnostics and treatment of ICU patients. Students are internally scheduled to assist in treatments in the Intensive Care Unit; patient care shifts may include evening and overnight responsibilities. Weekend duties are distributed equitably among all assigned students. Afternoon rounds are held daily Monday-Friday at approximately 2pm Student teaching rounds are held most weekdays at approximately 3.30pm, or as soon as afternoon rounds are completed.  
9 Credit Hours

**VCSP 7765 Dermatology & Allergy Service**

This service exposes the student to case material presented to the Dermatology and Allergy Clinic at the small animal hospital and may include case material presented to the large animal hospital at New Bolton Center. Special emphasis is given in the discussion of each patient to the etio-pathogenesis, diagnosis, and treatment of disease. The primary objective of this course are to acquire a practical skillset to recognize, diagnose, and treat common dermatologic diseases in animals  
8 Credit Hours

**VCSP 7775 Comprehensive Cancer Care Service**

This service will expose students to a comprehensive approach to clinical oncology in small animals, including cancer diagnosis, staging, treatment, and palliative care. This service is primarily comprised of faculty and staff from Medical Oncology and Radiation Oncology. Other services, such as Interventional Radiology, may also be involved. Students are expected to participate in the care of outpatient and hospitalized cases and in patient care rounds in the morning and afternoon. Weekend duties include morning and afternoon treatments for hospitalized patients. Each student will present and discuss a journal article or relevant tumor topic once during the service.  
9 Credit Hours

**VCSP 7815 Primary Care Services**

This rotation will offer students the opportunity to evaluate cases scheduled with the Primary Care Service (PCS). The Primary Care Service is designed to give students first-hand experience in dealing with common general practice clinical cases and with client communication. The main objective is for students to have the opportunity to be the vet while working under the guidance and supervision of a PCS veterinarian.  
8 Credit Hours

**VCSP 7820 Small Animal Pediatrics/Genetics/Reproduction**

The Small Animal Pediatrics-Genetics-Reproduction Clinic is run under the supervision of two board-certified faculty and two residents and emphasizes the unique care of pediatric patients, the approach and management of hereditary diseases, and reproductive problems. Pediatric and genetics clinics are held on Mondays and Tuesdays, and reproduction appointments are seen any day of the week. In addition to the clinical appointments, there is opportunity to see several unique genetic diseases in dogs and cats and handle the youngest of pediatric patients in the animal colonies, as well as get an appreciation for the specialty diagnostic laboratories. The clinical rotation deals with the initial yet crucial pediatric wellness visits including nutrition, socialization and preventive care and disease issues specific to this age group. The clinic highlights the evaluation of normal development and diagnosis of diseases of puppies and kittens (<1 year). Moreover, kittens and puppies with known or suspected inherited disorders are examined for which genetic counseling or special diagnostic studies are required. It provides experience with routine immunizations, treatment and prevention of parasitism, and nutritional and spay/neuter counseling.

Also Offered As: VCSP 7220

2 Credit Hours

**VCSP 8005 Small Animal Soft Tissue Surgery**

This is an elective clinical rotation equivalent to courses VCSP 8000.

Prerequisite: Core Surgery Courses CONFERENCE HOURS: 3 hrs/day of clinics (5) = 15 hours. 2-4 hrs/day of surgery (5) = 10-20 hours. 1 hr/ weekend morning (4) = 4 hour. TOTAL 29-39 hours.

9 Credit Hours

**VCSP 8115 Small Animal Orthopedics**

This is an elective rotation equivalent to SA Orthopedic Surgery

VCSP 8115. Prerequisite: Core Surgery Courses

6 Credit Hours

**VCSP 8135 Small Animal Emergency Service**

Students are assigned to a busy 24-hour, 7-day per week emergency service on a shift system. The students are responsible for diagnosis and management of animals presented to the service under the supervision of Emergency Service staff. Emergency Service rounds are held Mondays, Wednesdays and Thursdays and include topics related to emergency medicine and surgery centered around case discussion. On the second Wednesday of the rotation rounds will focus on well-being.

9 Credit Hours

**VCSP 8145 Small Animal Radiology Service**

This course primarily offers experience in small animal diagnostic radiology with some exposure to diagnostic ultrasound. Principles of radiographic interpretation teaching rounds are held daily. Students will assist in the positioning of animals and taking of routine and special procedure radiographic examinations and will observe and assist with ultrasonographic examinations of Ryan Hospital clinic cases. Students will also interact with the radiologist or radiology resident during their interpretation of the clinic cases. A 2-hour examination is given on the last day of the rotation. See Learn.vet for information on clinical competencies to be assessed in this rotation and to access additional study materials.

9 Credit Hours

**VCSP 8155 Small Animal Anesthesiology Service**

Students are responsible for anesthetizing animals presented to the anesthesia service under the supervision of the Anesthesia staff. During the day, students will work closely with either the anesthesiologist on duty or a senior technician. Students will be scheduled with a technician for "on-call" night and weekend duty. On-call duties begin the first Tuesday (or second day) of the rotation and continue through to the last Sunday (or last day before the next rotation). The anesthesia service provides on-call services from 8 pm until 8 am during weekdays, and from Friday 8 pm until Monday 8 am over the weekend. In general, students schedule themselves for the on-call duties. Most rotations assign one student on-call per night during weekdays and split the weekend into 8 or 12-hour shifts. Anesthesia student rounds are conducted Mondays, Wednesdays, Thursdays, and Fridays. The first rounds on the first day of the rotation (usually a Monday) will occur at 9 am. Rounds on Wednesdays are at 8 am. Rounds on Thursdays and Fridays are at 7:30 am. Students are expected to attend grand rounds on Tuesdays. It is highly recommended that students prepare for their rotation by reviewing the course notes from the anesthesia core course and student surgery labs. The anesthesia handout will be given to students on the first day of the rotation. The rounds schedule and topics will be presented in more detail then.

9 Credit Hours

**VCSP 8175 Small Animal Dentistry and Oral Surgery**

Students participate in the client communication (including assessment of medical history), clinical examination, diagnostic testing (including patient restraint for intravenous catheter placement), treatment planning and treatment of animals presented with dental and oral diseases, including periodontal, endodontic, restorative and occlusal problems and oral and maxillofacial inflammation, infection, malformation, trauma and cancer. Mondays and Wednesdays are clinic appointment days, with rounds and a teaching laboratory or treatment procedures in the afternoons. Tuesdays, Thursdays and Fridays are treatment days. Occasionally, cases are hospitalized into Saturdays, and emergency cases may be referred from ES on Saturdays and Sundays. Responsibility for Saturday and Sunday patient care will be one to maximum two weekend days per student during the two-week rotation, and will most often consist of being on-call. Typically, Mondays and Wednesdays run from 8.30am-5.30pm (only rarely are there cases to SOAP on these mornings), and Tuesdays and Thursdays from 7am- 6.30pm. One student will be assigned to early-call (7am) on Fridays (other students will have an 8.30am start); Friday responsibilities typically extend to 4pm, except for one late-call student. Prerequisite: Core surgery lecture courses.

8 Credit Hours

**VCSP 8705 Small Animal Soft Tissue Surgery**

This is an elective clinical rotation equivalent to courses VCSP 800.

Prerequisite: Core Surgery Courses CONFERENCE HOURS: 3 hrs/day of clinics (5) = 15 hours. 2-4 hrs/day of surgery (5) = 10-20 hours. 1 hr/ weekend morning (4) = 4 hour. TOTAL 29-39 hours.

9 Credit Hours

**VCSP 8715 Small Animal Orthopedics**

This is an elective rotation equivalent to SA Orthopedic Surgery

VCSP 8115. Prerequisite: Core Surgery Courses

9 Credit Hours

**VCSP 8725 Small Animal Ophthalmology**

The goals of this clinical rotation are to ensure that students achieve proficiency in performing a complete ophthalmic examination and become familiar with recognizing and treating common problems in small animal ophthalmology practice. All students are required to meet at 7:30 am the first day, and then at 8:00 am on subsequent days of the rotation. Attendance is not required on Friday of each week but the free time is expected to be dedicated to independent study in ophthalmology. An introduction to the service will be given on the first day of the rotation which will include a graded, short quiz. It is recommended that students prepare for the clinical rotation by reviewing their course notes in ophthalmology. Clinical rounds will take place several times weekly. Topic rounds and a cadaver (pig eye), surgery wet lab will be included if time permits. Outpatient service (each day of the rotation): Students are responsible for history taking, clinical examination, treatment planning, preparation of client discharge instructions and some client communication. Surgery patients (each day of the rotation): Students assigned a patient for surgery will be responsible for helping with the patient's admission (7:30am the day of surgery). In preparation for surgery, the student must have reviewed the surgical technique, performed a complete physical examination and reviewed pertinent bloodwork. SOAPs, a surgical report and client communication following the procedure are also expected. There will be an opportunity to assist with some of the surgical procedures.

9 Credit Hours

**VCSP 8735 Small Animal Emergency Service**

Students are assigned to a busy 24-hour, 7-day per week emergency service on a shift system. The students are responsible for diagnosis and management of animals presented to the service under the supervision of Emergency Service staff. Emergency Service rounds are held Mondays, Wednesdays and Thursdays and include topics related to emergency medicine and surgery centered around case discussion. On the second Wednesday of the rotation rounds will focus on well-being.

9 Credit Hours

**VCSP 8745 Small Animal Radiology Service**

This course primarily offers experience in small animal diagnostic radiology with some exposure to diagnostic ultrasound. Principles of radiographic interpretation teaching rounds are held daily. Students will assist in the positioning of animals and taking of routine and special procedure radiographic examinations and will observe and assist with ultrasonographic examinations of Ryan Hospital clinic cases. Students will also interact with the radiologist or radiology resident during their interpretation of the clinic cases. A 2-hour examination is given on the last day of the rotation. See [Learn.vet](http://Learn.vet) for information on clinical competencies to be assessed in this rotation and to access additional study materials.

9 Credit Hours

**VCSP 8755 Small Animal Anesthesiology Service**

Students are responsible for anesthetizing animals presented to the anesthesia service under the supervision of the Anesthesia staff. During the day, students will work closely with either the anesthesiologist on duty, a senior anesthesia nurse or an anesthesia resident. Students will be scheduled with a nurse or resident for "on-call" night and weekend duty. On-call duties begin the first Monday (or first day) of the rotation and continue through to the last Sunday night (or last day before the next rotation). The anesthesia service provides on-call services from 7 pm until 7 am during weekdays, and from Friday 7 pm until Monday 7 am over the weekend. In general, students schedule themselves for the on-call duties. Most services assign one student on-call per night during weekdays and split the weekend into 12-hour shifts

9 Credit Hours

**VCSP 8765 Small Animal Behavior Clinic**

This is an elective clinical rotation in small animal behavioral medicine. Clinics are Wednesday and Thursday. Appointments are also seen on Fridays, and students are invited, but not required, to join us. Out-patient behavior clinic appointments are scheduled at approximately 3-4 hour intervals. Each student is responsible for reviewing behavior notes from VMED 6160 (9005), prior to his/her first scheduled clinic. Students are required to attend all case rounds (twice per day), review records before rounds, and be prepared to present all cases. Students will assist with medical and behavioral history-taking, physical examination and diagnosis, and are responsible for a selecting handouts and writing discharge letter summarizing the recommendations made. Behavioral topics and volunteer training sessions are offered, when possible, between afternoon appointments and rounds.

8 Credit Hours

**VCSP 8775 Small Animal Dentistry and Oral Surgery**

Students participate in the client communication (including assessment of medical history), clinical examination, diagnostic testing (including patient restraint for intravenous catheter placement), treatment planning and treatment of animals presented with dental and oral diseases, including periodontal, endodontic, restorative and occlusal problems and oral and maxillofacial inflammation, infection, malformation, trauma and cancer. Mondays and Wednesdays are clinic appointment days, with rounds and a teaching laboratory or treatment procedures in the afternoons. Tuesdays, Thursdays and Fridays are treatment days. Occasionally, cases are hospitalized into Saturdays, and emergency cases may be referred from ES on Saturdays and Sundays. Responsibility for Saturday and Sunday patient care will be one to maximum two weekend days per student during the two-week rotation, and will most often consist of being on-call. Typically, Mondays and Wednesdays run from 8.30am-5.30pm (only rarely are there cases to SOAP on these mornings), and Tuesdays and Thursdays from 7am- 6.30pm. One student will be assigned to early-call (7am) on Fridays (other students will have an 8.30am start); Friday responsibilities typically extend to 4pm, except for one late-call student. Prerequisite: Core surgery lecture courses.

8 Credit Hours

**VCSP 8785 Exotic Companion Animal Medicine/Surgery**

The purpose of this service is to introduce the student to exotic companion animal medicine and surgery. Students will gain knowledge of these animals by hands-on experience and participation in rounds. The student will be expected to observe appointments and surgery for exotic companion animals, wildlife, and occasional zoo animals, review husbandry of patients seen, perform physical examinations and document findings, derive a list of differential diagnoses and a plan for patients and document thought process, and finally, present a case, topic of interest, or research project at the end of the rotation. This is usually about 20-30 minutes. Required time by students is Monday through Friday 8:30am - 5:30pm.

9 Credit Hours

**VCSP 8795 Working Dog and Canine Sports Medicine**

This rotation combines time at the Penn Vet Working Dog Center (PVWDC) and the Sports and Performance Medicine Service at Ryan Veterinary Hospital. Students gain hands-on experience in specialized care for working and athletic dogs. This rotation focuses on preventive care, diagnosis, and treatment of conditions related to performance, sports, and working dog tasks. Students learn to incorporate cooperative care in physical exams tailored to athletic and working dogs' unique needs, with an emphasis on musculoskeletal assessments to identify performance-limiting conditions. The service incorporates advanced diagnostic imaging, physical therapy, therapeutic exercise, pain management, and performance testing to assess and improve the athletic capabilities of dogs. At the PVWDC, students will have opportunities to observe training sessions to understand the physical and mental demands placed on working dogs. In both locations, students are engaged in real-world veterinary care that involves both traditional medical care and specialized performance support. It's an opportunity to develop clinical proficiency while working with high-drive dogs.

9 Credit Hours

**VCSP 8805 Shelter Medicine and Community Engagement**

This rotation gives a complex overview of the field of shelter medicine and community outreach by partnering via a service-learning model with open and limited admission shelters, HGHVSN clinics, schools, and outreach organizations like Pets for Life. A typical rotation focuses on authentic hands-on learning including two-three surgical days, mentored primary case management of medical cases and shelter population rounds, public clinical outreach, herd health management, training and behavioral assessment, outreach to local schools, and providing veterinary CE for shelter staff. Rounds and tour topics include shelter medicine practice, biosecurity, cruelty investigation and humane law enforcement, behavior, ethics, exotics, and risk analysis. Dentistry, necropsies, consults, special procedures, and other opportunities may occasionally be included as part of the rotation depending on the week. Because Penn Vet works with outside organizations, keep in mind the schedule can change as our partners' needs change. This course occurs off-campus in a variety of locations and students must coordinate their own transportation. Two of the three weeks will be in-clinic. One of the three weeks students will have off as determined by the shelter medicine program schedule. Other experiences scheduled by the student, preparation for boards, and/or vacation can be done in the non-clinical week.

5 Credit Hours

**VCSP 8905 VHUP Holiday Rotation**

Holiday rotation at Ryan Veterinary Hospital.

2 Credit Hours

**VCSP 8930 Small Animal Emergency Service Holiday Rotation**

This rotation will be very similar to the Emergency Medicine clinical rotation elective course. Students will be involved in triage, patient stabilization, history and physical examination, diagnostic workup and treatment of patients seen in the emergency room. (We want students who have an interest in learning more about emergency medicine!) Specific time will not be set aside during the rotation for student rounds; however, teaching on a case-to-case basis will be stressed. Rotation shifts will be 8 AM to 8 PM and 8 PM to 8 AM. Each student will be assigned to 5 shifts during the rotation. There will be at least two students assigned to each shift.

3 Credit Hours

**VCSP 8940 Small Animal Radiology Service**

3 Credit Hours