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COURSE DESCRIPTIONS

Course Symbols
The following symbols are used throughout the course prerequisites.

SP ......... Quarter Prerequisites

SP– ......... Semester Prerequisites

$ ............... Credit will not be granted if credit has been received for the course listed after this symbol.

¶ ............... Concurrent registration is required (or allowed) in the course listed after this symbol.

# ............... Approval of the instructor is required for registration.

∆ ............... Approval of the department offering the course is required for registration.

...... Approval of the college offering the course is required for registration.

, ............. In prerequisite listings, comma means “and.”

Pre requisite courses listed by number only (e.g., “6220”) are in same department as course being described.

CVM 1000. Introduction to Veterinary Medicine. (1 cr; S-N only)
History of veterinary profession, careers within the profession, employment trends. Information about admission to DVM. Veterinary technology programs.

CVM 3502. Animal Health and Disease. (3 cr; QP–Biol 1009 or [Biol 1001, Biol 1002]; SP–Biol 1009; A-F only)

CVM 6000. Orientation to Veterinary Medicine. (3 cr; QP–CVM 1st yr or CVM transfer; SP–CVM 1st yr or CVM transfer; S-N only)
Introduction to academic and professional skills necessary for success in the veterinary curriculum and profession. Three-day pre-class orientation. Peer and faculty mentorship network.

CVM 6011. Integrative Course I. (2 cr; QP–DVM 1st yr; SP–DVM 1st yr)
Integrates subjects taught in the veterinary professional curriculum. Introduction to and practice of professional skills, including communication, ethics, teamwork, and leadership.

CVM 6012. Integrative Course II. (2 cr; QP–DVM 1st yr or Δ; SP–DVM 1st yr or Δ)
Integrates subjects taught in the veterinary professional curriculum. Introduction to and practice of professional skills, including communication, ethics, teamwork, and leadership.

CVM 6013. Integrative Course III. (2 cr; QP–DVM 2nd yr or Δ; SP–DVM 2nd yr or Δ)
Integrates subjects taught in the veterinary professional curriculum. Introduction to and practice of professional skills, including communication, ethics, teamwork, and leadership.

CVM 6014. Integrative Course IV. (2 cr; QP–DVM 2nd yr or Δ; SP–DVM 2nd yr or Δ)
Integrates subjects taught in the veterinary professional curriculum. Introduction to and practice of professional skills, including communication, ethics, teamwork, and leadership.

CVM 6021. Overview of Animal Populations I. (1 cr; QP–DVM 1st yr or Δ; SP–DVM 1st yr or Δ)
Introduction to U.S. production animal agriculture at individual producer level and to roles veterinarians play.

CVM 6022. Overview of Animal Populations II. (1 cr; QP–DVM 1st yr or Δ; SP–DVM 1st yr or Δ)
Introduction to U.S. production animal agriculture at individual producer level and to roles veterinarians play.

CVM 6025. Clerk Duty I. (2 cr; SP–1st yr DVM or [#]; S-N only)
Experience in procedures/policies involved in after-hours care of hospitalized/emergency cases in the small-/large-animal hospitals.

CVM 6026. Clerk Duty II. (2 cr; SP–2nd yr DVM or [#]; S-N only)
Experience in procedures/policies involved in after hours care of hospitalized/emergency cases in the large-animal hospital.

CVM 6027. Clerk Duty III. (2 cr; SP–3rd yr DVM or [#]; S-N only)
Experience in procedures/policies involved in after hours care of hospitalized/emergency cases in the small- or large-animal hospital or in both.

CVM 6028. Clerk Duty IV. (2-4 cr; SP–4th yr DVM or [#]; S-N only)
Experience in team leadership in procedures/policies involved in after hours care of hospitalized/emergency cases in large-animal hospital.

CVM 6029. Small Animal Clerk Duty. (1 cr [max 2 cr]; SP–[6025, 6027] or Δ; S-N only)

CVM 6030. Public Health—Veterinary Community Medicine. (2 cr; QP–DVM 3rd yr or Δ; SP–6220, 6201, 6202; A-F only)
Emphasizes epidemiological approach to veterinary public health, major zoonoses, animal sentinels, meat/milk inspection, preharvest food safety, environment, occupational health/safety, euthanasia, carcass disposal methods, cruelty investigations, and welfare issues. Problem-solving examples.

CVM 6031. International Animal Diseases. (1 cr; QP–DVM, [CVM grad student or Ω]; SP–DVM, [CVM grad student or Ω]; S-N only)
Epidemiology, clinical signs, differential diagnoses, pathology, economic effect of diseases not currently or intermittently present in the United States. International role of veterinarians in controlling disease, increasing food production, facilitating trade.

CVM 6042. Practice Management/Law and Ethics. (2 cr; QP–DVM or Ω; SP–DVM or Ω; S-N only)
Economic, marketing, personnel management, accounting issues in veterinary practice management. Legal/ethical parameters for veterinary practice. Attendance required.
CVM 6046. Companion Animal Practice Readiness: Advanced Block. (2 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #)
Prepares students for jobs in companion animal private practice by tying together, applying fundamental knowledge used in private practice setting. Life stage wellness care: vaccination recommendations, parasite control, dentistry, prevention/treatment of common behavioral problems, answering common client questions. Client counseling regarding pet selection, genetic counseling, breed risks.

CVM 6050. Perspectives: Interrelationships of People and Animals in Society. (1-3 cr)
Interrelationships of people/animals. Social, economic, health consequences. Pets/people sharing urban environment, animal rights, influence of cultural differences on animal-human relationships.

CVM 6051. Human-Companion Animal Bond: Attachments and Losses, Communications, Ethics, and Service. (1 cr; SP–1st or 2nd yr DVM or #; S-N only)
Human-companion animal bond activities/services. Emphasizes helping clients, particularly at time of actual or anticipated death of companion animals. Communication/counseling skills.

CVM 6052. Grief, Human Animal Bond, Communication Elective. (1 cr; QP–DVM or #; SP–DVM or #; S-N only)
Veterinarians’ role in recognizing/managing aspects of human-animal bond. Grief management, client present euthanasia, closure, staff relations, work-life balance, communicating in specific situations. Communicating with co-workers/staff in practice setting.

CVM 6100. Veterinary Anatomy and Imaging. (6 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only)
Mammalian anatomy, including developmental anatomy and normal radiographic anatomy. Small-animal portion of the course uses the dog as model animal and compared it with the cat. The large-animal portion focuses on basic anatomy of the horse and on ruminants of clinical importance in swine.

CVM 6104. Small Animal Special Procedures in Radiology: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #; S-N only)
Common contrast studies used in small animal practice.

CVM 6111. Cells and Tissues. (4-8 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only)
Cell and tissue structure: microscopic and ultrastructural morphology. Cell and molecular biology: protein and enzyme structure and function; cell organelle function; cellular signaling mechanisms; utilization of carbohydrates, lipids, proteins, and nucleic acid; regulation of gene expression.

CVM 6112. Organology. (3 cr; QP–6111, DVM 1st yr or #; SP–6111, DVM 1st yr or #; A-F only)
Microscopic and ultrastructural morphology of organ systems (cardiovascular, gastrointestinal, respiratory, urinairy, endocrine) in mammalian domestic species.

CVM 6120. Veterinary Neurobiology. (2 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only)
Anatomy and physiology of central nervous system (brain, spinal cord) and special senses (eye, ear, olfaction, taste).

CVM 6130. Veterinary Physiology. (4 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only)
Fundamental principles of systemic physiology. Relationships between forces and flows in biological systems. Overview of control system theory as it relates to neurohormonal regulation. Survey of major organ systems.

CVM 6132. Reproductive Biology. (3 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; A-F only)
Physiology of reproduction, including lactation.

CVM 6134. Principles of Veterinary Nutrition. (1 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only)
Introduction to principles of nutrition. Basic applications and food sources for major domestic species.

CVM 6136. Small Animal Nutrition: Advanced Block. (3 cr; QP–3rd yr DVM or #; SP–3rd yr DVM or #)
Nutritional considerations in health, treatment of disease in small animals.

CVM 6141. Veterinary Pharmacology. (3 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only)
General principles of drug action, disposition, and clinical applications in animal patients. Pharmacology and therapeutic uses of drugs affecting the autonomic nervous system, cardiovascular system, respiratory and digestive tracts, and kidneys. Pharmacology and therapeutic uses of anti-allergic and anti-inflammatory drugs.

CVM 6142. Veterinary Neuropharmacology. (1 cr; QP–DVM or #; SP–DVM or #; A-F only)
Pharmacology of drugs that have a major effect on the central nervous system: absorption, distribution, metabolism, and excretion; major mechanisms of action; clinical usefulness; side effects; drug interactions.

CVM 6195. Veterinary Toxicology. (3 cr; QP–3rd yr DVM or #; SP–3rd yr DVM or #; A-F only)
Toxicology of minerals, pesticides, venoms, and various toxins. Identification of poisonous plants. Recognition, diagnosis, and treatment of animal poisons.

CVM 6201. Infectious Agents I. (3 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only)
Introduction to classification, morphology, reproductive cycle, and epidemiology of infectious microbial agents of veterinary importance; properties of disinfectants; therapeutic uses of chemicals and drugs for sterilization, control, and treatment.

CVM 6202. Infectious Agents II. (7 cr; QP–6201, DVM or #; SP–6201, DVM or #; A-F only)

CVM 6211. Applied Veterinary Genetics. (2 cr; SP–1st yr DVM or #; S-N only)
Overview of molecular/cyto genetics relevant to animal health, disease, breeding, and production. Emphasizes how molecular genetic information is used in veterinary medicine and animal agriculture. May Session course.

CVM 6220. Clinical Epidemiology. (2 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; A-F only)
Statistical and epidemiological concepts applied to veterinary medicine.
CVM 6300. Veterinary Pathology. (7 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; A-F only) Reactions of cells and tissues to injury and disease, including reversible and irreversible cell injury, disturbances of circulation, blood coagulation, and alterations of cell growth and multiplication. Pathology of body systems, emphasizing reactions of specific organs.

CVM 6301. Clinical Skills I. (1 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only) Domestic animal behavior. Basic animal handling and management skills. First of five-part series.

CVM 6302. Clinical Skills II. (1 cr; QP–DVM 1st yr or #; SP–DVM 1st yr or #; A-F only) Domestic animal behavior. Basic animal handling and management skills.

CVM 6303. Clinical Skills III. (1 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; S-N only) Domestic animal behavior. Basic animal handling and management skills.

CVM 6304. Clinical Skills IV. (1 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; S-N only) Domestic animal behavior. Basic animal handling and management skills.

CVM 6305. Clinical Skills V. (1 cr; QP–DVM 3rd yr or #; SP–DVM 3rd yr or #; S-N only) Domestic animal behavior. Basic animal handling and management skills.

CVM 6306. Small Animal Clinical Skills: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #; S-N only) Advanced clinical skills used by small animal practitioners in private practice.

CVM 6321. Surgery, Anesthesiology, Critical Care. (4 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; A-F only) Introduction to principles/techniques for conducting surgical procedures, managing uncomplicated anesthesia, and providing critical care for common situations in large/small animal species.

CVM 6400. Skin and Adnexa. (3 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; A-F only) Normal form and function, histopathologic reaction patterns, wound healing, and clinical disease states of the skin and adnexa (horns, mammary glands) of common domestic species.

CVM 6404. Small Animal Dermatology: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #; S-N only) Diagnostic/therapeutic considerations in small animal dermatology beyond core in preparation for clinical rotations.

CVM 6410. Digestive System. (5 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; A-F only) Pathophysiology, diagnostic methods, therapeutic procedures, and preventative/management protocols for common disorders of the oral cavity and digestive tract in major domestic species.

CVM 6414. Small Animal Liver/Pancreas Disorders: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #; A-F only) Pathophysiology, diagnosis, treatment of common disorders of small animals.

CVM 6416. Small Animal Gastrointestinal Endoscopy. (0.5 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #) Endoscopic diagnosis/treatment of small animal diseases.

CVM 6420. Musculoskeletal System Diseases. (2 cr; QP–DVM 3rd yr or #; SP–DVM 3rd yr or #; A-F only) Presentation, pathophysiology, diagnostic, and therapeutic/management approaches for common disorders of locomotion.

CVM 6424. Small Animal Orthopedic: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; non-track students may audit lectures, but labs must be taken for grade; SP–[3rd or 4th] yr DVM or #; non-track students may audit lectures, but labs must be taken for grade) Dog/cat pediatric, adult orthopedic problems frequently seen in clinical practice. For comparative information, selected human orthopedic problems are presented by guest lecturers. Attendance/participation required for grade.

CVM 6430. Cardiopulmonary System Disorders. (4 cr; QP–DVM or #; SP–DVM or #; A-F only) Pathophysiology, presentation, diagnostic presentation, therapeutic approaches, and management protocols for common disorders of the cardiovascular and pulmonary systems.

CVM 6433. Hematology Elective. (0.5 cr; SP–3rd yr DVM or #; S-N only) Case based experience in interpreting/using hematology/chemistry results for small animals.

CVM 6434. Critical Care: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #) Case-based discussions of common emergencies: trauma, toxins, acute abdomen, hematologic, respiratory, Emergency procedures, intensive care monitoring, blood gas interpretation. Sepsis, related inflammatory response. Cardiopulmonary resuscitation.

CVM 6436. Small Animal Cardiology: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #) Diagnostic/therapeutic considerations related to small animal cardiovascular disorders beyond core in preparation for clinical rotations.

CVM 6440. Nervous System Disorders. (2 cr; QP–DVM 3rd yr or #; SP–DVM 3rd yr or #; A-F only) Pathophysiology, presentation, diagnostic approach, therapeutic approach, and management protocol for common neurologic/ophthalmologic disorders in domestic species.

CVM 6441. Behavior Core. (1.5 cr; SP–3rd yr DVM student or #; A-F only) Ethology, small/large animal behavior, human-animal bond, behavior medicine, psychopharmacology, behavior genetics, learning theory, behavior modification.

CVM 6442. Small Animal Behavior Elective: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #; S-N only) Introduction to pathologic small animal behaviors. Diagnostic procedures, behavioral/chemical modifications.

CVM 6444. Ophthalmology. (2 cr; QP–[3rd or 4th yr] DVM or #; SP–[3rd or 4th yr] DVM or #; A-F only) Common procedures for evaluation, diagnosis, treatment of eye disorders in domestic species.
CVM 6451. Metabolic Disorders. (3 cr; QP–DVM 2nd yr or #; SP–DVM 2nd yr or #; A-F only)
Toxicites that affect domestic species. Diagnostic, therapeutic, and management approaches.

CVM 6452. Metabolic Disorders II. (3 cr; QP–DVM 3rd yr or #; SP–DVM 3rd yr or #; A-F only)
Pathophysiology, clinical presentation, diagnostic approach, therapeutic options, and management protocols for metabolic and endocrine based disorders of domestic species.

CVM 6460. Urinary System Disorders. (2 cr; QP–2nd yr DVM or #; SP–2nd yr DVM or #; A-F only)
Pathophysiology, clinical presentation, diagnostic approach, therapeutic options, and management protocol for common disorders of the urinary system in domestic species.

CVM 6461. Small Animal Urinalysis. (1 cr; SP–3rd yr DVM or #; S-N only)
Informal, case-based, interactive, in-depth approach to evaluation of urinalyses of clinical cases recently admitted to Veterinary Teaching Hospitals. Improving observational/interpretation skills. Recognizing invitro factors that may alter results of urinalyses.

CVM 6464. Small Animal Urinary System Disorders: Advanced Block. (1 cr; QP–[3rd or 4th] yr DVM or #; SP–[3rd or 4th] yr DVM or #; S-N only)
Expands on disorders of small animal urinary system. Introduction to core/additional disorders.

CVM 6470. Multisystemic Diseases. (3 cr; QP–DVM 3rd yr or #; SP–DVM 3rd yr or #; A-F only)
Pathophysiology, clinical presentation, diagnostic approach, therapeutic options, and management protocol of disorders of the immunologic and hematologic systems and of multisystemic infectious diseases.

CVM 6480. Obstetrics and Reproductive Diagnostics. (2 cr; QP–6132, 2nd yr DVM) or #; SP–[6132, 2nd yr DVM] or #; A-F only)
Diagnosis/management of reproductive diseases. Obstetric manipulation in domestic species.

CVM 6481. Obstetrics Lab. (1 cr; A-F only)
Techniques for pregnancy diagnosis, obstetric manipulation in large animal species.

CVM 6482. Reproductive Diseases of Companion Animals. (1-2 cr [max 2 cr]; QP–3rd yr DVM or #; SP–3rd yr DVM or #; A-F only)
Physiology/pathology of reproduction, artificial insemination, abortive diseases, postpartum injuries, and breeding management in small animals, horses, and small ruminants. Students may take 1-3 species. Students must take at least 10 hours for 1 credit.

CVM 6494. Small Animal Anesthesia Advanced Block. (1 cr; QP–3rd yr DVM or #; SP–3rd yr DVM or #)
Sedative techniques, combination injectable anesthesia, pediatric/geriatric small animal anesthesia, pain control, regional techniques, anesthesia in trauma cases, complications in anesthesia, ventilator use.

CVM 6495. Non-Traditional Pet Core. (1 cr; QP–3rd yr DVM or #; SP–3rd yr DVM or #; A-F only)
General/reproductive biology, behavior, husbandry, nutrition, handling, restraint, anesthesia. Common diseases, their treatments. Research animal issues. Special considerations of species commonly encountered in small/mixed animal practices (mice, rats, hamsters, gerbils, guinea pigs, chinchillas, rabbits, ferrets, basic aquarium species).

CVM 6497. Avian Medicine and Surgery: Advanced Block. (1 cr; QP–[3rd or 4th yr] DVM or #; SP–[3rd or 4th yr] DVM or #)

CVM 6498. Food Animal and Exotic Large Animal Anesthesia. (0.5 cr; QP–[3rd or 4th yr] DVM or #; SP–[3rd or 4th yr] DVM or #; A-F only)
Restraint, sedation, immobilization of ruminants/pigs. Regional techniques, special considerations for anesthesia. Injectable food animal anesthesia, anesthesia of llamas, ostriches, elk, other exotic large animal species.

CVM 6500. Veterinary Public Health. (2 cr [max 6 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
How and why public health and regulatory agencies function; veterinarian’s role in operation of the U.S. food industry; problem solving in veterinary public health, occupational health, and environmental topics.

CVM 6502. Hospital and VDL Necropsy. (4 cr [max 40 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Necropsy technique, collection of tissues for laboratory analysis, interpretation of clinicopathologic findings, preparation of reports. Application of principles of basic and clinical sciences to determine cause of individual animal and group health problems. No Saturday duty on this rotation.

CVM 6505. Directed Studies in Veterinary Medicine. (2-4 cr [max 40 cr]; QP–DVM 4th yr or #; SP–DVM 4th yr or #; S-N only)
Students, under the guidance of a faculty member, conduct a special project addressing an issue in veterinary medicine. Project proposals must include hypothesis, objectives, plan of study, and product for evaluation by the faculty adviser and must be approved by CVM’s curriculum committee.

CVM 6506. Directed Studies in Large Animal Medicine. (2-4 cr [max 40 cr]; SP–DVM 4th yr or #; S-N only)
Students, under guidance of a faculty member, conduct special project addressing an issue in large animal medicine. Project proposals include hypothesis, objectives, plan of study, and product for evaluation by adviser and approval by CVM’s curriculum committee.
CVM 6507. Directed Studies in Small Animal Medicine. (2-4 cr [max 40 cr]; SP–DVM 4th yr or #; S-N only)
Students, under guidance of a faculty member, conduct special project addressing an issue in small animal medicine. Project proposals include hypothesis, objectives, plan of study, and product for evaluation by adviser and approval by CVM's curriculum committee.

CVM 6508. Directed Studies: Pathobiology. (2-4 cr [max 40 cr]; SP–DVM 4th yr or #; S-N only)
Students, under guidance of a faculty member, conduct special project addressing an issue in veterinary pathobiology. Project proposals include hypothesis, objectives, plan of study, and product for evaluation by faculty adviser and approval by CVM's curriculum committee.

CVM 6509. Directed Studies: Diagnostic Medicine. (2-4 cr [max 40 cr]; SP–DVM 4th yr or #; S-N only)
Students, under guidance of a faculty member, conduct special project addressing an issue in diagnostic medicine. Project proposals include hypothesis, objectives, plan of study, and product for evaluation by faculty adviser and approval by CVM's curriculum committee.

CVM 6515. Precepteeship. (2-12 cr [max 24 cr]; QP–Sr or #; SP–Sr or #; S-N only)
Students spend two weeks/rotation in a practice or other professional setting.

CVM 6525. Rotation at Other Institution. (2-12 cr [max 40 cr]; QP–DVM 4th yr or #; SP–DVM 4th yr or #; S-N only)
Students to spend one-six weeks in an organized program at another degree-granting institution, in an area either not offered at the University or in one that complements experience in a clinical rotation at the University.

CVM 6532. Hematology/Cytology/Microbiology. (2-4 cr [max 40 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Hematology/cytology lab emphasizes microscopic aspects in the dog, cat, cow, horse, sheep, goat, pig, and llama: case-oriented approach to pathophysiologic aspects of disease. Diagnostic/clinical microbiology lab uses clinical diagnostic materials: students cultivate bacteria and fungi, and determine susceptibility; student presentations discuss cases and outline therapy/control.

CVM 6533. Hematology and Cytology. (2 cr; SP–DVM 3rd or 4th yr or #; S-N only)
Emphasis is on microscopic aspects of hematology/cytology in the dog, cat, cow, horse, sheep, goat, pig, and llama. Case oriented approach is used to develop pertinent pathophysiological aspects of disease. One-week rotation.

CVM 6540. Advanced Veterinary Toxicology. (2-8 cr [max 40 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
In-depth examination of toxins. Clinical, diagnostic, mechanistic, and therapeutic aspects of biotoxins, organic, and inorganic toxins that affect livestock, poultry, wildlife, and companion animals or that threaten public health.

CVM 6545. Introduction to Regulatory Medicine. (2-4 cr; SP–S-Txcl 6545; DVM or #; A-F only)
Explanation of products requiring pre-market approval and those that may be marketed without approval. Post-market surveillance. Adverse reactions, removal of product from market.

CVM 6600. Advanced Small Animal Practice. (1-6 cr; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #)
Training beyond core in small animal and pocket pet medicine, surgery, and theriogenology, in preparation for clinical rotations.

CVM 6601. Small Animal Internal Medicine—SAM A. (2-8 cr; SP–DVM 3rd or 4th yr or #; S-N only)
Problem solving; history taking and physical examination; record keeping; ethical issues in the management of referral cases; computerized searches and diagnostic programs. Small group discussions. Students assist clinicians in the management of referral and emergency cases related to gastroenterology, nephrology, urology, oncology, nutrition, neurology, and cardiology. First in SAM series. Required before SAM B.

CVM 6602. Small Animal Internal Medicine: SAM B. (2-8 cr [max 52 cr]; QP–DVM 3rd or 4th yr or #; SP–[6601, [DVM 3rd or 4th yr]] or #; S-N only)
Problem solving, history taking, physical examination, record keeping. Ethical issues managing referral cases. Computerized searches, diagnostic programs. Students help clinicians manage referral/emergency cases related to gastroenterology, nephrology, urology, oncology, nutrition, neurology, and cardiology. 2nd portion of small animal medicine rotation. Small group discussions.

CVM 6603. Small Animal Internal Medicine—SAM C. (2-8 cr [max 8 cr]; SP–6601, 6602, 3rd or 4th yr DVM student or #; S-N only)
Students work with clinical faculty during history and physical exams of referral medicine cases. Informal discussion of cases. Students do case procedures as they would in core medicine rotations. Most case responsibility is handled by the clinician. No formal rounds.

CVM 6604. Small Animal Internal Medicine: SAM D. (2-8 cr [max 16 cr]; SP–[6601, 6602, [DVM 3rd or 4th yr]] or #; S-N only)
Problem solving, history taking, physical examination, record keeping. Ethical issues in managing referral cases. Computerized searches, diagnostic programs. Students help clinicians manage referral/emergency cases related to gastroenterology, nephrology, urology, oncology, nutrition, neurology, and cardiology. Small group discussions.

CVM 6606. Emergency Rotation. (4 cr [max 40 cr]; QP–DVM or #; SP–DVM or #; S-N only)
Students participate in VTH emergency service (4:30-11pm weekdays; 8am-11pm weekends). Hands-on management of small animals with acute trauma and medical emergency problems. Students assist staff emergency clinicians in diagnosis/management of cases. Triage of medical/surgical patients.

CVM 6608. Small Animal Critical Care Medicine. (4 cr [max 40 cr]; QP–DVM or #; SP–DVM or #; S-N only)
Critical care medicine. Blend of individual case contact and nursing assistance in the small animal ICU unit. Small group discussions focus on CPR, fluid therapy, respiratory care, and shock. Self assessment program. Students assist in management of critically ill animals.

CVM 6626. Small Animal Orthopedics. (2 cr; SP–DVM 3rd or 4th yr or grad or #; S-N only)
Small animal orthopedic problems and surgical procedures to correct them.
CVM 6630. Small Behavior Rotation. (4 cr [max 16 cr]; SP–DVM 3rd or 4th yr or grad student or #; S-N only)
Students participate in behavior consultations: history taking, diagnosis, outline of treatment protocols, sample collection, demonstration of training techniques, writing of treatment plans, case follow-up. Students present one case, prepare one topic of their choice for presentation during rounds. Daily rounds include discussion of cases, review of behavior-related articles, discussion of problem complexes.

CVM 6632. Comparative Dermatology. (4 cr [max 40 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)

CVM 6634. Comparative Ophthalmology. (2-4 cr [max 40 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Enter-level ophthalmology. Diagnosis and treatment. Outside readings, review papers, final essay exam.

CVM 6636. Cardiology. (2-4 cr [max 40 cr]; QP–DVM 4th yr or CVM grad or #; SP–DVM 4th yr or CVM grad or #; S-N only)
Clinical problem solving through exposure to cases of cardiopulmonary disease, including canine/feline congenital heart disease, acquired valvular/myocardial disease, dicrofilariasis, arrhythmias, pulmonary disorders. Hands-on experience in conducting physical examinations, recording electrocardiograms and echocardiograms, and reading thoracic radiographs. Group discussions.

CVM 6640. Clinical Companion Animal Nutrition. (4 cr [max 4 cr]; SP–DVM 3rd or 4th yr or #; S-N only)

CVM 6644. Community Practice. (2-4 cr [max 40 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Clinical experience using preventative health, behavior, and communication skills. Basic small animal husbandry. Client education resources. Importance of teamwork regarding the practice environment, referral cases, and community involvement. Selected pet bird and pocket pet appointments.

CVM 6648. Advanced Oncology Rotation. (4 cr; QP–DVM 3rd or 4th yr or grad or #; SP–DVM 3rd or 4th yr or grad or #; S-N only)
Hands-on role in the Clinical Oncology Service of the VTH, admitting new cases and participating in diagnostic and staging work-ups. Procedures such as ultrasound-guided aspirations, core biopsies, bone marrow biopsies, lymph node biopsies. Monitoring/treatment of ongoing chemotherapy/radiation therapy patients. Student give short presentations relating to clinical/comparative oncology. Faculty lead discussions relating to cancer biology, immunology, epidemiology, pathology, and chemotherapy/radiation therapy.

CVM 6651. Small Animal Clinical Ultrasound. (4 cr [max 16 cr]; SP–3rd or 4th yr DVM or #; S-N only)
Participation in small animal abdominal ultrasound procedures. Observation of echocardiography meshed with abdominal studies (as available, depending on caseload and scheduling). Normal dog/cat hands-on scanning. Daily lectures.

CVM 6661. Clinical Neurology. (4 cr [max 4 cr]; QP–3rd or 4th yr DVM or #; SP–3rd or 4th yr DVM or #; S-N only)
Rotation combines medical and surgical neurology. Students integrated into service to maximize both learning and client/patient care.

CVM 6662. Comparative Anesthesiology. (4 cr [max 4 cr]; SP–DVM 3rd or 4th yr; S-N only)
Pre-anesthetic, anesthetic, and post-anesthetic management of small and large animal species. Students, anesthesiologists, and technicians work as a team to determine proper anesthetic management of cases and monitor anesthesia events. Medical/surgical diagnostic information integrated with patient care plans.

CVM 6663. Small Animal Surgery. (4 cr [max 4 cr]; SP–DVM 3rd or 4th yr or #; S-N only)
Diagnostic/therapeutic management of surgical patients. History taking, physical examination, communication, problem solving, and surgical techniques. Economic issues. Students work as part of a surgical service team with faculty member, resident, and intern.

CVM 6664. Elective Small Animal Surgery. (4 cr [max 20 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Elective surgeries such as ovariohysterectomies, neuters, declaws, and hernia repairs. Teams of three students are responsible for pre-surgical evaluation, anesthesia induction, maintenance, surgical procedure performance, and post-operative care. Students assist at Humane Society. Taught by community veterinary practitioners.

CVM 6666. Special Procedures in Veterinary Radiology. (2 cr; SP–DVM 3rd or 4th yr or grad or #)
Contrast agents and procedures used to examine various body systems or anatomical areas.

CVM 6668. Comparative Radiology. (4 cr [max 4 cr]; SP–DVM 3rd or 4th yr or #; S-N only)

CVM 6682. Small Animal Theriogenology. (4 cr [max 4 cr]; SP–DVM 3rd or 4th yr or #; S-N only)
Small-animal theriogenology. Clinical techniques, including collection of reproductive histories, physical examinations, collection/interpretation of vaginal cytology specimens in the bitch, measurement/interpretation of serum progesterone concentrations in planning breeding management in the bitch, dystocia management in the bitch and queen, collection and evaluation of canine semen.

CVM 6685. Small Animal Reproductive Diagnostic Technique Lab. (1 cr; SP–DVM or #; A-F only)
Hands-on clinical experience in the evaluation of small animal reproduction. Two three-hour labs, several projects.
COURSE DESCRIPTIONS

CVM 6690. Complementary Medicine: Introduction to Veterinary Acupuncture and Chiropractic. (1 cr; SP–DVM student or #; S-N only)
History/principles of acupuncture, chiropractic, and other commonly used complementary approaches to care of domestic animals. Training requirements for certification. Lectures, case examples, demonstrations. Two and a half day May Session elective.

CVM 6700. Advanced Track Block. (12 cr; SP–3rd yr DVM student; S-N only)
Preparation for senior rotations.

CVM 6702. Large Animal Palpation Labs. (1 cr; SP–DVM or #; A-F only)
Hands-on clinical experience in evaluation of bovine reproductive status/disorders. Two three-hour labs per week split evenly between cattle/horses. 5-week session.

CVM 6704. Reproductive Diseases of Food Animals. (1-2 cr [max 3 cr]; QP–3rd yr DVM or #; SP–3rd yr DVM or #; A-F only)
Common diseases affecting reproductive function in cattle, swine, and small ruminants. Students may take 1-3 species. Students must attend at least 10 hours for 1 credit.

CVM 6706. Epidemiology and Biostatistics. (2-8 cr [max 8 cr]; SP–DVM 4th yr or grad or #; S-N only)

CVM 6709. Advanced Building Design and Herd Evaluation. (2-8 cr [max 8 cr]; QP–DVM 3rd or 4th yr or CVM grad or #; SP–DVM 4th yr or CVM grad or #; S-N only)

CVM 6711. Large Animal Internal Medicine. (2-8 cr [max 8 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Medical diseases of horses, cattle, and small ruminants. History taking, clinical diagnosis, and patient management. Assessment of treatment responses. Clinic case material supplemented by computer-based problem-knowledge couplers and case simulations. Small group discussions focus on clinical diagnosis, treatment, and prevention of common medical disorders.

CVM 6714. Large Animal Surgery. (2-4 cr [max 40 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Diagnostic and therapeutic management of lameness and surgical diseases of the large animal species (equine, bovine, small ruminants) in a hospital setting. Students work as part of the surgical service team in a referral setting.

CVM 6716. Large Animal Anesthesia. (4 cr [max 4 cr]; SP–DVM 3rd or 4th yr or #; S-N only)
Anesthesiologists and students work as a team on large animal cases to determine proper anesthetic management and monitor anesthetic events during general anesthesia.

CVM 6717. Large Animal Diagnostic Ultrasonography. (4 cr [max 4 cr]; SP–4th yr DVM; S-N only)
Fundamentals of diagnostics ultrasonography in large animals. Cases in teaching hospital, lectures, laboratories.

CVM 6718. Large Animal Community Based Practice Mentoring. (1 cr; SP–2nd yr DVM or #; S-N only)
Large animal veterinary practice. Opportunity to practice new clinical skills with a veterinarian who may serve as a mentor. Students visit the practice four times.

CVM 6721. Neonatology. (1-2 cr; S-N only)
Instruction, emergency duty, and practical application of principles in evaluating and treating sick equine neonates. Seasonal participation in clinically managing hospitalized foals and periodically reviewing past cases.

CVM 6722. Clinical Anatomy of the Equine Limb. (1-2 cr; SP–#; limited registr—1st yr DVM students have priority; S-N only)
Practical limb anatomy. Clinical cases, common surgical procedures. Special diagnostic techniques such as radiology, nerve blocks, joint injections, and ultrasound.

CVM 6723. Colic Management. (1 cr; SP–DVM 1st yr; S-N only)
Principles and techniques for evaluating and treating equine colic cases.

CVM 6724. Equine Colic Team. (1 cr; SP–6723, DVM; S-N only)
Clinically managing equine colic cases and periodically reviewing past cases, success rates, and topics in related fields.

CVM 6725. Advanced Colic Team. (1 cr [max 2 cr]; QP–CAPS 5356, DVM or #; SP–6724, DVM or #; S-N only)
Clinically managing cases and periodically reviewing past cases, success rates, and topics in related fields. Students act as team leaders during clinical management and assist in lab exercises for 6723.

CVM 6727. Equine Palpation. (1 cr; QP–DVM or #; SP–DVM or #; A-F only)
Hands-on clinical experience in evaluation of equine reproductive status and reproductive disorders.

CVM 6728. Reproductive Diseases of the Horse. (1 cr; QP–3rd yr DVM or #; SP–3rd yr DVM or #; A-F only)
Reproduction patterns, breeding practices, management, artificial insemination, economics of reproductive performance, and infertility in horses.

CVM 6730. Advanced Equine Practice: Lecture Block. (4 cr; QP–[3rd or 4th yr] DVM or #; SP–[3rd or 4th yr] DVM or #; non-track students may audit; S-N only)
Intensive course on equine medicine, surgery, theriogenology content/skills beyond core.

CVM 6731. Advanced Equine Practice: Lab Block. (2 cr; QP–[66730, [3rd or 4th yr] DVM] or #; no audit allowed; SP–[66730, [3rd or 4th yr] DVM] or #; no audit allowed; S-N only)
Equine medicine, surgery, theriogenology content/skills beyond core, necessary for entering predominately equine practice. Intensive lab.

CVM 6732. Equine Dentistry. (2 cr [max 2 cr]; SP–3rd or 4th yr DVM or #; S-N only)
Lectures, labs, on-farm experience. One week course, offered January in second week of public health rotation.
CVM 6734. Equine Surgery. (4 cr [max 16 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Two-week clinical rotation during which students participate in the examination, diagnosis, and treatment of horses with lameness or with surgically manageable diseases.

CVM 6736. Equine Lameness. (2-4 cr [max 16 cr]; QP–DVM 4th yr or #; SP–DVM 4th yr or #)
Two week clinical rotation involving study of lameness and orthopedic diseases in the horse. Clinical lameness cases. Hands-on opportunity to diagnose and treat lame horses. Cases may be supplemented with discussions of videos of lame horses, examination of radiographs and other imaging tools, and discussion of laboratory lameness.

CVM 6738. Equine Podiatry. (4 cr; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Two-week didactic and laboratory course. Concepts of equine podiatry, anatomy and physiology of the foot and hoof. In-depth seminars on diseases of the hoof and foot. Discussion of actual cases. Laboratories introduce basic techniques and methods of treatment for hoof and foot injuries.

CVM 6747. Equine Theriogenology Introduction. (4 cr [max 16 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Basic techniques in equine reproduction: handling of stallions and mares, teasing for estrus detection, rectal palpation and ultrasound examination of the reproductive tract, breeding management, hormone treatments, vaginal examination, uterine culture, cytology and biopsy, semen collection and evaluation, intrauterine therapy, and artificial insemination. Hands-on experience with semen cryopreservation, embryo transfer, and reproductive surgical procedures.

CVM 6748. Advanced Equine Theriogenology. (4 cr [max 8 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #)
Advanced techniques for evaluation, management, and treatment in equine reproductive programs.

CVM 6749. Stud Farm Practice (SFP). (4 cr [max 4 cr]; SP–DVM 4th yr DVM, #; S-N only)
Rotation gives students experience in stud farm management and veterinary practice. Aspects of stud farm practice from both veterinary and management points of view prepare students for specialized practice. Rotation given in central Kentucky in collaboration with a large veterinary practice and different stud farms.

CVM 6750. Equine Sports and Preventive Medicine. (4 cr; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #)
Broad exposure to the equine industry, emphasizing various sports-performance activities and role of the veterinarian. Field trips and guest lectures provide insight into thoroughbred racing and show-horse, English, and Western pleasure-horse activities. Training methods, physiologic adaptations to exercise, diseases, rehabilitation techniques, rules/regulations relating to drug usage, and development and institution of preventative-medicine programs. Treadmill evaluation of gait, hoof balance, upper airway function. Imaging techniques for evaluation of poor performance.

CVM 6790. Advanced Small Ruminant Practice. (1 cr; QP–DVM 3rd or 4th yr DVM or #; SP–DVM 3rd or 4th yr DVM or #; S-N only)
Training beyond core in practice of small ruminants. Lecture.

CVM 6791. Advanced Small Ruminant Practice: Laboratory Block. (1 cr; SP–DVM 3rd yr DVM or #; S-N only)
Common diagnostic/therapeutic procedures used in treating small ruminants.

CVM 6792. Small Ruminant Health and Production Rotation. (4 cr [max 8 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Sheep, goat, llama, and farmed-deer production, medicine, and health management. Orientation to production systems. System-based review of diseases. Seasonal nutrition and health management, purchasing/ introducting new stock, facility requirements/ maintenance, husbandry, diagnostic aids for disease(s), record keeping, zoonosis, and necropsy of stock. Farm visits to evaluate health/productivity. Hands-on experience in reproductive management. Breeding-soundness exams, body condition scoring, vasectomy, ultrasound pregnancy diagnosis, castration, tail docking, disbudding, dehorning, vaccination/injection techniques, parasite control, restraint/handling, venipuncture, foot trimming, tuberculin testing. Round up seminars at which participants present their approach to specific production-limiting flock/herd problems.

CVM 6795. Herd Health. (2 cr; SP–DVM 1st yr DVM or #; S-N only)
Herd health programs for dairy/beef cattle, sheep, and dairy goats. Components that constitute a herd health program, their costs/timing. Farm tours demonstrate need/method of applying herd health programs in commercial production settings. Five day, May Session course.

CVM 6796. Advanced Feedlot Herd Health (Feedlot). (4 cr; SP–CVM 3rd or 4th yr student, #; S-N only)

CVM 6797. Cow-Calf Herd Health and Production. (4 cr [max 4 cr]; QP–DVM 3rd or 4th yr or #; S-N only)
Cow-calf production, medicine, and health management. Field trips to high- and low-health cow-calf operations.

CVM 6800. Bovine Palpation. (1 cr; QP–DVM or #; SP–DVM or #; A-F only)
Practice in diagnostic evaluation of bovine reproductive tract.

CVM 6802. Advanced Bovine Practice: Lecture Block. (3 cr; QP–DVM 3rd or 4th yr DVM or #; SP–DVM 3rd or 4th yr DVM or #; track students must take A-F; non-track students may take A-F or S-N or Audit)
Topics in cattle health/production medicine not included in core. More extensive discussion of conditions introduced in core.
COURSE DESCRIPTIONS

CVM 6803. Advance Bovine Practice: Laboratory Block. (2 cr; SP–[6802, [3rd or 4th yr DVM or #; track students must take A-F; non-track students may take A-F or S-N or Audit]) Cattle health, production medicine. Topics not included in core, more extensive discussion of conditions introduced in core.

CVM 6804. Bovine Surgery. (4 cr; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only) Abdominal surgery of dairy cow. Urogenital and musculoskeletal diseases. Non-bovine food animal cases. Surgical and anatomy laboratories with coordinated seminars/lectures supplement ruminant clinical cases. Diagnostic/therapeutic plans and procedures. Small-group format.

CVM 6805. Food Animal and Exotic Animal Anesthesia. (0.5 cr; SP–5321 or equiv; S-N only) Techniques/complications of sedation, local anesthesia, and general anesthesia in ruminants, pigs, and some large exotic species. Cases demonstrate anesthetic management of clinical problems common in veterinary practice.

CVM 6811. Dairy Theriogenology Palpation. (4 cr (max 40 cr); QP–DVM 3rd or 4th yr or #; SP–CAPS 5551, DVM 3rd or 4th yr or #; S-N only) Palpating the reproductive tract of the cow per rectum. On-farm reproductive record systems. Evaluating dairy herd reproductive performance through DHI reports. Dairy Comp 305 and DairyCHAMP reports. Farm visits, Case discussions, laboratories, student presentations.

CVM 6812. Dairy Theriogenology Management. (4 cr (max 16 cr); QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only) Two-week rotation of lecture/laboratory. Embryo transfer. Breeding soundness evaluation of bulls. Health management of bulls. Obstetrics and fetotomy. Reproductive management of dairy herd. Decision cases on herds with infertility problems. Approaches to sire selection, evaluating genetic and nutrition factors on reproduction.

CVM 6813. Reproduction: Delivery Management (RDM). (4 cr (max 4 cr); SP–3rd or 4th yr DVM or #; S-N only) Two week rotation associated with MVMA’s reproduction booth (Birthing Center) at Minnesota State Fair. Students participate in delivery of calves, lambs, and piglets and assist in public education about processes related to large animal delivery and veterinary care.

CVM 6814. Mastitis, Milking Machines, and Milk Quality. (4 cr (max 8 cr); QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only) Evaluating herd mastitis problems, recommending solutions, creating control programs. Evaluating milking system. Field surgery of mammary gland and teats. Therapy for clinical mastitis. FDA 10-point program for milk residue avoidance.

CVM 6815. Dairy Ruminant Nutrition. (4 cr (max 8 cr); QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only) Nutrient requirements of ruminants, nutrient content of feed stuffs (primarily forages), energy utilization, protein/non-protein nitrogen utilization, nutritional disorders, formulation of adequate rations, techniques for analyzing rations, grazing.

CVM 6816. Applied Dairy Nutrition. (4 cr (max 8 cr); QP–AnSci 5403 (or equiv), DVM 3rd or 4th yr or #; SP–AnSci 5403 (or equiv), DVM 3rd or 4th yr or #; S-N only) Providing nutritional advice, counseling, or assessment to a dairy farm. Techniques and principles of nutrition. Problem-solving from field cases. Ration-formulation programs. “Live” case studies and herd visits. Written/oral report to client and class.

CVM 6818. Infectious Disease Control (Biosecurity) and Development of Treatment Protocols for Dairy Farms. (4 cr; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only) How to help a dairy producer implement management practices necessary to control/treat dairy diseases.

CVM 6820. Dairy Record Analysis, Epidemiology, and Economics. (4 cr (max 8 cr); QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only) Evaluation of a dairy herd using biological and economic records. Records analysis. Economic basis of dairying. Financial techniques for evaluating producer decisions and veterinary recommendations. Field trips, decision-case evaluation, and laboratories.

CVM 6830. Dairy Production Medicine and Youngstock (DPMY). (4 cr (max 4 cr); SP–[6814, 6815, 6820, DVM yr 4] or #; S-N only) Two week rotation. Focuses on youngstock rearing (calves/heifers), advanced dairy production medicine topics.

CVM 6840. Swine Core. (2 cr; QP–DVM or #; SP–DVM or #) Swine medicine, production, and health management.

CVM 6841. Swine Behavior. (0.5 cr; QP–[3rd or 4th yr] DVM or #; SP–[3rd or 4th yr] DVM or #) Common considerations in swine behavior.

CVM 6842. Swine Disease Diagnosis, Therapy, and Prevention. (4 cr (max 8 cr); QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only) Major diseases and high-health technologies. Field trips of high- and low-health farms and an abattoir for slaughter check. Problem solving and discussion of on-farm disease cases. In-clinic diagnostic techniques.

CVM 6843. Understanding PRRS: A Problem-Based Approach. (3 cr; SP–3rd or 4th yr DVM or grad student or practitioner; A-F only) Students experience real-time cases of Porcine Reproduction and Respiratory Syndrome (PRRS) and devise diagnostic/plans/intervention strategies, receiving actual diagnostic/production data to monitor progress. Course is all online.

CVM 6844. Swine Production Systems. (4 cr (max 8 cr); QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only) Systems of commercial swine production. Information management systems; building/equipment designs; health, genetics, and nutritional systems; marketing alternatives; Influence of production systems on biological and financial endpoints. Lectures, laboratories, and special projects (individual and group).

CVM 6845. Training in Swine Production. (4 cr (max 16 cr); SP–3rd or 4th yr DVM or #; S-N only) On-site training in day-to-day aspects of swine production/management. A 300 sow, three site system available for practicing swine production.
CVM 6846. Swine Nutrition. (4 cr [max 16 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)

CVM 6848. Swine Economics, Financial Management, and Marketing. (4 cr [max 16 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Economic theories, accounting practices, and marketing issues as they relate to the pork production. Case studies. Financial-analysis techniques.

CVM 6850. Swine Records. (2-4 cr [max 8 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
How to interpret performance measures, monitor productivity, capture data, and generate reports in managing production in the swine industry. Using records to troubleshoot problems and manage production.

CVM 6852. Swine Virology. (4 cr [max 16 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Lab techniques for diagnostic virology, serology, and immunology. Research techniques for use of fluorescent antibodies, determination of classes of immunoglobulins, and immunostimulation of lymphocytes.

CVM 6880. Avian Core. (2-4 cr; QP–DVM or #; SP–DVM or #; A-F only)
Avian nutrition, physiology, anatomy, and disease.

CVM 6882. Pet Bird Medicine. (4 cr; QP–DVM or #; SP–DVM or #; S-N only)
Pet bird diseases, management, and care.

CVM 6883. Raptor Center (RAP). (4 cr [max 4 cr]; SP–6497, DVM 3rd or 4th yr, #; S-N only)
Two week rotation at Gabbert Raptor Center. Students work with clinicians and Center staff in evaluation, treatment, rehabilitation, and necropsy of raptors.

CVM 6884. Poultry Health Rotation. (4 cr [max 16 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; S-N only)
Records and performance analysis, evaluation of research data; disease prevention; diagnosis of poultry diseases; troubleshooting and disease treatment; processing, inspection, and food safety. Lecture, necropsy, field visits, laboratory diagnosis, serum profiling, and discussion of cases.

CVM 6930. Medical Management of Zoo Animals. (1 cr; SP–3rd yr DVM or #; S-N only)
Zoo animal handling techniques, including physical/chemical restraint, commonly seen diseases, preventative medicine programs. Adaptation to standard medical practice/management techniques for zoos. Lectures.

CVM 6931. Diseases of Zoo Animals and Exotic Pets. (1 cr; QP–DVM or grad or #; SP–DVM or grad or #; S-N only)
Diseases of and management procedures for zoo animals and exotic pets. Restraint procedures, medication, diagnosis.

CVM 6932. Advanced Zoo Animal Medicine. (1 cr; QP–6931, DVM 3rd or 4th yr or #; SP–6931, DVM 3rd or 4th yr or #; S-N only)
Adapting existing veterinary techniques and principles to zoo animal medicine. Animal management and preventive medicine programs.

CVM 6933. Zoological Medicine. (4 cr [max 40 cr]; SP–Completion of first 3 yrs of veterinary medicine training, #; S-N only)
Introduction to all aspects of health care of zoo animals. Housing, nutrition, preventative health programs. Students assist zoo veterinarians with immobilizations, examinations, necropsies, laboratory work, records keeping.

CVM 6940. Cyto genetic Evaluation of Animal Diseases. (1 cr; QP–DVM, grad or #; SP–DVM, grad or #)

Clinical and Population Sciences (CAPS)

CAPS 7500. Advanced Public Health. (2 cr [max 6 cr]; QP–Grad or #; SP–Grad or #)
Provides practical experience of how and why public health and regulatory agencies function and the role veterinarians play in U.S. food industry; problem solving in veterinary public health, occupational health, and environmental topics.

CAPS 7505. Directed Studies in Large Animal Medicine. (2-8 cr [max 40 cr]; QP–#; SP–#; S-N only)
Students, under the guidance of a faculty member, conduct a special project addressing an issue in veterinary medicine. Project proposals must be approved by CVM’s curriculum committee.

CAPS 7706. Advanced Epidemiology. (2-8 cr [max 16 cr]; QP–#; SP–#; S-N only)
Applied and practical approach to describing data and using common statistical testing techniques. Strengths and limitations of statistical methods used in veterinary medicine and epidemiology. Students design a research program within given constraints of funding, time, and facilities and prepare a research proposal suitable for submission for competitive funding.

CAPS 7708. Advanced Analytic Techniques. (2-8 cr [max 8 cr]; SP–CVM 4th yr or grad or #; A-F only)
Principles and practices of developing and using computer systems for processing, analyzing, and interpreting various categories of animal health data. Acquiring resources necessary to undertake a research program. Developing a critical approach to reading veterinary medical literature.
COURSE DESCRIPTIONS

CAPS 7709. Advanced Building Design and Herd Evaluation. (2-8 cr [max 16 cr]; QP–#; SP–#; S-N only)
Two week course in design of animal housing systems to promote animal well-being, health, and productivity. Evaluation of operating production units to identify and correct environmental deficiencies that contribute to production losses. Natural and mechanical ventilation systems, including their design, operation, and maintenance. Ventilation and building placement as related to clinical epidemiology of on-farm/off-farm animal flow pattern. Classroom presentations and on-farm evaluations are performed by all participants. Course emphasizes bovine and porcine species. Equine, ovine, caprine, or llama discussions may be held (depending on class preference, which must be pre-arranged). Offered once yearly. Restricted to 15 participants.

CAPS 7711. Advanced Large Animal Medicine. (2-8 cr [max 8 cr]; SP–#; A-F only)
Provides exposure to medical diseases of horses, cattle, and small ruminants. History taking, clinical diagnosis, and patient management. Assessment of treatment responses in hospitalized patients. Clinical case material is supplemented by computer-based problem-knowledge couplers and case simulations. Small group discussions focus on clinical diagnosis, treatment, and prevention of common medical disorders.

CAPS 7712. Large Animal Medicine. (4 cr; SP–Grad or #; A-F only)
Provides exposure to medical diseases of horses, cattle, and small ruminants. History taking, clinical diagnosis, and patient management. Assessment of treatment responses in hospitalized patients. Clinical case material is supplemented by computer-based problem-knowledge couplers and case simulations. Small group discussions focus on clinical diagnosis, treatment, and prevention of common medical disorders.

CAPS 7713. Large Animal Medicine. (4 cr; SP–Grad or #)
Provides exposure to medical diseases of horses, cattle, and small ruminants. History taking, clinical diagnosis, and patient management. Assessment of treatment responses in hospitalized patients. Clinical case material is supplemented by computer-based problem-knowledge couplers and case simulations. Small group discussions focus on clinical diagnosis, treatment, and prevention of common medical disorders.

CAPS 7714. Advanced Large Animal Surgery. (2-8 cr [max 8 cr]; SP–#; S-N only)
Provides exposure to the diagnostic and therapeutic management of lameness and surgical diseases of the large animal species (equine, bovine, small ruminants) in a hospital setting. Students work as part of a team consisting of a senior large animal surgeon, a surgical resident, an intern, and 2-6 senior students. Cases range from the routine to those requiring intensive management or the advanced diagnostic and therapeutic techniques available in a referral setting. Caseloads vary throughout the year.

CAPS 7736. Advanced Equine Lameness. (2-8 cr [max 8 cr]; SP–CVM 4th yr or grad or #)
Two-week course involving the study of lameness in horses. Examines clinical lameness cases. Hands-on diagnosis and treatment. Discussions of videos of lame horses, examination of radiographs and other imaging tools, and discussion theory of diagnosis/treatment of laboratory lameness. Hospitalized cases are attended before morning rounds.

CAPS 7738. Advanced Equine Podiatry. (2-8 cr; SP–CVM 3rd or 4th yr or grad or #; A-F only)
Two-week didactic and laboratory course. Concepts of equine podiatry. Anatomy and physiology of the foot and hoof. Seminars on diseases of the hoof and foot, including discussion of actual cases. Labs introduce basic techniques and methods of treatment for hoof and foot injuries.

CAPS 7750. Advanced Equine Sports and Preventive Medicine. (2-8 cr [max 8 cr]; SP–CVM 3rd or 4th yr or grad or #)
Broad exposure to the equine industry. Emphasizes various sports performance activities and the role of the veterinarian. Field trips and guest lectures by trainers and veterinarians regarding thoroughbred racing and show horse/English/Western pleasure horse activities. Other sessions focus on training methods, physiologic adaptations to exercise, diseases, rehabilitation techniques, rules and regulations relating to drug usage, and development/institution of preventative medicine programs. Labs include treadmill evaluation of gait, hoof balance, and upper airway function, and imaging techniques for evaluation of poor performance.

CAPS 7792. Advanced Small Ruminant Medicine. (4 cr)

CAPS 7801. Large Animal Internal Medicine I. (3 cr; QP–DVM, grad, #; SP–DVM, grad, #; A-F only)
Pathophysiology, clinical manifestations, and therapeutic regimes for major organ systems of main large animal species.

CAPS 7802. Large Animal Internal Medicine II. (3 cr; QP–DVM, grad, 7801, #; SP–DVM, grad, 7801, #)
Pathophysiology, clinical manifestations, and therapeutic regimes used for major organ systems of main large animal species.

CAPS 7815. Advanced Ruminant Nutrition. (4 cr [max 16 cr]; QP–CVM 3rd or 4th yr or #; SP–CVM 3rd or 4th yr or #; A-F only)
Nutrient requirements of ruminants, nutrient content of feed stuffs (primarily forages), energy utilization, protein and non-protein nitrogen utilization, nutrition disorders, formulation of adequate rations, techniques for analyzing rations, and grazing.

CAPS 7816. Advanced Applied Dairy Nutrition. (4 cr [max 16 cr]; QP–CVM 3rd or 4th yr or #; SP–[Ruminant rotation or equiv], CVM 3rd or 4th yr or #)
Providing counseling or assessment to a dairy farm on its nutrition program. Discussions of techniques and scientific principles. Problem solving experiences derived from field cases. Students practice using ration formulation programs. “Live” case studies and herd visits will be made by each student including a written and oral report to the client and the class.

CAPS 7818. Infectious Disease Control (Biosecurity) and Development of Treatment Protocols for Dairy Farms. (4 cr [max 16 cr]; QP–#; SP–#; A-F only)
How to assist a dairy producer with implementing management practices necessary to control/treat dairy diseases.
CAPS 7820. Advanced Dairy Records. (4 cr [max 8 cr]; QP–CVM 3rd or 4th yr or #: SP–CVM 3rd or 4th yr or #: A-F only) Evaluation of a dairy herd, using biological and economic records. Prepares students for consulting, identifying causes of problems and proposing solutions. Records analysis (computer and hand records). Economic-basis dairying and financial techniques for evaluating producer decisions and veterinary recommendations. Course includes computer labs and field trips.

CAPS 7852. Swine Virology. (4 cr [max 16 cr]; QP–CVM 3rd or 4th yr or #: SP–CVM 3rd or 4th yr or #: A-F only) Lab techniques for diagnostic virology, serology, and immunology. Research techniques for use of fluorescent antibodies, determination of classes of immunoglobulins, and immunostimulation of lymphocytes.

Molecular Veterinary Bioscience (MVB)

MVB 5200. Statistical Genetics and Genomics. (4 cr; QP–Stat 3091 or equiv, GCB 3022 or Biol 4004 or equiv; A-F only) Statistical issues in genomics. Gene detection, including statistical analysis/designs for linkage study and for mapping quantitative trait loci. Linkage analysis using pedigree data for codominant/dominant markers. Using radiation hybrid mapping/single cell typing. Design issues in linkage analysis, parentage testing, and marker polymorphism.

MVB 5594. Directed Research in Molecular Veterinary Biosciences. (1-4 cr [max 4 cr]; SP–Jr; A-F only) Special project, addressing specific issue in veterinary medicine, under guidance of faculty member.

Small Animal Clinical Sciences (SACS)

SACS 7505. Directed Studies in Small Animal Medicine. (2-8 cr [max 16 cr]; QP–CVM grad or #: SP–CVM grad or #: A-F only) Students conduct a special project addressing a specific issue in veterinary medicine under the guidance of a faculty member.

SACS 7638. Residency in Small Animal Cardiology. (2-8 cr [max 20 cr]; QP–CVM grad or #: SP–CVM grad or #: A-F only) Clinical evaluation and management of cardiolapmonary disease. Students perform physical examinations, electrocardiograms, and echocardiograms; interpret radiographs; and participate in case discussions.

SACS 7648. Companion Animal Clinical Oncology. (2-8 cr [max 8 cr]; QP–CVM grad or #: SP–CVM grad or #: A-F only) Students participate in admitting new cases and in diagnosis and staging work-ups; perform aspirations and core biopsies, bone marrow biopsies, and lymph node biopsies; help monitor/treat patients; and make presentations on issues in clinical/comparative oncology. Faculty lead discussions relating to cancer biology, immunology, epidemiology, pathology, and chemotherapy/radiation therapy.

SACS 7705. Independent Study in Veterinary Medicine. (2 cr; SP–DVM or #: A-F only) Arranged independent study in a clinical area of veterinary medicine.

SACS 7710. Clinician’s Analysis of Urinalysis. (2 cr; QP–DVM 3rd or 4th yr or DVM grad or #: SP–DVM 3rd or 4th yr or DVM grad or #: A-F only) Interpreting abnormalities detected by routine urinalysis. Key concepts illustrated with clinical case material.

SACS 7715. Independent Research in Veterinary Anesthesiology. (1-6 cr; SP–Bi ology major or prevet or vet or grad; A-F only)

SACS 7720. Small Animal Orthopedic Radiology. (2 cr) Roentgen signs of common bone diseases of small animals.

SACS 7722. Large Animal Orthopedic Radiology. (1-2 cr) Roentgen signs of common bone diseases of large animals. Emphasizes the horse.

SACS 7730. Companion Animal Oncology. (2 cr; SP–DVM deg or #: S-N only) Principles of veterinary oncology reviewed. Biologic behaviors, treatments, and prognosis of neoplastic disorders.

SACS 7732. Comparative Clinical Veterinary Dermatologic Pathology. (1 cr; SP–Grad; A-F only) Microscopic pathology of basic dermatologic reactions and variable disease states.

SACS 7740. Residency in Veterinary Dermatology. (1-2 cr; SP–Grad; A-F only) Rotations in veterinary dermatology clinics. Review of dermatopathology slides.

SACS 7748. Companion-Animal Oncology. (4 cr)

SACS 7770. Small Animal Roentgenology. (2 cr; max 4 cr; SP–DVM 3rd or 4th yr or grad or #: A-F only) Roentgen signs of bone diseases of small animals.

Veterinary Diagnostic Medicine (VDM)

VDM 5000. Comparative Pathology Conference. (1-3 cr [max 99 cr]; SP– #: A-F only) Discussions/demonstrations of contemporary aspects of diseases of animals. Emphasizes disease diagnosis, clinical outcomes, pathogenesis, and molecular mechanisms.

VDM 7505. Directed Studies in Veterinary Diagnostic Medicine. (2-8 cr [max 8 cr]; SP–CVM grad or DVM 4th yr or #: A-F only) Special project under guidance of faculty member.

VDM 7950. Problems in Diagnostic Pathology. (1-5 cr; A-F only) Laboratory techniques in diagnostic virology and serology.

VDM 7954. Problems in Diagnostic Virology. (1-4 cr; A-F only)
Laboratory techniques in veterinary diagnostic pathology.

VDM 7956. Seminar: Diagnostic Medicine. (1 cr; SP–Grad; A-F only)
Presentation/discussion of morphologic and etiologic features of diseases.

Veterinary Medicine, Graduate (VMed)

VMed 5080. Problems in Veterinary Epidemiology and Public Health. (1-3 cr; SP–#; A-F only)
Individual study on problem of interest to epidemiology or public health student.

VMed 5165. Monitoring and Surveillance of Disease and Production. (2 cr; SP–#; A-F only)
Seminars and discussion on techniques used to monitor animal disease and production.

VMed 5210. Advanced Large Animal Physiology I. (1-3 cr [max 6 cr])
Review of large animal physiology at level needed for specialty board certification or beginning research. Students present topics in physiology and supplement reading with clinical case material or journal articles.

VMed 5211. Advanced Large Animal Physiology II. (1-3 cr [max 6 cr]; SP–5210 recommended; A-F only)
Review of large animal physiology at level needed for specialty board certification or beginning research. Students present topics in physiology and supplement reading with clinical case material or journal articles.

VMed 5295. Problems in Large Animal Clinical Medicine/Surgery and Theriogenology. (1 cr [max 3 cr]; SP–VMed grad student, possess DVM; A-F only)
Hospital cases using standardized format, audiovisual aids. Review literature pertaining to case. One or two cases presented by enrolled participants per month.

VMed 5596. Swine Diseases and Diagnostics. (2-3 cr)
Review of recent advances in swine diseases; farm visits for on-farm disease diagnostics and control programs.

VMed 7706. Advanced Epidemiology and Biostatistics. (2 cr; SP–Grad or IV track)
Describing data and using statistical testing techniques. Strengths and limitations of statistical methodologies.

VMed 7709. Advanced Building Design and Environment. (2-4 cr; SP–Grad or IV track)

VMed 7842. Advanced Swine Diseases. (2 cr; SP–Grad)
Lectures and discussion on advances in diseases of swine.

VMed 7844. Advanced Swine Production Systems. (2 cr; SP–Grad or IV track)
Swine production systems. Design, construction, staffing, pig flow, and financial aspects.

VMed 7846. Advanced Swine Nutrition. (2 cr; SP–Grad or IV track; A-F only)
Nutritional principles and concepts in swine nutrition.

VMed 7848. Advanced Swine Economics, Financial Management, and Marketing. (2 cr; SP–Grad or IV track; A-F only)
Economics theories, accounting practices, and marketing issues. Case studies to develop farm plans. Financial analysis techniques for farm production and expansion plans.

VMed 7850. Advanced Swine Records. (2 cr; SP–Grad or IV track)
How to interpret data from computer health management program.

Veterinary Pathobiology (VPB)

VPB 2022. General Microbiology. (2 cr; SP–3 cr biol)
Fundamental principles of microbiology; bacterial metabolism, growth, and genetics; biology of viruses and fungi; control of microorganisms; host-microbe interactions; microorganisms and disease; applied microbiology. Intended primarily for non-microbiology majors.

VPB 2032. General Microbiology with Laboratory. (4 cr; SP–3 cr biol)
Fundamental principals of microbiology; bacterial metabolism; growth and genetics; biology of viruses and fungi; control of microorganisms; host-microbe interactions; microorganisms and disease; applied microbiology. Intended primarily for non-microbiology majors.

VPB 5601. Veterinary Parasitology. (4 cr)
VPB 7505. Directed Studies in Veterinary Pathobiology. (2-8 cr [max 8 cr]; SP–CVM grad or #; A-F only)
Students, under the guidance of a faculty member, conduct a special project addressing an issue in veterinary medicine. Project proposals must include an hypothesis, objectives, plan of study and product for evaluation by the faculty adviser and must be approved by CVM’s curriculum committee.

VPB 7882. Pet Bird Medicine. (1-2 cr; QP–DVM or #; SP–DVM or #)
Pet bird diseases: management and care.

VPB 7884. Poultry Health Rotations. (4 cr [max 16 cr]; QP–DVM 3rd or 4th yr or #; SP–DVM 3rd or 4th yr or #; A-F only)
Records and performance analysis; evaluation of research data; disease prevention, diagnosis, troubleshooting, and treatment; food processing, inspection, and safety. Lecture, necropsy, field visits, laboratory diagnosis, serum profiling, and discussion of cases.

VPB 7886. Avian Physiology. (2 cr; QP–5 cr systemic physiology or equiv or #; SP–5 cr systemic physiology or equiv or #)
Wild- and domestic-bird physiology.
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Laura J. Mauro, Ph.D.
Jacqueline Jacob, Ph.D.
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World Wide Web Directory

University of Minnesota College of Veterinary Medicine
<www.cvm.umn.edu/>

University of Minnesota–Twin Cities
<www1.umn.edu/twincities/>

Veterinary Medical College Application Service (VMCAS)
and current Veterinary College Application
<http://aavmc.org/vmcas.htm>