

## DVM Course Descriptions

Courses are listed by semester, and are denoted as core, track, or elective. Track courses are denoted as S (Small Animal), F (Food Animal), E (Equine), and P (Public/Corporate). Mixed animal track students select specified track courses from Small Animal, Equine, and Food Animal track courses. A track course for one student can be an elective for a student in another track providing scheduling can be accomplished. The number of credits for each course is stated in parentheses at the end of the course description.

Course prefixes: VM = Veterinary Medicine, BMVS = Biomedical & Veterinary Sciences. Any BMVS course can be taken for elective credit providing scheduling can be accomplished.

### First Year - Semester 1

**Veterinary Anatomy I VM 8014/BMVS 5434 (Core)** Study of the basic structural and functional anatomy of carnivores (dog, cat), horse, and ruminants. Gross morphology is applied to clinical diagnosis, interpretation, surgical and medical treatment. Pre: First year standing in the DVM curriculum. (2H, 6L, 4C)

**Veterinary Histology VM 8054 (Core)** Introduction to basic histology and microscopic anatomy of animal organs. Intended to provide a foundation in normal tissue and organ structure at the light microscopic level, to support later courses in histopathology. Pre: First year standing in the DVM curriculum. (2H, 2L, 3C)

**Veterinary Physiology 1 VM 8034/BMVS 5454 (Core)** Study of physiological functions in companion, food, fiber, laboratory, zoo, and wildlife animal species. Emphasizes fundamentals and the overview of cellular, organ, and regulatory integration. Topics include cells, muscles, blood, respiration, circulation, environmental and regulatory physiology. Pre: First year standing in the DVM curriculum. (2H, 2L, 3C)

**Medical Biochemistry VM 8044 (Core)** Study of macromolecules, micronutrients and thermodynamics in regulating metabolic pathways with emphasis on the interrelationships between these factors in health and diseases. The course is designed to help students learn to use biochemistry in the process of clinical problem solving and encourage students to use the information within a clinical context. The major unifying concept of the course is homeostasis. The regulation of metabolic pathways by intracellular and hormonal mechanisms is emphasized. Pre: First year standing in the DVM curriculum. (2H, 2C)

**Veterinary Immunology VM 8064/BMVS 5044 (Core)** Study of fundamental immunological concepts and mechanism effective in protecting animals from infectious and foreign agents. To apply these concepts to clinical settings such as infectious diseases, vaccinations, immunologic disorders and for immunotherapies. Includes the use of immunological reactions for diagnostic purposes and the role of immune mechanisms in the induction of diseases. Pre: First year standing in the DVM curriculum. (2H, 2C)

**Profession Foundations VM 8004 (Core)** Topics will include veterinary ethics and law, personal and business finance, marketing, teamwork in veterinary practice, communication, professionalism, internship opportunities, public practice opportunities and animal welfare. Graded P/F only. (2H, 2C)

**Veterinary Ethology VM 8144 (Core)** This course will focus on the study of animal behavior and the interaction of animals to humans, other animals, and the environment. Knowing the normal behavior of the various species commonly encountered in veterinary medicine allows for proper handling and management procedures to be developed and applied for the well being of the species as well as the humans that interact with them. Understanding the normal behavior of the various species allows for better detection of disease states as pathological conditions may alter the behavior of animals and is often the first sign of disease. (1C)

**Veterinary LA Husbandry VM 8074 (Core)** This course acquaints first year veterinary professional students with basic production goals, simple management strategies, and routine procedures which occur in the production of beef cattle, dairy cattle, sheep, swine, and horses. Pre: First year standing in the DVM curriculum. (1H, 1C)

**Animal Domest/Gene Res BMVS 4014 (Elective)** Considers the process, history, sociology and geography of animal domestication. Includes behavioral, physiologic, and morphological changes incurred by domesticated stocks. Examines genetic variability of domestic species, considers breed groups and uniquely adapted breeds. Pre: First year standing in the DVM curriculum. (1H, 1C)

**Descriptive Embryology VM 8024 (Elective)** This course provides an overview of the cellular events immediately preceding and following fertilization, as well as a synopsis of general developmental features of gastrulation, placentation, and ontogeny of selected body systems. Completion of the course should greatly assist students in understanding various anatomical aspects of the adult animal body, as well as common congenital malformations. Pre: First year standing in the DVM curriculum. (1H, 1C)

**Diseases of Poultry BMVS 4024 (Elective)** Biological control and prevention of poultry diseases. Taught alternate years. (2C)

## First Year - Semester 2

**Veterinary Anatomy II VM 8114/BMVS 5444 (Core)** Study of the structural and functional anatomy of carnivores (dog and cat), horses, and ruminants. Gross, developmental and radiographic morphology with applications for clinical diagnosis, interpretation, and surgical and medical treatment. Pre: 8014 (4C)

**Veterinary Neurobiology VM 8104/BMVS 5474 (Core)** Normal structure and function of the mammalian nervous system. Basic neuroanatomy, neurophysiology, neurochemistry, and neurohistology of sensory, motor, integrative, and regulatory systems will be discussed, as well as metabolic support systems. (1H, 2L, 2C)

**Veterinary Physiology II VM 8134/BMVS 5464 (Core)** Study of domestic mammalian and avian renal, endocrine, digestive, reproductive, and ocular systems. The central themes include close relationship between structure and function, process of adaptation, and the concepts of homeostasis and feedback control systems. The course focuses on the normal function but mention is made of clinical relations to abnormal function (disease) in each section. (4H, 4C)

**Veterinary Pathology I VM 8304 (Core)** Mechanisms of cellular reaction to injury, inflammation, circulatory disturbances, and neoplasia. Emphasizes mechanisms of disease at the level of cells and tissues. (2H, 2L, 3C)

**Veterinary Parasitology VM8324/BMVS 5744 (Core)** Study of the morphology and biology of parasites of veterinary importance. Considers of pathogenesis, diagnosis, signs, and treatment of parasitic diseases of animals. Study of the immunologic and pathophysiologic aspects of host/parasite relationships and the importance of zoonotic parasitic infections. (3H, 3C)

**Veterinary Epidemiology VM 8084 (Core)** This course provides the veterinary student with the basic information and techniques to conduct disease outbreak investigations and develop disease prevention programs based on the demographics, the risk factors, and the pathological conditions that exist within the population. (2C)

**Fundamentals of Nutrition VM 8234 (Core)** Identification, classification, and description of nutrient classes, functions, metabolism and factors affecting nutrient availability. Description of feed sampling, evaluation, and analysis systems. Consideration of animal nutrient requirements, principles of ration balancing and nutritional investigation. (1C)

**Reptile & Bird Morphology VM 8254/BMVS 5814 (Elective)** Anatomical features are described that are unique to, or are characteristic of, each major group covered. Features to be discussed will largely be those that adapt each group to and permit successful exploitation its habitat; the discussion will extend to how anatomical features and functions are utilized in the life of members of the group. On completion of discussion of pertinent anatomical features, selected attributes of the group's natural history will be covered, as well as a brief survey of members of the group common to the local and extended area and those commonly kept as pets. Pre: first-year standing in the DVM curriculum. (1H, 1C)

**Clinical Perspectives VM 8094 (Elective)** Clinical application of basic science material. The course content will be closely linked with topics being taught concurrently in Veterinary Physiology II, Veterinary Pathology, Veterinary Anatomy II, Veterinary Neurobiology, and Veterinary Parasitology. The clinical application will be accomplished by presentation of clinical cases or clinical experiences that utilize the basic science principles in other courses in the first year curriculum. Pre: first-year standing in the DVM curriculum. Lectures will use case examples that will promote application of basic science knowledge to help in the diagnosis or treatment of veterinary patients. (1C)

### Second Year - Semester 3

**Fundamentals of Vet Pharmacol VM 8314 (Core)** General principles of drug action, including dose response, contribution of chemical properties to pharmacokinetics, species differences in response, clinical effects of agonists and antagonists, adverse responses, and comparisons of pharmacodynamics and pharmacokinetics among subtypes of important drug classes. Pre: second-year standing in the DVM curriculum or consent of instructor (3H, 3C)

**Vet Bacteriology & Mycology VM 8334/BMVS 5754 (Core)** Veterinary Microbiology and Mycology involves the study of important bacterial and fungal organisms that cause disease in companion and domestic animals. The course uses clinical cases and practical examples to explore the role of these microorganisms within the context of veterinary practice. (4C)

**Clinical Techniques VM 8354 (Core)** Restraint techniques for various species of animals commonly seen by veterinarians are demonstrated and practiced. Routine diagnostic and therapeutic procedures are demonstrated and practiced for the major domestic animal species. P/F only. Pre: second year standing in the DVM curriculum. (1H, 3L, 2C)

**Veterinary Pathology II VM 8404 (Core)** Pathology of specific lesions and diseases of each organ system is discussed at the gross and microscopic level. Emphasis is on diagnostic characteristics of diseases and the interpretation of common findings. Pre: second-year standing in the DVM curriculum. (3H, 3C)

**Veterinary Radiology VM 8544 (Core)** This course provides study of radiographic theory and practice. Initial topics include x-ray production and radiographic equipment, radiation safety, contrast media, production of diagnostic quality radiographs, basic principles of interpretation and an introduction to alternate imaging. Introductory material is followed by more detailed study of technique, normal appearance and principles of interpretation of the various body systems. The course will focus on normal radiography but will include abnormal to demonstrate principles and introduce concepts and to provide comparisons to normal radiographs. Pre: second-year standing in the DVM curriculum. (2H, 2C)

**Veterinary Clinical Nutrition VM 8454/BMVS 5654 (Core)** This course considers the nutritional needs of species of veterinary importance throughout life and for various work-loads and purposes. Nutritional management of diseased or compromised patients is considered. Pre: second-year standing in the DVM curriculum or completion/test-out of VM 8234 or equivalent course. (1H, 1C)

**Fundamentals of Theriogenology VM 8374 (Core)** Presentation of normal reproductive function and management in domestic species of veterinary interest. Diagnosis and management of reproductive diseases are covered during the course. Pre: second-year standing in the DVM curriculum. (2H, 2C)  
Available to graduate students by request only.

**Veterinary Business Management VM 9104 (Core)** Basics of operation of a small or large animal veterinary business. Topics include portraying the value of a practice's services, improving a practice's perception of value, principles of organizing management of a practice, understanding the marketing of veterinary products and services, and the art of effective communication. Pre: second year standing in DVM curriculum. Graded P/F only. (1H, 1C)

**FA Nutrition VM 8384/BMVS 5834 (Track, F)** Practical feeding guidelines for food animals. Special consideration given to the relationship of diet to nutrient excesses and deficiencies that result in clinical disorders. Diagnosis, treatment, and prevention of metabolic disorders of food animals will be discussed. Pre: completion of, or enrollment in VM 8454. (2H, 2C)

**Equine Nutrition VM 8394/BMVS 5844 (Track, E)** The course is designed to provide practical feeding guidelines for different classes of horses. The relationship between nutrition and clinical disorders of the horse is explored including their nutritional management. Students will be expected to complete a problem-solving nutrition project during the course. Pre: completion of, or enrollment in VM 8454. (1H, 1C)

**SA Nutrition VM 8264/BMVS 5824 (Track, S)** Practical feeding guidelines for companion animals. Special consideration will be given to the relationship of diet to nutrient excesses and deficiencies that result in clinical disorders. Diagnosis, treatment, and prevention of nutrition-related diseases will be discussed. Pre: Completion of, or enrollment in VM 8454. (1H, 1C)

**Intro to Clinical Research VM 8534/BMVS 5564 (Track, P)** Design of studies in veterinary related clinical and epidemiologic research, planning and implementation of experimental and survey data collection, management and analysis of data, evaluation of analysis and critical evaluation of published information. Pre: second-year standing in DVM curriculum. (2C)

**Adv Epidemiology VM 8684/BMVS 6554 (Track, P)** This course is intended for students interested in applying analytical epidemiological methods in assessing the health and disease status of populations (animal and/or human) and the factors affecting that status. It will include lecture/discussion sessions and exercises on the design, analysis, and interpretation of clinical trials and cross-sectional, case-control, and longitudinal studies. Risk assessment and techniques for assessing and enhancing the validity of epidemiological studies will also be covered Pre: third-year standing in DVM curriculum. (2C)

**Morph Nat Hist Mammal VM 8244 (Elective)** This course is designed for post first-year veterinary medical students who have an interest in non-domesticated species of mammals. The primary educational goal is to provide a foundation knowledge of life histories and associated functional morphology of the various taxonomic groups within the vertebrate class Mammalia as preparation for clinical studies and experiences that the student may subsequently select in the D.V.M. program. Life strategies and associated functional anatomy for locomotion, alimentation and reproduction will be emphasized. Familiarization with biological and veterinary literature resources related to this vertebrate class will be a coordinate objective. (2C)

**Pharmacol Topics VM 8274 (Elective)** Contemporary topics in veterinary pharmacology, including premarket safety studies, information included on drug labels, and the contribution of pharmaceutical preparation to drug use and effectiveness. Factors contributing to individual responses to drugs, including route of administration, homeostatic factors, and clearance. Issues in drug therapy, including optimal extra-label drug use, drug-induced behavior modification, and indications for multiple drug therapy. Pre: Completion of, or concurrent enrollment in VM 8314. (1C)

#### Second Year - Semester 4

**Clinical Pathology VM 8414/BMVS 5374 (Core)** Relating abnormal clinical laboratory data to specific organ dysfunctions with emphasis on data interpretation and pathophysiologic mechanisms. Understanding the diagnostic and prognostic value of pertinent laboratory tests as aids in the medical management of clinical cases. Alterations in the hematology, clinical chemistry, urinalysis, and cytology of the major domestic species will be studied. (4L,3C)

**Veterinary Virology VM 8124/BMVS 5054 (Core)** This course covers general virology, e.g. classification, physico-chemical characteristics, replication, recognition of and immune responses to members of different virus families. Detailed attention is given to clinical signs, pathology, histopathology, prevention and diagnosis of animal virus diseases organized by species of animals and by virus families. (2C)

**Veterinary Anesthesiology VM 8444 (Core)** This is an introductory course in the art and science of veterinary anesthesiology. The course will focus on the anesthetist's role for the safe anesthetic management of patients using inhalation anesthetics. This requires an understanding of patient evaluation, selection and knowledge of premedication, induction and maintenance anesthetic drugs as well as anesthetic equipment, monitoring depth of anesthesia and physiologic function. The canine patient will be used as the animal model for most of the course, however specific topics related to other species are incorporated where possible. Topics and techniques taught in this course will be revisited by the student in other courses in the third year DVM curriculum as well as preparation for the fourth year clerkship in anesthesiology. Pre-requisites: second-year standing in the DVM curriculum. (2H,2C)

**Veterinary Musculoskeletal VM 8284 (Core)** Presentation of common musculoskeletal problems, their incidence, pathophysiology, diagnosis, treatment and prevention. This course will include medical and surgical therapy of common musculoskeletal conditions of the domestic species. The principles of external and internal fixation will be discussed. Pre: second-year standing in the DVM curriculum. (3C)

**Veterinary Toxicology VM 8424/BMVS 5254 (Core)** Toxic agents, mechanisms of action, toxicoses, and treatments, especially as related to domestic and wild animals. Principles of toxicity testing and clinical diagnosis. Pre: second-year standing in the DVM curriculum or ALS 5304 or equivalent. (2H, 2C)

**Vet Cardioresp Syst VM 8754/BMVS 5864 (Core)** This course concentrates on respiratory and cardiovascular diseases of the common domestic species. Emphasis is given to teaching students how to develop a data base for these two body systems using effective communications and modern diagnostic tools. The course focuses on the common diseases of these systems and how these diseases are managed and treated. Pre: second-year standing in the DVM curriculum. (3C)

**General Veterinary Medicine VM 8554 (Core)** This course is an overview of routine immunization protocols, physical management, and parasite control for major species of veterinary concern. Also included are general fluid therapy, shock, fever, and acute trauma. The problem-oriented medical record is also discussed. Pre: second-year standing in the DVM curriculum. (1H)

**Animals & Public Policy VM9214/BMVS 6574 (Track, P)** Course will examine society's changing attitudes toward the care and use of animals and examine the philosophical spectrum between animal welfare and animal rights. Will explain the role of the major regulatory and accrediting organizations in setting standards of care for animals used in research, exhibition, transportation, and production. Will describe the regulatory process for making policies and regulations that support federal legislation. Will provide information on the currently acceptable standards for the care and use of animals for regulated purposes. Will explain roles and responsibilities of humane organizations such as pounds and shelters. **PRE:** second year standing in the DVM curriculum (1H, 1C)

**FA Theriogenology VM 8574 (Track, F)** This course presents the practice of theriogenology in a food animal or mixed animal practice. The course will include reproductive management for herds of food animal species including cattle, sheep, goats and swine. Emphasis is on clinical aspects of reproductive management. The course will consist of lectures, laboratories, discussion groups, and field experiences. Pre: VM8374 and second year standing in the DVM curriculum. (2C)

**Equine Theriogenology I VM 8514/BMVS 6514 (Track, E)** An advanced study in the breeding management, estrous cycle manipulation, parturition and foaling issues, reproductive disease diagnosis and treatment of the mare and stallion. The didactic work of this course will emphasize the practical application of the latest research covered in this species. The course will consist of lectures and interactive case discussions. Pre: VM 8374 and second-year standing in the DVM curriculum, or ALS 4304 and ALS 4424, or basic courses in comparative reproductive anatomy, physiology, and endocrinology. (1H, 1C)

**SA Medicine I VM 8585 (Track, S)** Advanced topics of diseases of the dog and cat. Course will provide the student with core knowledge for small animal track students in the diagnosis and management of breeding and neonatal disorders, advanced cardiopulmonary techniques, traumatic injuries and infectious diseases of the dog and cat. Pre: second year standing in the DVM curriculum. (1C)

**SA Theriogenology VM 9254 (Elective)** This course deals with the normal reproductive function and management in the dog and cat. Diagnosis and management of reproductive diseases are considered. Recent literature and advances in canine theriogenology will be included. (1H, 1C)

**Aq Medicine & Fish Health VM 8494/BMVS 5764 (Elective) (O)** Study of the etiology, diagnosis, pathology, pathogenesis, chemotherapy, control, and management of infectious and non-infectious diseases of aquatic organisms, especially pertaining to cultured food and tropical fish. Pre: BIOL 4424, FiW 4514 or VM 8363. (2C)

**Toxicology of Poisonous Plants VM 9114 (Elective)** Toxicoses in farm animals caused by common, important poisonous plants found in North America. Plant descriptions, a study of the toxic principles involved presented by the body systems affected and treatment measures to be taken when animals become ill. Principles of prevention and client education are also emphasized. Pre: second-year standing in the DVM curriculum. (1H, 1C)

**Behavioral Medicine VM 8984 (Elective)** An introduction to canine and feline behavior medicine. Topics include ontogeny of behavior, basic obedience, basic housetraining, aggression, anxiety, compulsive behavior, house soiling, psychopharmacology, psychoactive herbs, and sexual behavior. Pre: first year standing, DVM curriculum. (1H, 1C.) Graded P/F.

**Complementary Medicine VM 8804 (Elective)** This Special Topics course will cover the basic aspects of Traditional Chinese Medicine (TCM) including veterinary acupuncture. Discussions will focus on neurophysiology of acupuncture along with applications in both dogs and horses. Additional topics will include nutritional and chiropractic applications of TCM in veterinary medicine. (1C)

**Wildlife Medicine VM 8594 (Elective)** The course will include discussions on the regulations and ethics covering the rehabilitation and release of native wildlife. Lectures will cover the major infectious diseases, parasites, toxicities, injuries and other problems of wildlife. Common treatments, methods and equipment used to care for and rehabilitate these animals will be discussed. Species covered will include native mammals, wild songbirds, and raptors. (1C)

**PocketPets & Exotic Animal Med VM 9224 (Elective) (1C)**

**Reproductive Pathology VM 8474/BMVS 5124 (Elective)** This course covers morphologic changes and associated functional changes caused by diseases of the reproductive tract in domesticated animals. Attention is paid to the correlation of gross and microscopic changes and the reproductive efficiency of affected animals. (1H, 1C)

### Third Year - Semester 5

**Vet Surgical Princ & Prac VM 8624 (Core)** The basic principles of modern veterinary surgery will be presented including asepsis, wound healing, suture materials, wound management, and patient management in the perioperative period. The most common elective surgical procedures will be presented for companion animals as well as the more advanced techniques of closure of hollow viscus of the gastrointestinal and urinary systems. Lecture topics will be applied in a laboratory setting where strict anesthesia and surgical protocols will be enforced to emulate the recommended techniques in veterinary practice. Pre: third-year standing in the DVM curriculum (3C)

**Veterinary Gastroenterology VM 8614 (Core)** This course will present the important medical and surgical digestive, hepatic and pancreatic diseases of dogs, cats, horses, and food animals. Diagnosis, differential diagnosis, treatment, and prognosis will be discussed for all of the common disorders. Pre: third-year standing in the DVM curriculum. (4H, 4C)

**Veterinary Public Health VM 8434 (Core)** Public health issues involved in private veterinary practice, food inspection, and environmental health and safety. Pre: third year standing in the DVM curriculum. (1H, 1C)

**Veterinary Neurology VM 8654 (Core)** This course details the clinical signs produced by injury to the specific areas of the nervous system in domestic animals and discusses the natural disease processes that occur in these areas. Diagnosis and treatment for the more common diseases of the nervous system of domestic animals will be covered. Pre: Third-year standing in the DVM curriculum. (2C)

**Veterinary Ophthalmology VM 8344 (Core)** Presentation of diseases of the eye and orbit, including anatomy, pathophysiology, and medical and surgical management. Congenital and acquired ophthalmic diseases are considered. Pre: third-year standing in the DVM curriculum. (1H, 1C)

**Client Communication Skills VM 8634 (Core)** Basics of effective communication skills for the veterinary professional. Topics include techniques involved in eliciting and understanding the client's perspective, assisting clients in making decisions (including euthanasia), dealing with difficult clients, sharing bad news, recognizing non-verbal communication, health care team communication, and ethical considerations. Simulated client interviews will be conducted. Pre: third year standing, DVM curriculum. Graded P/F only. (1H, 1C.)

**Equine Medicine & Surgery I VM 8695 (Track, E)** Advanced study of the pathophysiology, diagnosis, and therapy of equine medical and surgical disorders affecting the respiratory, cardiac, and musculoskeletal systems. Laboratories are provided to allow students to develop skills with diagnostic techniques and to apply information to evaluate sample cases. (3C)

**FA Medicine & Surgery I VM 8615 (Track, F)** This course will provide in-depth information on the common disorders of the major body systems of cattle, sheep, goats and pigs. Clinical signs, diagnostic

tests and treatments for disorders of individual animals will be emphasized. Pre: third-year standing in the DVM curriculum (3H, 3C).

**SA Medicine II 8586 (Track, S)** Advanced topics of diseases of the dog and cat. Course will focus on disease processes affecting the respiratory, digestive, and neurological systems. Course material provides an understanding of the pathophysiology, diagnosis and clinical management and treatment of these disease processes. Pre: Third year standing in DVM curriculum (1H, 1C)

**Veterinary Public Policy VM 8984/BMVS 6584 (Track, P)** Overview of the formulation and implementation of public policy at the local, state and national level through legislation, regulation and operational strategy. Review of current public policy issues related to veterinary medicine, animal and human health such as food safety, animal disease control, animal welfare, business practices. National leaders interact with the class to discuss current issues. Pre: third year standing in the DVM curriculum Graded P/F only. (1 H, 1 C)

**Adv SA Clinical Tech VM 8694 (Track, S)** An advanced study of small animal clinical techniques. Special consideration will be given to techniques commonly performed in small animal practice. The course consists of lectures and laboratories. Prerequisites: Small animal (SA) track (See III), third year standing in the DVM curriculum. (1H, 1C)

**Veterinary Oncology VM 9095/BMVS 5305 (Elective)** This course and its companion course (VM 9096) are designed to provide intensive study of the biology of neoplasms, their diagnosis, clinical presentation and treatment. Introductory/review lectures: factors in protooncogene mutation, methods of diagnosis, and cancer epidemiology. A second portion of this course discusses important neoplasms of various animal species and body systems, and classical methods of treatment. Pre: Third year standing in the DVM curriculum. (2H, 2C)

**FA Product Safety for Vets VM 8984 (Elective)** The course explores the history, development and enforcement of laws and regulations that affect the food animal processing industry and food consumers. Comprehensive approach to microbiological and physical foodborne hazard identification, testing and sampling. Foodborne hazard prevention and control, including Hazard Analysis and Critical Control Points systems. Pre: third year standing in DVM curriculum; academic and/or professional background in microbiology, food safety, or meat processing. (2H, 2C)

**Equine Neonat & Pediat VM 9174 (Elective)** An overview of normal parturient events, diseases that affect neonatal foals, and the diagnostic and treatment options currently available to practitioners. Emphasis will be placed on problem oriented approach through evaluation of case examples. (1C)

**Goat & Sheep Medicine VM 9074 (Elective)** This is an in-depth treatment of the health and management as well as the diseases of goats and sheep. Production cycles, management concerns, as well as routine preventative care are covered as well as management of traumatic, infectious, and toxic disease problems. Pre: third-year standing in the DVM curriculum (1C)

**Veterinary Career Development VM 8854 (Elective)** Topics include what employers are looking for in a new DVM graduate, the transition from student to veterinarian, introduction to contract law, ingredients of employment contracts, art of negotiation, personal finance/investment strategies, and

strategies for achieving goals and objectives for the future. Pre: Third year standing in the DVM curriculum. Graded P/F only. (1H, 1C)

**Ferret Medicine & Surgery VM 8874 (Elective)** A comprehensive study of the domestic ferret from the veterinary perspective. Topics include husbandry/management, common diseases and therapeutic procedures. The course consists of lectures and a laboratory. Graded pass/fail. Pre: third year standing in the DVM curriculum. (1C)

**Emerging Infectious Dis I VM 9085/BMVS 5005 (Elective)** The course defines and discriminates general mechanisms and principles and factors influencing the emergence of infectious diseases. Selected emerging food-borne, bacterial, viral, zoonotic diseases of animals and humans are described and analyzed. Pre: Third year standing in the DVM curriculum, good standing in a graduate degree program Grades P/F only. (1H, 1C)

**Veterinary Cytopathology VM 8984 (Elective)** Using routine to complex case material from tissue specimens obtained by fine needle aspiration, needle biopsy, imprint, and scraping and slides prepared from body fluids and washes, students will develop skills in interpreting cytopathologic samples and writing descriptive reports. Pre-requisites: 3rd year standing, DVM curriculum or basic knowledge/competency in cytological specimen collection, slide preparation, sample staining, and microscopic evaluation and permission of instructor. (1 H, 1 C) Graded: A-F

### Third Year - Semester 6

**Vet Derm & Endocrinol VM 8764 (Core)** Presentation of diseases of the skin and endocrine systems, with pathophysiology, diagnosis, and clinical management. (3C)

**Vet Hemolymphatic Syst VM 8674 (Core)** This course covers core information for all professional veterinary students on the pathogenesis, diagnosis, and management of the important disorders of the hemic and lymphatic systems in dogs, cats, swine, horses, cattle, sheep and goats. Pre: third-year standing in the DVM curriculum. (2C)

**Urology VM 8644 (Core)** Presentation of renal, ureteral, cystic, and urethral diseases of veterinary interest. Pathogenesis, diagnosis, medical management, and surgical management are all discussed. Pre: third-year standing in the DVM curriculum (2H, 2C)

**Clinical Pharmacol VM 8784 (Core)** This course concentrates on principles of therapeutic decision making with emphasis on selection of appropriate drug, the risks and benefits of drug treatment, monitoring the course of therapy in an individual patient, and the economic impact of therapeutic decisions. Study of drugs based on therapeutic objectives and the effect of the disease process on pharmacokinetics and pharmacodynamics. Pre: third-year standing in the DVM curriculum (2C)

**Intro to Clinics VM 8686 (Core)** Introduction to the Veterinary Teaching Hospital at the Blacksburg campus of the Virginia-Maryland Regional College of Veterinary Medicine. Orientation to the logistics of hospital operations. Student participation in the daily activities of clinical services. Pre: Third-year standing in the DVM curriculum. (3 L, 1C)

**SA Clinical Prob Solv VM 9144 (Track, S)** Primary emphasis will be on developing problem solving skills of diagnosis of medical diseases in small animal patients. Problem-orientated case material will be presented and students will be guided through diagnostic evaluation and therapeutic options. (2C)

**SA Medicine III 8587 (Track, S)** Course will focus on disease processes affecting the central nervous and endocrine systems. Course material provides an understanding of the pathophysiology, diagnosis and clinical management and treatment of these disease processes. Pre: third year standing in the DVM curriculum. (1C)

**Adv SA Surgery VM 9034 (Track, S)** Course description: This course concentrates on the study of surgical principles and methods that are applicable to small animal practice. Emphasis is placed on the identification of disease conditions treatable by surgical therapy, applicable surgical methods, and expected outcome. Surgical methods will be discussed, particularly with respect to how they apply to laboratory procedures performed in the Advanced Small Animal Surgery Laboratory course (VM 9134). Pre: Completion of VM 8624. (2C)

**Equine Medicine & Surgery II 8696 (Track, E)** Advanced topics in equine anesthesia, ophthalmology, neurology, gastrointestinal, dermal and urinary system. This course provides in-depth information about diseases that affect horses. The pathophysiology of prominent diseases will be explained along with methods of diagnosis, clinical management and treatment will be described. Laboratory time will be provided to permit students to develop diagnostic skills and techniques and apply information to evaluate sample cases. PRE: Third year standing in the DVM curriculum. (VM8696 (2H, 3L, 3C)

**Equine Clinical Prob Solv VM 8524 (Track, E)** Course description: This course concentrates on the study of surgical principles and methods that are applicable to small animal practice. Emphasis is placed on the identification of disease conditions treatable by surgical therapy, applicable surgical methods, and expected outcome. Surgical methods will be discussed, particularly with respect to how they apply to laboratory procedures performed in the Advanced Small Animal Surgery Laboratory course (VM 9134). Pre: Completion of VM 8624 (2C)

**Equine Theriogenology II VM 9124 (Elective)** This course will continue to build on the information presented in Equine Theriogenology I (VM 8514). There will be multiple labs to reinforce reproductive procedures and information presented on the latest techniques of assisted reproductive technology. The collection of semen/embryos and the processing/shipment of each will be discussed. Surgical management of reproductive disorders will be presented. Prerequisites: VM 8514; third-year standing in the DVM curriculum (3L, 1C)

**FA Medicine & Surgery II VM 8616 (Track, F)** The course will include treatment of the individual animal and herd problems, preventive aspects of herd problems, and the regulatory and health aspects of herd management. Emphasis is on the production medicine aspects of herd and flock management. Pre: third-year standing in the DVM curriculum. (2H, 2C)

**FA Clinical Prob Solv VM 9044 (Track, F)** This course will present food animal clinical cases in a problem oriented format. Although the majority of the problems presented will begin with the individual animal case, emphasis will be placed on control and prevention in the flock or herd. Aspects of outbreak/disease investigation, production medicine, economics, and epidemiology will also be utilized. Pre: third-year standing in the DVM curriculum. (2C)

**International Vet Medicine VM 9244/BMVS 6594 (Track, P)** This course provides an overview of important global trends and issues in international veterinary medicine. It will explain the role of governmental agencies, inter-governmental and non-governmental organizations in international relations, development, relief work, conservation, disease control and prevention, and trade. It will compare and contrast types of cross cultural communications, negotiation and conflict resolution strategies. Course will examine issues related to globalization and its impact on poverty and food security. Course presenters include veterinarians who have worked in various countries around the world. Students will have the opportunity to practice oral and written communication skills by preparing and delivering short issue paper at conclusion of course. Pre: third year standing in the DVM curriculum or permission of the instructor. Graded: A-F (1 H, 1 C)

**Emerging & Exotic Dis of An VM 8984 (Track, P)** This on-line, self directed study course consists of overviews, scenarios, a database, infectious inquiries, and tests related to emerging and exotic diseases of animals (EEDA). The ability of veterinarians in all areas of the profession to suspect and notify proper officials of potential foreign animal diseases in livestock or companion animals is crucial to safeguarding America's animals and agricultural sectors. Animal diseases that may be seen in a variety of species including pet birds, cattle, dogs, rabbits, fish, horses, sheep, goats, pigs, cats, and zoo animals are presented as clinical cases, scenarios, and in actual recent outbreak situations. Graded Pass or Fail. (1H, 1C)

**Emerging Infectious Dis II VM 9086/BMVS 5006 \* (Elective)** The course expands the general principles of emerging infectious diseases to include recent examples of important viral, parasitic and zoonotic diseases of animals and humans. Pre: Third year standing in the DVM curriculum, good standing in a graduate degree program. Completion of VM 9085 / BMVS 5005 is desirable Graded P/F only.(1H,1C)

**Adv Histopathology VM 9064 \* (Elective)** Pathology centering on reaction of organs, tissues and cells at the light microscopic level is presented in a case-based format. Emphasis will be placed on classic tissue and cellular response to injury and will incorporate information and correlate disease mechanisms presented in prerequisite courses. Pre: third-year standing in the DVM curriculum (3L, 1C)

**Medical Toxicology VM 9204/BMVS 4084 \* (Elective)** Adverse health effects of exposure to drugs or substances of abuse. Covers principles of toxicodynamics, toxicokinetics, biotransformation, diagnosis and treatment. Emphasis will be placed on mechanism(s) of action of the various drug classes, body system(s) affected, clinical manifestations of problems and the resulting adverse effects on human health and society. Methods of treatment and client education will also be addressed. Laws controlling and governing the use of these drugs/substances and the agencies responsible for them will also be covered. (2H, 2C)

**Adv Vet Public Health VM 9094/BMVS 6564 \* (Elective)** This course is broken into two sections, didactic lecture and discussion of water quality, emerging diseases, antibiotic resistance issues and the role of the veterinarian in public health. The second section consists of student presentations. Presentation topics are student determined and the focus is to review an article of current public health concern and discuss the role of the veterinarian in that issue. (1C)

*\* 1 of 4 courses required as track for Govt/Corp students*

**Adv SA Surgery Lab VM 9134 (Elective)** This course provides an opportunity to practice surgical principles and techniques, building on those principles learned in Practice and Principles of Surgery (VM 8624). Included are ovariohysterectomy, orthopedic, and ophthalmic procedures, used as a demonstration of principles and skills needed to perform entry-level surgery. Prerequisite: Advanced Small Animal Surgery (VM 9034). Graded P/F. (3L, 3C)

**Adv Veterinary Cardiology VM 9184 (Elective)** Course description: This course is intended for students with a small animal orientation and a desire to have a better understanding and working knowledge of cardiovascular diseases. Emphasis will be on advanced topics in physical diagnosis, electrocardiography and echocardiography. Pre: third year standing in the DVM curriculum. (1C)

**Avian Medicine & Surgery VM 9004 (Elective) (1C)** Course is designed to provide students with basic information and skills necessary for the diagnosis and treatment of disorders of avian species with an emphasis on pet birds. Pre: Third year standing in the DVM curriculum. (1H, 1C)

**Adv Diagnostic Imaging VM 9014 (Elective)** This course will introduce students to basic principles and applications of advanced diagnostic imaging in veterinary medicine. Topics will include nuclear imaging, digital radiography, picture archiving systems, computed tomography, magnetic resonance imaging, ultrasonography and echocardiography. Pre: third year standing in the DVM curriculum. (1H, 1C)

**Parasitol of Grazing Animals VM 8984 (Elective)** Lecture format to teach students the diagnosis, treatment and management of parasites encountered in grazing animals. The course will focus on anthelmintic use and management of drug resistant parasites and environmental management to limit parasite infection. Prerequisites: Completion of core Parasitology course (VM 8324). (1H, 1C)

**SA Emergency Medicine VM 8984 (Elective)** This course provides state-of-the-art information on major aspects of small animal emergency and critical care including: triage, shock, sepsis, systemic inflammatory response syndrome, multiple organ dysfunction syndrome, cardiopulmonary crises,, abdominal pain, acute neurologic management, pediatric critical care, obstetric emergencies, and urologic emergencies; as well as monitoring the critical care patient. Graded: A-F. (1 H, 1 C)

#### Fourth Year - Semesters 7- 9

##### Core Clerkships:

**SA Surgery I Clk VM 9614** Supervised clinical experience in diagnostics, pre-operative preparation, surgery and post-operative care of dogs and cats admitted through the Teaching Hospital for surgical problems. Correlative and communicative skills will be stressed. Patient care is prime concern. ( 4C) P/F only

**Community Practice Clk VM 9264** Senior veterinary students will be trained in clinical medicine and surgery in a private veterinary practice setting under the direction of experienced veterinary practitioners. Opportunities will exist to participate in the routine aspects of veterinary practice, to interact with clients and clinic personnel, to improve surgical and diagnostic skills, and to observe and understand business management activities. (4C). P/F only.

**LA Clinical Services I Clk VM 9504** Principles of large animal medicine and surgery including acquisition of an unbiased medical history, performance of a complete physical examination and knowledge of various diagnostic, therapeutic and surgical procedures performed on large animal patients admitted to the Teaching Hospital. Students will work with large animal medical and surgical patients, attend daily rounds and have additional time for individual study. (2H, 6L, 4C). P/F.

**PMM I Clk VM 9534** The Production Management Medicine (PMM) Clerkship will introduce students to clinical problems of horses and food animals as they occur within the production environment. Emphasis will be directed to problem identification, solution, and prevention. Students will handle, examine, and treat animals within their environment. Students will determine risk factors that contribute to the incidence of disease and production inefficiency affecting individual animals and populations of animals, and assess how these factors can be most economically altered to prevent recurrence of the problem. (2H, 6L, 4C) P/F only

**Anesthesiology Clk VM 9624** Composed of clinical experiences in comparative anesthesiology. The student will spend the majority of time working with Teaching Hospital patients. Time will be allocated for both prospective and retrospective rounds and case discussions. Additional time will be available for individual study. (4C) P/F only

**Radiology Clk VM 9634** Practical training in the production of diagnostic quality radiographs of various body parts of large and small animals with attention given to radiation safety and optimal radiographic positioning and technique: development of skills in radiographic interpretation. (2H, 6O, 4C) P/F only.

**Lab Services Clk VM 9724** This course will provide senior veterinary students with experience in the necropsy service of the Teaching Hospital by working on actual case material. The course will also give students an overview of laboratory support services of the hospital including parasitology, microbiology, virology, immunology, toxicology and clinical pathology and review the major diseases in each of those disciplines. (2H, 6L, 4C) P/F only

**Public Corporate Clk VM 9714** Develops and expands the student's awareness and understanding of career opportunities in veterinary medicine other than those in private clinical practice. (4C) P/F only

#### **Track and Elective Clerkships:**

**SA Medicine I Clk VM 9434, II VM 9434, III VM 9434** Senior veterinary students will be trained in clinical small animal medicine through cases presented to the Veterinary Teaching Hospital. The majority of cases will be referrals from private practitioners (>35 mile radius) of Blacksburg, or transfers from other internal VTH services. Students will participate in a local emergency service and help staff the Intensive Care Unit. Students are given primary patient responsibility, allocated time for daily rounds and individual case study. P/F only

**SA Surgery II Clk VM 9614** Supervised clinical experience in diagnostics, pre-operative preparation, surgery and post-operative care of dogs and cats admitted through the Teaching Hospital for surgical problems. Correlative and communicative skills will be stressed. Patient care is prime concern. ( 4C) P/F only

**SA Specialty Medicine I Clk VM 9404, II VM 9404** In-depth study of cardiology and neurology. Instruction will be case-based in the Veterinary Medical Teaching Hospital. Pre: fourth-year standing in the DVM curriculum (2H, 6L, 4C)

**Ophthalmology Clk VM 9454** This clerkship allows students to focus on diseases of the eye in several species. The majority of the student's time will be spent examining and treating local and referred patients with eye problems. Students will be given primary patient responsibility. Pre: fourth-year standing in the DVM curriculum (2H, 6L, 4C). P/F only

**LA Clinical Services II Clk VM 9504, III VM 9504, IV VM 9504** Principles of large animal medicine and surgery including acquisition of an unbiased medical history, performance of a complete physical examination and knowledge of various diagnostic, therapeutic and surgical procedures performed on large animal patients admitted to the Teaching Hospital. Students will work with large animal medical and surgical patients, attend daily rounds and have additional time for individual study. (2H, 6L, 4C). P/F.

**Equine Medical Center I Clk VM 9544, II VM 9544** Designed to provide the student with clinical experience in both equine medicine and surgery by working with the faculty and clinical support staff in the management of horses referred by veterinarians for elective or emergency care. This will include patient admission and discharge responsibilities, pre- and post-operative patient care, routine and intensive medical surgical care. (4C) P/F only.

**Equine Private Practice Clk VM 9814** Training of senior veterinary students in clinical medicine and surgery in the equine private practice setting under the direction of experienced veterinary practitioners. Opportunities to participate in the routine of veterinary practice, to interact with clients and clinic personnel, to improve surgical and diagnostic skills, and to observe clinic management. Pre: Fourth year standing in the DVM curriculum. (4C) P/F only

**Equine Field Services Clk** Training of senior equine track students in equine theriogenology beyond that provided in earlier theriogenology courses (VM 8374, 8514, 9124). Students will work on cases involving breeding management and abnormal reproductive function and will become familiar with methods to correct or treat these problems. The student will also participate in the daily equine ambulatory service provided by the veterinary teaching hospital. Pre: Fourth year standing in the DVM curriculum. (4C) P/F only

**PMM Clk II VM 9534, III VM 9844** The Production Management Medicine (PMM) Clerkship will introduce students to clinical problems of horses and food animals as they occur within the production environment. Emphasis will be directed to problem identification, solution, and prevention. Students will handle, examine, and treat animals within their environment. Students will determine risk factors that contribute to the incidence of disease and production inefficiency affecting individual animals and populations of animals, and assess how these factors can be most economically altered to prevent recurrence of the problem. (2H, 6L, 4C) P/F only

**FA Private Practice I Clk VM 9804, II VM 9554, III VM 9554, IV VM 9554** Training of senior veterinary students in clinical medicine and surgery in the food animal private practice setting under the direction of experienced veterinary practitioners. Opportunities to participate in the routine of veterinary practice, to interact with clients and clinic personnel, to improve surgical and diagnostic

skills, and to observe clinic management. Pre: Fourth year standing in the DVM curriculum. (4C) P/F only

**Adv Dairy Herd Management Clk VM 8984** The Beef Cattle Health and Management Systems (BHAMS) provides additional training and experience in understanding the herd based aspects of beef cattle medicine and management and the veterinarians role in economically producing a safe, wholesome food supply. The clerkship will combine interactive discussion topics with herd visits to increase the students observational and decision making skills. Pre: fourth year standing in the DVM curriculum. (2H, 6L, 4C). P/F only

**Adv Beef Herd Management Clk VM 8984** The Beef Cattle Health and Management Systems (BHAMS) provides additional training and experience in understanding the herd based aspects of beef cattle medicine and management and the veterinarians role in economically producing a safe, wholesome food supply. The clerkship will combine interactive discussion topics with herd visits to increase the students observational and decision making skills. Pre: fourth year standing in the DVM curriculum. (2H, 6L, 4C). P/F only

**Small Ruminant Clk VM 9604** Detailed clinical exercises, discussion sessions, and problem-solving exercises concerning the biology, management diseases, and therapeutics of sheep, goats, llamas, and alpacas. Course content is moderately flexible in order to accommodate varying caseload and student interests. (4C) P/F only

**Adv Pathology Clk VM 9744** Focuses on the details of performing animal necropsies and interpreting the lesions that may be found. Sampling and preparation techniques are considered for the preparation of histopathological specimens. Correlation of laboratory results with gross and histopathological findings is stressed and a final diagnostic report is prepared. Pre: 9724. ( 4C) P/F only

**International FA Clk** Provides the opportunity for the food animal track senior student to be involved in international projects in areas such as food safety, preventative medicine and public health. This would include, but is not limited to, current collaborations with Chile, Dominican Republic, and Mongolia. Pre: Fourth year standing in the DVM curriculum and approval by the Director of Admissions and Student Services. (4C) P/F only

**Research I Clk VM 9764, II VM 9764** Provides the opportunity for students considering a career in public practice (Public/Corporate) to obtain in-depth experience in their focus area. Also allows students enrolled in the DVM/MS or DVM/PhD program to pursue research or other objectives in specified areas. Experiences will be tailored to the student's area of interest. (4C) P/F only

**Mixed Private Practice Clk VM 9824** Training of senior veterinary students in clinical medicine and surgery in the private practice setting under the direction of experienced veterinary practitioners. Opportunities to participate in the routine of veterinary practice, to interact with clients and clinic personnel, to improve surgical and diagnostic skills, and to observe clinic management Pre: 4th year standing in the DVM curriculum. (4C) P/F only

**Ultrasound Clk VM 9464** Practical training in ultrasound, with emphasis on small animal abdominal examination. Thoracic, musculoskeletal, cervical, large animal abdomen, and ocular ultrasound experience is dependent on clerkship caseload. Training in ultrasound is through a combination of

observation and hands-on practice. Students attend morning rounds with the radiology clerkship students. Each ultrasound elective student is expected to make a short presentation on the imaging aspects of an area of interest at the end of each block.(2H, 6O, 4C) P/F only.

**SA Clinical Topics Clk I VM 9664, II VM 9674** Allows the interested student to pursue off-campus training in areas related to the small animal track. May include, but not limited to general or specialty private practice. . Pre: Fourth year standing in the DVM curriculum and approval by the Director of Admissions and Student Services. (4C) P/F only

**Equine Clinical Topics Clk I VM 9654, II VM 9704, III VM 9704** Allows the interested student to pursue off-campus training in areas related to the equine track but other than general private practice. Pre: Fourth year standing in the DVM curriculum and approval by the Director of Admissions and Student Services. (4C) P/F only

**FA Clinical Topics Clk I VM 9564, II VM 9574, III VM 9574** Allows the interested student to pursue off-campus training in areas other than food animal general private practice during the clinical year. Pre: Fourth year standing in the DVM curriculum and approval by the Director of Admissions and Student Services. (4C) P/F only

**P/C Clinical Topics Clk I VM 9684, II VM 9694, III VM 9774, IV VM 9784, V VM 9794** Allows the interested student to pursue off-campus training in their focus area. Pre: Approval by the Director of Admissions and Student Services. (4C) P/F only