

# Veterinary Medicine and Surgery (V\_M\_S)

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**V\_M\_S 6001: Topics in Veterinary Medicine**

Current topics, infrequently-taught courses, or new courses not yet designated by a permanent course number. Some sections may be graded A-F only or S/U only. Course instructor consent prior to enrollment is required.

**Credit Hour:** 0.5-6

**Prerequisites:** Restricted to Veterinary Medicine students

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**V\_M\_S 6002: Veterinary Raptor Medicine**

This multiple-block course is designed to introduce veterinary students to wildlife rehabilitation practices through lectures, laboratories, hands-on rehabilitation, and release of wild birds of prey. Professional veterinary students organize this course with oversight by the course directors. Graded on S/U basis only.

**Credit Hours:** 0.5

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**V\_M\_S 6004: Special Topics in Bovine Reproduction**

This course provides students with a foundation in bovine reproductive anatomy and physiology and then applies this knowledge to real-world reproductive management through the dissection of estrous synchronization protocols, the application of artificial insemination, and the performance of pregnancy examinations. The importance of analysis of herd data is emphasized. Management of pathologic conditions such as abnormalities of cyclicity and parturition are discussed. Current topics of industry interest in Missouri such as assisted reproductive technologies, genomics and the impact of fescue toxicosis on bovine reproductive performance are also presented. Graded on S/U basis only.

**Credit Hour:** 1-1.5

**Prerequisites:** VM1 standing

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**V\_M\_S 6005: Clinical Skills**

A hands-on laboratory class to provide experience with handling and examining Horses, Cattle, Small ruminants and Camelid species, Cats and Dogs for veterinary students.

**Credit Hours:** 0.5

**Prerequisites:** first year veterinary students. Graded on S/U basis only

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**V\_M\_S 6006: Clinical Skills**

A hands-on laboratory class to provide experience with handling and examining Horses, Cattle, Small ruminants and Camelid species, Cats and Dogs for veterinary students. Graded on S/U basis only.

**Credit Hours:** 0.5

**Prerequisites:** first year veterinary students

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**V\_M\_S 6007: Healer's Art: Awakening the Heart of Medicine**

The Healer's Art is set-up as a 15-hour elective course for VM1 and VM2 students. The 15 contact hours are achieved across 5 evening sessions. Each three-hour session is divided into a large-group and small-group experience. The course addresses the hidden crisis in veterinary medicine - the growing loss of meaning and commitment experienced by veterinarians under the stresses of today's world. The curriculum is process-based and enables the formation of a community of open dialogue between students and faculty. The tools used in the course include faculty sharing from personal experience, generous listening and open discussion in the small group setting, experiential learning, and reflection exercises. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** VM1 and VM2

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**V\_M\_S 6010: Evaluated Veterinary Preceptorship**

This required co-op style course provides the student with practical exposure and experience in nonacademic veterinary medicine. Duration of 2-6 weeks. Graded on S/U basis only.

**Credit Hour:** 1-99

**Prerequisites:** VM-3 standing

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**V\_M\_S 6020: Veterinary Radiology with Laboratory**

Introduces through lectures and demonstrations the principles of radiographic examination and interpretation of disease processes of domestic animals. Instructional period 8.

**Credit Hours:** 2

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**V\_M\_S 6030: Veterinary Anesthesiology with Laboratory**

Basic principles of anesthesiology for any species of domestic and exotic animals. Instructional period 9.

**Credit Hours:** 2

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**V\_M\_S 6040: Companion Animal Medicine with Laboratory**

Covers basic principles of veterinary internal medicine and selected subdisciplines. Instructional period 9.

**Credit Hours:** 4

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**V\_M\_S 6050: Small Animal Medicine**

Didactic presentations regarding pathophysiology, diagnosis and therapeutic management of organ system diseases in small animals.

**Credit Hours:** 2.5

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**V\_M\_S 6060: Small Animal Surgery with Laboratory**

Basic principles including suture materials, suture patterns, operative techniques, wound healing, and body system approach to soft tissue surgery conditions.

**Credit Hours:** 2

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**V\_M\_S 6071: Small Animal Surgery**

Continuation of V\_M\_S 6060 lectures, focusing primarily on orthopedics.

**Credit Hours:** 2

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**V\_M\_S 6072: Optional Surgery and Anesthesia Laboratory**

Designed to teach entry-level surgical and anesthesia skills using models, live animals, and cadavers. This laboratory is offered as a substitute to V\_M\_S 6073 for students who wish to gain anesthesia and surgical experience with live tissues. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** V\_M\_S 6060

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**V\_M\_S 6073: Fundamental Surgery Laboratory**

Designed to teach entry-level surgical skills using models and cadavers. Canine cadavers will be substituted for pigs in the first two celiotomy laboratories. Students will not anesthetize pigs but will observe clinical anesthesia by following one clinical case from start to finish. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** complete V\_M\_S 6060

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**V\_M\_S 6081: Food Animal Medicine and Surgery**

Covers the important diseases of cattle, goats, sheep, camelids, and swine recognition, management and prevention of diseases are stressed.

**Credit Hours:** 2.5

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**V\_M\_S 6082: Food Animal Medicine and Surgery**

Continuation of V\_M\_S 6081. Covers the important diseases of cattle, goats, sheep, camelids, and swine recognition, management and prevention of diseases are stressed.

**Credit Hours:** 2

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**V\_M\_S 6090: Small Animal Emergency and Critical Care with Laboratory**

Basic principles of emergency and critical care of companion animals, and body system approach to emergency and critical care.

**Credit Hour:** 1

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**V\_M\_S 6100: Evaluation of Animal Disease Monitoring and Surveillance Pro**

This course will allow students to articulate and share what they have learned in coursework and to supplement previous learning by exploring additional areas of knowledge relevant to their readiness for professional practice. It will enable students to test theoretical knowledge against real life practical experiences, and to integrate and refine basic and advanced concepts, values, and methods acquired during the professional education. Graded on A-f only.

**Credit Hours:** 2

**Prerequisites:** second year standing in the DVM program, enrollment in the dual degree MPH program, or consent of instructor

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**V\_M\_S 6110: Theriogenology**

Reproductive function, estrous cycle manipulation, and breeding of individual domestic animals and herds. Pathogenesis, diagnosis and management (medical and surgical) of common reproductive disorders.

**Credit Hours:** 3

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**V\_M\_S 6120: Veterinary Ophthalmology**

Covers examination, diagnostic procedures and treatment of important eye diseases of domestic animals.

**Credit Hour:** 1

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**V\_M\_S 6130: Fundamentals of Veterinary Business Management**

To realistically present to the second-year veterinary student a basic explanation of the essential need for strong base of knowledge pertaining to business and management in order to be successful in the veterinary profession.

**Credit Hour:** 1

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**V\_M\_S 6135: Foundations of Financial Success**

College of Veterinary Medicine students will make hundreds of financial decisions that will impact not only their current well-being, but future financial situations as well. Knowing how to manage money, identify goals, and take steps to make them happen is key to a healthy relationship with your finances. In this course, students will work on developing skills in setting financial goals, budgeting, financial self-assessments, leveraging resources, safe and smart use of credit (and debit) cards, avoiding financial hazards, and student loan repayment. A

financially savvy student does not just understand why and how to make healthy personal financial choices; they see how those choices fit into the larger picture, they practice those choices daily, and they help others in their families and communities to cultivate financial wellness. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** VM 1 student

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#### **V\_M\_S 6140: Nutrition with Laboratory**

Nutrition of companion and food producing animals and nutritional principles important to veterinary medicine. Subjects presented include feeding of animals for maintenance of healthy conditions during all life stages, evaluation of foods and supplements, and methods of diet formulation and evaluation.

**Credit Hour:** 1.5

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#### **V\_M\_S 6151: Equine Medicine and Surgery**

Covers the fundamentals of diseases of the equine species. Case Management approaches are utilized to provide examples of disease conditions.

**Credit Hours:** 2

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#### **V\_M\_S 6152: Equine Medicine and Surgery**

Continuation of V\_M\_S 6151. Covers the fundamentals of diseases of the equine species. Case Management approaches are utilized to provide examples of disease conditions.

**Credit Hour:** 1.5

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#### **V\_M\_S 6400: Food Animal Medicine and Surgery I**

Clinical Rotation. Technical, diagnostic and therapeutic procedures common to the practice of large animal medicine and surgery. Experience in the operation of a large animal hospital and farm outpatient practice.

**Credit Hours:** 6

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#### **V\_M\_S 6411: Small Animal Internal Medicine**

Clinical rotation in small animal internal medicine for veterinary degree students. Students will obtain history and conduct physical examination of client-owned dogs and cats. After reviewing findings with faculty, they will perform diagnostic tests and carry out treatments. Graded on A-F basis only. May be repeated for credit.

**Credit Hour:** 1-99

**Prerequisites:** the entire pre-clinical curriculum of the CVM must be completed before taking this course; that is, students must have successfully completed the DVM curriculum through instruction period 12. Restricted to students in years 3 and 4 of the DVM curriculum

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#### **V\_M\_S 6412: Small Animal Primary Care/Community Practice**

Clinical rotation in Small Animal Community Practice covers Dermatology, Dentistry and Primary Care Cases for dogs and cats. This is a core course for all MU CVM students. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** the entire pre-clinical curriculum of the CVM must be completed before taking this course; students must have successfully completed the DVM curriculum through instructional period 12. Restricted to students in years 3 and 4 of the DVM curriculum

**Recommended:** V\_M\_S 6400 and V\_M\_S 6500

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#### **V\_M\_S 6413: Wentzville Specialty Service Elective Rotations**

The objective of this course is to provide clinical veterinary students with structured clinical exposure to one of the specialty services operating at the MU Veterinary Health Center in Wentzville, MO. This course will introduce 3rd and 4th year veterinary students to the practice of medicine in one of the available specialties through active case management and rounds discussions. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** Restricted to third- and fourth-year Veterinary Medicine students

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#### **V\_M\_S 6414: Shelter Medicine**

Clinical rotation in shelter medicine for veterinary degree students. Students will conduct physical examination of shelter/rescue dogs and cats and perform sterilization procedures. During the rotation, students will develop skills in physical examination, low-stress handling techniques, anesthesia induction and monitoring, and high quality, high volume spay and neuter techniques. Students will gain an understanding of the role of shelters and rescues in the community, shelter animal care, and a health-work life balance. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** The entire pre-clinical curriculum of the CVM must be completed before taking this course; students must have successfully completed the DVM curriculum through didactic instructional period 11. Restricted to students in years 3 and 4 of the DVM curriculum

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#### **V\_M\_S 6420: Equine Medicine and Surgery I**

Clinical rotation. Technical, diagnostic and therapeutic procedures common to equine practice. Emphasis on fundamental principles.

**Credit Hours:** 6

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#### **V\_M\_S 6432: Small Animal Soft Tissue Surgery**

Clinical rotation. Diagnostic procedures and surgical techniques applicable to companion animal soft tissue surgery. Practical experience in the operation of a small animal soft tissue surgical practice.

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**Credit Hours:** 2

**Prerequisites:** completion of Vet Med years 1 and 2 and specifically V\_M\_S 6072 or V\_M\_S 6073

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**V\_M\_S 6434: Small Animal Orthopedic Surgery**

Clinical rotation. Diagnostic procedures and surgical techniques applicable to companion animal orthopedic surgery. Practical experience in the operation of a small animal orthopedic surgical practice. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** completion of Veterinary Medicine years 1 and 2

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**V\_M\_S 6436: Veterinary Neurology/Neurosurgery**

Clinical rotation. A hands-on applied clinical rotation to provide experience in examination and diagnosis of domestic animals with neurologic disease.

**Credit Hours:** 2

**Prerequisites:** completion of preclinical curriculum of Veterinary Medicine years 1 and 2. Restricted to VM3 and VM4 students

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**V\_M\_S 6441: Clinical Radiology I**

Clinical rotation. Fundamentals of radiology: indications for use, techniques, pathophysiologic alterations, interpretation of results, patient aftercare, protective measures against radiation hazards.

**Credit Hours:** 3

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**V\_M\_S 6442: Clinical Anesthesiology I**

Clinical rotation. Fundamentals of anesthesiology: indications for use techniques, pathophysiologic alterations, and interpretations of results, patient aftercare.

**Credit Hours:** 3

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**V\_M\_S 6450: Theriogenology I**

Clinical rotation. Practical experience in reproductive techniques, obstetrics, breeding soundness and herd reproductive problems.

**Credit Hours:** 2

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**V\_M\_S 6460: Clinical Ophthalmology I**

Clinical rotation. Practical application in problem solving and medical and surgical management of eye conditions of domestic animals.

**Credit Hours:** 2

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**V\_M\_S 6490: Small Animal Specialty Medicine I**

Clinical rotation in small animal oncology. Taught in the clinical setting using animals presented to the VMTH for evaluation and treatment of oncologic diseases.

**Credit Hours:** 2

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**V\_M\_S 6700: Food Animal Medicine and Surgery II Elective**

Additional food animal experience located off-site or on-site under special circumstances.

**Credit Hour:** 2-6

**Prerequisites:** V\_M\_S 6400. Consent required

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**V\_M\_S 6710: Small Animal Medicine II Elective**

Clinical rotation offered to VM3 and VM4 students. Opportunity for concentrated study and experience in medical areas. Enrollment subject to approval of course coordinator.

**Credit Hour:** 2-6

**Prerequisites:** The entire pre-clinical curriculum of the CVM must be completed before taking this course

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**V\_M\_S 6711: Small Animal Internal Medicine Elective Clinical or Research Rotation**

Clinical rotation in SAIM to focus on either clinical diagnostics and therapy, or research relevant to clinically important issues of pet animals.

**Credit Hours:** 2

**Prerequisites:** Veterinary curriculum up until the clinical rotations; must be VM3 or VM4 students

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**V\_M\_S 6712: Private Practice Small Animal Internal Medicine Elective**

Clinical rotation. Improve critical thinking skills in disease diagnosis and management for internal medicine of dogs and cats. Clinical rotation off-site at Associated Veterinary Specialists. Teaching by cases seen by AVS clinician on duty. Student participation determined by supervising clinician.

**Credit Hours:** 2

**Prerequisites:** All required VM1 and VM2 courses. VM3 or VM4 standing required

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**V\_M\_S 6713: Shelter Medicine Elective at the Humane Society of Missouri**

Comprehensive shelter medicine rotation at Humane Society of Missouri.

**Credit Hour:** 2-6

**Prerequisites:** Restricted to VM3 and VM4 students

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**V\_M\_S 6714: Shelter Medicine Clinical Elective**

The shelter medicine clinical elective provides the veterinary student with a diverse training experience in shelter medicine accompanied by exposure to the critical aspects of animal sheltering. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** Restricted to Veterinary Medicine students

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**V\_M\_S 6717: Small Animal Dentistry and Oral Surgery**

The course is a clinical intensive that builds upon concepts and skills based on a small animal oral evaluation, dental cleanings, oral radiology, dental extractions and specialty dentistry procedures. The course will emphasize evaluation of a patient's oral health status, recognition, prevention, and client education regarding common oral health conditions, diseases, and surgeries. The clinical course will involve client and patient interaction and education, surgical procedures, and interactive discussions with faculty and staff.

**Credit Hours:** 2

**Prerequisites:** completed VM1 and VM2 curriculum

**Recommended:** VM3 or VM4

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**V\_M\_S 6720: Equine Medicine and Surgery II Elective**

Clinical rotation. Continuation of V\_M\_S 6420. Open to VM3 and VM4 students, subject to approval of course coordinator. Opportunity for concentration in specific area of interest.

**Credit Hour:** 2-6

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**V\_M\_S 6732: Small Animal Soft Tissue Surgery II Elective**

Clinical rotation. Opportunity for concentrated study and advanced soft tissue surgical experience.

**Credit Hours:** 2

**Prerequisites:** V\_M\_S 6432 and completion of year VM1 and VM2

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**V\_M\_S 6733: Small Animal Surgical Oncology Elective Rotation**

Cancer is the most common cause of death in adult dogs and surgery is the most widely used modality to treat tumors. This rotation provides students with opportunities to participate in the diagnosis and treatment of diseases and conditions encountered in small animal surgical oncology. Under the direct supervision of a veterinarian, students will be given responsibility for the management of individual cases. Students will demonstrate clinical reasoning and participate in the decision-making process for assigned cases. Students in this elective will have clinical case exposure and responsibility equivalent to students in the Surgical Oncology section of the Oncology Rotation (see the course description document in the General Information section of the VMS 6490 Canvas

page). Time commitment, both in and out of hospital, is equivalent to the required Oncology rotation. Course maybe repeated with approval.

**Credit Hours:** 2

**Prerequisites:** Students must have completed all pre-clinical didactic requirements and clinical orientation as routinely required for participation in clinical rotations

**Recommended:** Preference would be given to students who have completed V\_M\_S 6490 but this is not essential

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**V\_M\_S 6734: Small Animal Orthopedic Surgery II Elective**

Clinical rotation. Opportunity for concentrated study and advanced orthopedic surgical experience.

**Credit Hours:** 2

**Prerequisites:** completion of VM years 1 and 2

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**V\_M\_S 6736: Veterinary Neurology/ Neurosurgery-Elective**

A hands-on applied clinical rotation to provide experience in examination and diagnosis of domestic animals with neurologic disease.

**Credit Hours:** 2

**Prerequisites:** completion of preclinical curriculum of Veterinary Medicine years 1 and 2. Restricted to VM3 and VM4 students

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**V\_M\_S 6741: Clinical Radiology II Elective**

Clinical rotation. Continuation of V\_M\_S 6441.

**Credit Hour:** 1-99

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**V\_M\_S 6742: Clinical Anesthesiology II Elective**

Clinical rotation. Continuations of V\_M\_S 6442. This course will focus on anesthetizing and monitoring the more challenging anesthetic cases during rotation. Required projects include a review paper on a relevant topic of choice, a written case report and assistance in research activities.

**Credit Hour:** 1-99

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**V\_M\_S 6743: Radiology - Special Imaging Elective**

Introduction to special imaging modalities including ultrasound, computed tomography, magnetic resonance and nuclear scintigraphy with emphasis towards small animal patients. A major part of the course will be devoted to recognition and interpretation of abdominal ultrasound. Graded on A-F basis only. Prerequisites: V\_M\_S 6020; VM III and VM IV

**Credit Hour:** 2-3

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**V\_M\_S 6750: Theriogenology II Elective**

Continuation of V\_M\_S 6450. Opportunity for concentrated study and experience. An elective, subject to approval of course coordinator and faculty member(s) who supervise student's work.

**Credit Hour:** 1-99

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**V\_M\_S 6751: External Food Animal Service and Theriogenology Teaching Program**

Additional options for off-site clinical training in Theriogenology and Food Supply Veterinary Medicine beyond the core curriculum.

**Credit Hour:** 1-99

**Prerequisites:** V\_M\_S 6081, V\_M\_S 6082, V\_M\_S 6110, and VM3 or VM4 students

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**V\_M\_S 6760: Small Animal Nutrition**

Clinical rotation designed to allow students to gain hands-on experience with canine and feline nutrition.

**Credit Hours:** 2

**Prerequisites:** V\_M\_S 6140. Restricted to VM3 or VM4

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**V\_M\_S 6800: Clinical Ophthalmology II Elective**

Clinical rotation offered to VM 3 and VM 4 students. Opportunity for concentrated study and experience. Subject to approval of course coordinator and faculty member(s) who supervise student's work.

**Credit Hour:** 1-99

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**V\_M\_S 6810: Cardiology II Elective**

Cardiology course consists of a three-week clinical rotation in the small animal clinic. Duties include primary care receiving and patient care with clinical case work-up. Additional responsibilities include attendance at clinical rounds and participating in related clinical activities.

**Credit Hour:** 1-99

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**V\_M\_S 6820: Small Animal Emergency and Critical Care**

Clinical rotation offered to VM 3 and VM 4 students. Opportunity for concentrated study and experience in small animal emergency and critical care.

**Credit Hour:** 1-99

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**V\_M\_S 6821: Small Animal Emergency Critical Care Elective**

Clinical rotation providing focused experience in care management and issues pertinent to small animal emergency and critical care. Graded on A-F basis only. May be repeated for credit.

**Credit Hour:** 2-6

**Prerequisites:** Restricted to levels VM 3 or VM 4

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**V\_M\_S 6830: Food Animal Production Medicine**

Clinical rotation will focus primarily on beef, dairy, and swine with emphasis on preventive medicine by looking at the herd incorporating spreadsheet and the data base application analysis. The course participants will visit various operations and write reports to the producer, which will enhance their farms.

**Credit Hour:** 1-99

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**V\_M\_S 6850: Clinical Oncology**

Clinical rotation in small animal oncology. Taught in the clinical setting using animals presented to the VMTH for evaluation and treatment of oncologic diseases.

**Credit Hour:** 1-99

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**V\_M\_S 6920: Equine Techniques Elective**

This course provides an opportunity for equine oriented veterinary students wishing to enhance their understanding of the clinical techniques used in equine veterinary medicine and gain hands on practical experience in selected clinical techniques. It is offered as a 2 credit, 2 week elective clinical rotation. Graded on S/U basis only.

**Credit Hours:** 2

**Prerequisites:** VM3 or VM4

**Recommended:** Completion of V\_M\_S 6151 and V\_M\_S 6152

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**V\_M\_S 6986: Advanced Clinical Neurology and Neurosurgery**

This is a supplement to neurology taught in the small animal course to improve preparedness for clinical practice. Topics include neurolocalization techniques, electrodiagnostic and CT/MR interpretation, wider exposure to differential diagnosis, and neurosurgical principals.

**Credit Hour:** 1

**Prerequisites:** Passing grade in V\_M\_S 6040

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**V\_M\_S 6987: Problem-Based Learning Clinic Preparation**

This course is designed to prepare the VM 3 student about to enter clinics for a systematic approach to a clinical case. Emphasis will be placed on developing focused problem and differential lists, and logical choices of diagnostic tests. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** VM 3 level

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**V\_M\_S 6988: Small Animal Clinical Nutrition**

Application of nutritional principles to prevention and management of common diseases of dogs and cats. Including review of nutrients, commercial and home diets, and basic pathophysiology of nutritional aspects of disorders seen in companion animal practice.

**Credit Hour:** 1

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**V\_M\_S 6989: Advanced Oncology of Animals**

Expanded discussion of veterinary oncology topics not covered in the oncology section V\_M\_S 6050. Important for veterinary students who intend to enter private or academic practice and manage oncology cases, specific tumor types, diagnostic tools, and treatment modalities.

**Credit Hour:** 1

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**V\_M\_S 6990: Zoological Medicine**

Interested students of Zoological Medicine would significantly broaden their understanding of this discipline and increase the likelihood they could enter zoological veterinary practice or a zoological veterinary medical residency. Graded on A-F basis only

**Credit Hours:** 2

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**V\_M\_S 6991: Advanced Equine Lameness with Laboratory**

Learn to recognized forelimb and hind limb lameness through diagnostic techniques for localization of lameness. Gain practical experience in limb support for sever musculoskeletal injuries. One surgical laboratory using equine cadaver limbs to illustrate and practice common distal limb surgeries.

**Credit Hour:** 1

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**V\_M\_S 6993: Advanced Veterinary Anesthesia**

(cross-leveled with V\_M\_S 7303). Advanced Veterinary Anesthesia

**Credit Hour:** 1

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**V\_M\_S 6994: Advanced Techniques in Small Animal Surgery with Laboratory**

Course designed for students who want exposure to small animal surgical techniques above and beyond the experience gained from the basic surgical training in V\_M\_S.

**Credit Hour:** 1

**Prerequisites:** V\_M\_S 6072; limited enrollment

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**V\_M\_S 6995: Clinical Cardiology**

Students will utilize a combination of lectures, hands on laboratories, and problem based clinical correlates covering cardiovascular physical examination, radiographic and electrocardiographic interpretation, and the pathophysiology and management of congenital and acquired cardiac diseases.

**Credit Hour:** 1

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**V\_M\_S 6996: Advanced Dermatology**

This is a lecture course that will supplement and expand upon the canine and feline dermatology principles covered in the general pathology and small animal medicine courses. Graded on A-F basis only.

**Credit Hour:** 1

**Prerequisites:** V\_M\_S 6050

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**V\_M\_S 6997: Food Animal Diagnostic Exercises**

Discussion based course designed to integrate and review didactic coursework to increase knowledge of livestock diseases. A list of appropriate differential diagnoses will be generated for each problem.

**Credit Hour:** 1

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**V\_M\_S 6998: Small Animal Behavioral Medicine**

Small Animal Behavioral Medicine

**Credit Hour:** 1

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**V\_M\_S 6999: Food Animal Surgery Laboratory**

Routine food animal surgical procedures laboratory.

**Credit Hour:** 1

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**V\_M\_S 7301: Topics in Veterinary Medicine and Surgery**

Organized study of select topics.

**Credit Hour:** 1-99

**Prerequisites:** junior standing and instructor's consent

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**V\_M\_S 7320: Fundamentals of Small Animal Emergency and Critical Care**

(cross-leveled with BIOMED 4320, VET\_TCH 4320). This course will provide students with the knowledge and skills to assist in a small animal medical emergency and critical care facility.

**Credit Hours:** 3

**Prerequisites:** a bachelor's degree in biological science or veterinary technology, or DVM degree, or instructor's consent

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**V\_M\_S 7328: Introductory Radiation Biology**

(same as RADIOL 7328, NU\_ENG 7328, BIO\_SC 7328).

**Credit Hours:** 3

**Prerequisites:** junior standing Sciences/Engineering; one course in biological sciences and physics/chemistry; or instructor's consent

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**V\_M\_S 7355: Advanced Techniques in Radiology**

Special application to domestic animals.

**Credit Hour:** 1-99

**Prerequisites:** D.V.M

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**V\_M\_S 7510: Equine Clinical Anatomy: Forelimbs**

Basic Foundation in selected aspects of equine clinical anatomy for veterinary technicians, pre-veterinary students, and other students wishing to enhance their understanding of anatomical structure of the horse's forelimbs.

**Credit Hour:** 1

**Prerequisites:** A bachelor's degree in a biological science or veterinary technology, or DVM degree, or instructor's consent

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**V\_M\_S 8021: Neurology Journal Review**

Weekly journal review and seminar on current topics in veterinary neurology, related clinical disciplines and basic neurosciences. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** DVM degree

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**V\_M\_S 8022: Internal Medicine Clinicopathologic Conference**

Advanced discussion of small animal medicine cases with an emphasis on pathophysiology and clinicopathologic findings. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8023: Internal Medicine Journal Review**

Resident led review of the current veterinary internal medicine literature. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8024: Medicine-Surgery-Pathology Conference**

This is a case-based course in which clinical and pathological findings of interesting cases from the VMTH are presented by those who treated and

interpreted the case. Dogs, cats, cows, horses, and small ruminants are included with occasional non-traditional species. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8025: Equine Medicine Journal Review**

Aid Residents in preparing for board certification in ACVIM and ACVS. Articles pertaining to current equine veterinary literature are reviewed on a weekly basis. Participants select, distribute articles to group prior to meeting, then present short review with a discussion following. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8026: Surgery Journal Review**

Resident led review of the current veterinary surgical peer-reviewed literature. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8027: Food Animal Medicine Journal Review**

Critical review of the scientific literature with a focus on ACVIM board preparation. May also be used as a forum for information exchanged relevant to ACVIM board preparation. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8028: Cardiovascular Medicine Journal Review**

Resident led review of the current veterinary cardiovascular medicine literature. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8029: Emergency and Critical Care Journal Review**

This course will concentrate on review of emergency and critical care literature. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** DVM degree

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**V\_M\_S 8030: Seminars in Vet. Med. & Surgery: Ophthalmology Pathology Seminar**

Review of clinical cases presented in two formats: histopathology slides and kodachrome slides. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** DVM degree or equivalent and acceptance into an ophthalmology residency program



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**V\_M\_S 8031: Sem. in Vet. Med & Surgery: Ophthalmology Seminar & Journal Review**

Weekly journal review and seminar on current topics in veterinary ophthalmology, review of pertinent literature in human ophthalmology, and review of ophthalmic texts. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** DVM or equivalent degree and acceptance into the ophthalmology residency program

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**V\_M\_S 8032: Seminars in Veterinary Anesthesiology**

A journal review will focus on advances in veterinary anesthesiology, pharmacology, and physiology. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** DVM and graduate school enrollment or instructor's consent

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**V\_M\_S 8033: Seminars in Clinical Sciences-Equine Surgery Journal Review**

Journal review will focus on advances in equine surgery and will consist of a review of recent manuscripts pertaining to equine surgery in current journals and review of pertinent book chapters. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** DVM degree and instructor's consent

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**V\_M\_S 8034: Seminars in Veterinary Radiology**

This journal review will focus on advances in veterinary radiology, ultrasound and alternate imaging. Current and past literature will be reviewed weekly and will be chosen by the class coordinator. Graded on S/U basis only.

**Credit Hour:** 1

**Prerequisites:** DVM and graduate school enrollment or instructor's consent

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**V\_M\_S 8036: Advanced Physiology of the Dog and Cat**

To understand advanced medical physiology: cell physiology, muscle function, cardiac and circulatory physiology, renal function, distribution of fluid in the body, functions of red and white blood cells, mechanisms of hemostasis, resistance to infection and pulmonary physiology. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** Instructor's consent

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**V\_M\_S 8040: Advanced Small Animal Clinical Nutrition**

Advanced study of veterinary clinical nutrition in the dog and cat. Includes review of applied biochemistry, nutrients, and feeding principles along with pathophysiology and nutritional management of common diseases. May be repeated for credit. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** Introductory Veterinary Nutrition

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**V\_M\_S 8090: Research in Veterinary Medicine and Surgery (Thesis)**

Thesis research. Graded on a S/U basis only.

**Credit Hour:** 1-99

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**V\_M\_S 8100: Evaluation of Animal Disease Monitoring and Surveillance Programs**

This course will allow students to articulate and share what they have learned in coursework and to supplement previous learning by exploring additional areas of knowledge relevant to their readiness for professional practice. It will enable students to test theoretical knowledge against real life practical experiences, and to integrate and refine basic and advanced concepts, values, and methods acquired during the professional education. Graded on A-F basis only.

**Credit Hours:** 2

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**V\_M\_S 8303: Advanced Topics in Veterinary Anesthesiology**

Exposition and critical analysis of topics relevant to the theoretical understanding, basic science, and clinical application/delivery of anesthetics and anesthesia in the veterinary setting. Graded on A-F basis only.

**Credit Hour:** 1-3

**Prerequisites:** Graduate student in Biomedical Sciences emphasis Veterinary Medicine program or instructor permission

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**V\_M\_S 8401: Topics in Veterinary Clinical Sciences**

Current topics, infrequently-taught courses, or new courses not yet designated by a permanent course number. Some sections may be graded A-F only or S/U only.

**Credit Hour:** 1-3

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**V\_M\_S 8402: Seminar in Veterinary Clinical Sciences**

Graduate seminars and conferences with a focus on current literature within a specialty area. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8405: Comparative Respiratory Pathophysiology**

A consideration of clinical pathophysiology of the respiratory system relative to diseases of the thorax and clinical anesthesiology.

**Credit Hour:** 1

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**V\_M\_S 8406: Topics in Veterinary Medicine and Surgery**

Current topics, infrequently taught courses, or new courses not yet designated by a permanent course number.

**Credit Hour:** 1-99

**Prerequisites:** must be a DVM or be enrolled in the Veterinary curriculum; instructor's consent

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**V\_M\_S 8410: Veterinary Medicine and Surgery Research Seminar**

Current research in veterinary medicine and surgery. Literature reviews and presentation or original graduate student research. Graded on S/U basis only.

**Credit Hour:** 1

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**V\_M\_S 8411: Clinical Veterinary Endocrinology**

A 2-hour course for post-DMV graduate students. It will focus on clinically relevant physiology, pathophysiology, and diagnostic evaluation of hormone systems.

**Credit Hours:** 2

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**V\_M\_S 8413: Equine Internal Medicine**

The purpose of the course is to aid in the preparation of the Resident for board certification in the American College of Veterinary Internal Medicine-LAIM. Current concepts in the pathophysiology, diagnosis and management of medical disorders of horses.

**Credit Hours:** 2

**Prerequisites:** DVM degree or equivalent

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**V\_M\_S 8415: Advanced Veterinary Neurology**

Basic neuroscience as it relates to clinical neurology and the pathophysiology of diseases of the brain, spinal cord, peripheral nerve and muscle in domestic animals. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** DVM degree

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**V\_M\_S 8417: Advanced Veterinary Internal Medicine - Clinical Oncology**

Provides graduate students in the clinical and basic sciences alike with a working knowledge of the biological mechanisms of cancer development

and progression and the related approaches to cancer prevention and therapy. It is assumed that students will have a strong background in biology as a foundation for discussion.

**Credit Hours:** 2

**Prerequisites:** DVM or equivalent degree recommended

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**V\_M\_S 8418: Advanced Veterinary Internal Medicine: Food Animal Medicine**

Current concepts in the pathophysiology, diagnosis and management of medical disorders, diseases of the limbs, and infectious diseases of cattle and food producing animals.

**Credit Hours:** 2

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**V\_M\_S 8419: Advanced Topics in Cancer Biology and Clinical Oncology**

This course will provide students with a knowledge base in cancer cell biology that may be applied to the practice of clinical oncology. Monthly clinically-oriented seminars by invited speakers will be preceded by a weekly in-depth review of the basic science related to the seminar topic.

**Credit Hours:** 2

**Recommended:** MD or DVM

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**V\_M\_S 8421: Advanced Veterinary Surgery: Small Animal Surgery**

Current concepts in the pathophysiology, diagnosis and management of surgical disease of the dog and the cat. Includes laboratories of advanced surgical techniques.

**Credit Hour:** 2-4

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**V\_M\_S 8423: Comparative Arthrology**

Lectures and discussion covering anatomy, physiology, biomechanics, pathophysiology, and clinical aspects of mammalian diarthrodial joints.

**Credit Hours:** 3

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**V\_M\_S 8425: Advanced Veterinary Surgery: Equine Surgery**

Current concepts in the pathophysiology, diagnosis and management of surgical disorders of the horse. Taught yearly as sections A, B, C. Repeatable to a maximum of 10 credit hours (individual sections may be taken once).

**Credit Hour:** 2-4

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**V\_M\_S 8426: Advanced Veterinary Surgery - Ophthalmic Surgery**

Surgery labs consisting of 2-4 hours of surgical instruction per week. Graded on A-F basis only.

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**Credit Hour:** 2-4

**Prerequisites:** DVM or equivalent degree and acceptance into the ophthalmology residency program

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**V\_M\_S 8431: Research Methods and Data Analysis**

A consideration of research methods, data analysis, and practical approaches to analyzing data sets derived from veterinary and biomedical studies.

**Credit Hours:** 2

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**V\_M\_S 8432: Applied Statistics and Informatics**

Educate students in the practical application of statistics and information research tools. Students will learn about application of statistical modeling to biomedical research. They will be trained to use statistical software programs and then use those skills to analyze data sets. Additionally, students will learn about the use of informatics systems for researching scientific questions, data searching, and data dissemination. At the end of the course successful students should be able to develop and perform statistical analyses appropriate for most basic research study designs. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** DVM or equivalent degree and enrollment in a veterinary residency program unless an exception is approved by the course coordinator

**Recommended:** Successful completion of a general statistics course is highly recommended prior to taking this course

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**V\_M\_S 8435: Veterinary Clinical Sciences: Clinical Immunology**

Advanced concepts in veterinary immunology and immunopathology.

**Credit Hours:** 2

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**V\_M\_S 8437: Advanced Topics in Veterinary Medicine (Nuclear Medicine)**

An in-depth review of veterinary nuclear medicine. Includes the physics of nuclear medicine, common imaging techniques, common radiopharmaceuticals, radiopharmaceutical kinetic evaluation and some common physiological applications.

**Credit Hour:** 1

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**V\_M\_S 8439: Advanced Veterinary Ultrasonography**

Advanced concepts in veterinary ultrasonography; including ultrasound and Doppler physics, instrumentation, examination methodology, and interpretation of studies.

**Credit Hour:** 2-3

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**V\_M\_S 8440: Adv Veterinary Clinical Sciences: Advanced Clinical Ophthalmology**

Case-based discussion course. Graded on A-F basis only.

**Credit Hour:** 1-3

**Prerequisites:** DVM or equivalent degree and acceptance into the ophthalmology residency program

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**V\_M\_S 8445: Veterinary Critical Care and Emergency Medicine**

Advanced study of veterinary critical care and emergency medicine and surgery focusing on current research and literature as well as clinical application.

**Credit Hour:** 2-3

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**V\_M\_S 8450: Research in Veterinary Medicine and Surgery (non-thesis)**

Non-Thesis research. Graded on S/U basis only.

**Credit Hour:** 1-99

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**V\_M\_S 8485: Problems in Veterinary Clinical Sciences**

Supervised individual studies arranged with a faculty member and approved by the advisory committee. Some sections may be graded A-F only or S/U only.

**Credit Hour:** 1-3

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**V\_M\_S 8486: Interventional Veterinary Medicine**

This course is designed to teach a variety of interventional veterinary medicine techniques. The course will start with a general introductory lecture, with each subsequent lecture devoted to a particular disease and/or technique, including patent ductus arteriosus, nasopharyngeal stenosis, hepatic tumor embolization, heartworm extraction, ureteral obstructions, ectopic ureters, tracheal stenting, bladder and urethral stones, coil embolization for intrahepatic portosystemic shunts, cardiac pacing, gastrointestinal interventions, and interventions for pulmonic stenosis. One day per week will be dedicated to faculty-led lecture, and the other lecture each week will be resident-led journal club, with the journals pertaining to the same topic as the preceding lecture. Graded on A-F basis only.

**Credit Hours:** 2

**Prerequisites:** DVM or similar degree

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**V\_M\_S 8487: Nuclear Medicine**

Principles of radiation detection instrumentation, monitoring radiological safety and diagnostic procedures used on veterinary nuclear medicine.

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**Credit Hours:** 3

**Prerequisites:** one year College Physics, D.V.M. degree, and departmental consent

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**V\_M\_S 8488: Radiation Therapy**

Intermediate level course to review basic and advanced concepts in radiation biology, radiation physics, and clinical application of ionizing radiation for the treatment of cancer. Teletherapy, brachytherapy and radiation oncology are covered.

**Credit Hours:** 3

**Prerequisites:** A basic course in radiation physics/dosimetry, radiation biology and medical oncology. One year college physics, DVM degree and departmental consent

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**V\_M\_S 8489: Veterinary Radiographic Physics**

In depth review of the fundamental principles of radiographic physics, with an emphasis on preparation for the American college of Veterinary Radiology board examination. Graded on an S/U basis only.

**Credit Hour:** 1

**Prerequisites:** DVM and graduate school enrollment or instructor's consent

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**V\_M\_S 8640: Biological Radiochemistry**

(same as CHEM 8640). Covers the interaction of radiation with biological material. Aspects of radiation physics, chemistry, and biology are discussed, along with the use of radiation in imaging and therapy. Graded on A-F basis only.

**Credit Hours:** 3

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**V\_M\_S 8810: Cardiac Computed Tomography**

This course is designed to teach the interpretation of cardiac computed tomography (CT), including both the evaluation of normal structures as well as pathology. The course will be heavily image based. For the first several weeks of the course, lectures will proceed through normal structures followed by common congenital and acquired cardiovascular diseases. During the latter portion of the course, students will present cases as well as papers from the veterinary literature that focuses on cardiac CT as an imaging modality.

**Credit Hour:** 1

**Prerequisites:** (exp; VM3 or VM4) DVM or equivalent degree

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