Veterinary Clinical Sciences

Professional Program of Study

For the professional curriculum in veterinary medicine leading to the degree doctor of veterinary medicine, see Veterinary Medicine, Curriculum.

The curriculum of veterinary clinical sciences explores the preventive health care, and diagnosis and treatment of diseases of companion and competitive athletic animals. Veterinary specialists lead didactic and laboratory based learning in the clinical sciences. Experiential based courses conducted through the Veterinary Medical Center during the fourth year provide the student an opportunity to participate in the application of clinical skills and knowledge.

Graduate Study

The department offers work for the degree master of science with major in veterinary clinical science, and minor work for students majoring in other departments. Within the veterinary clinical sciences major, the student may specialize in veterinary medicine, surgery, or theriogenology. The D.V.M. degree or equivalent is prerequisite to a major graduate work. Both thesis and nonthesis options are available and require the completion of a minimum of 30 graduate credits and a final examination. World languages and cultures requirements may be established by the student’s program of study committee.

Courses primarily for professional curriculum students:

V C S 305. Shelter Medicine.
Cr. 1. S. Prereq: First year classification in Veterinary Medicine or with permission of instructor
An elective course designed to educate the veterinary student about issues of relevance to companion animal population and shelter medicine and welfare.

V C S 311. Veterinarian in Society I.
Cr. R. F. Prereq: First-year classification in veterinary medicine
Introduction to the veterinary profession and the various career opportunities available.

V C S 313. Veterinarian in Society III.
(1-1) Cr. 1. F. Prereq: Second-year classification in veterinary medicine
A continuation of the Veterinarian in Society series. The course covers selected topics on moral and ethical issues affecting the practice of veterinary medicine.

V C S 314. Veterinarian in Society IV.
(1-0) Cr. 1. F. Prereq: Third-year classification in veterinary medicine
A continuation of the Veterinarian in Society series. This course will focus on helping students develop their communication, leadership, team building and conflict resolution skills.

V C S 315. Veterinarian in Society V.
(1-0) Cr. 1. S. Prereq: Third-year classification in veterinary medicine
A continuation of the Veterinarian in Society series. This course will emphasize veterinary law.

V C S 339. Clinical Foundations I.
(Cross-listed with B M S). (0-2) Cr. 1. F. Prereq: First-year classification in veterinary medicine
Canine physical examination; basic behavior, animal handling and restraint; medical record keeping.

Cr. R. Repeatable. F.S. Prereq: Classification in veterinary medicine
Seminars and case presentations on selected clinical subjects by fourth-year students of the College of Veterinary Medicine. Attendance is required for a passing grade. Offered on a satisfactory-fail basis only.

V C S 391. Clinical Imaging.
(1-0) Cr. 1. F. Prereq: First-year classification in veterinary medicine
Evaluation of morphologic anatomy of the dog and cat utilizing clinical imaging methods - radiography, ultrasonography, computed tomography, magnetic resonance imaging and nuclear imaging. Emphasis will be placed on normal radiographic anatomy.

(3-0) Cr. 3. F. Prereq: Second year classification in veterinary medicine
General principles of surgery of companion animals.

V C S 394. Principles of Surgery Laboratory.
(0-3) Cr. 1. S. Prereq: Second year classification in veterinary medicine
General principles of surgery of companion animals.

(2-0) Cr. 2. S. Prereq: V C S 394
Small animal surgery.

V C S 396. Equine Surgery.
(2-0) Cr. 2. S. Prereq: V C S 394
Elective course in equine surgery.

V C S 398. Anesthesiology.
(1-0) Cr. 1. S. Prereq: Second-year classification in veterinary medicine
Anesthetic equipment, agents, and procedures for domestic animals.

(1-0) Cr. 1. S. Prereq: Third year classification in veterinary medicine
Principles and techniques of medical and surgical ophthalmology.

V C S 402. Clinical Cardiology.
(1-0) Cr. 1. F. Prereq: Third or fourth-year classification in veterinary medicine; V CS 444 or concurrent enrollment in V C S 444
Elective course in diagnosis and management of cardiac diseases. Emphasis on interpretation of electrocardiography.

(1-3) Cr. 2. S. Prereq: third classification in veterinary medicine
Elective course in management and diseases of pet birds and exotic species.

V C S 407. Feline Internal Medicine.
(1-0) Cr. 1. F. Prereq: Third-year classification in veterinary medicine
Elective course in feline internal medicine.

V C S 409. Oncology.
Cr. 2-4. Repeatable, maximum of 4 credits. Prereq: Fourth-year classification in veterinary medicine
Elective clinical assignment in oncology.

(1-0) Cr. 1. S. Prereq: Third or fourth-year classification in veterinary medicine
Elective course in small animal and equine nutrition.

V C S 415. Advanced Small Animal Dermatology.
(1-2) Cr. 2. F. Prereq: Third or Fourth-year classification in veterinary medicine
Elective course in dermatology.

V C S 419. Preceptorship in Companion Animal/Equine Veterinary Medical Practice.
Cr. 2-6. Repeatable, maximum of 6 credits. Prereq: Fourth-year classification in veterinary medicine, permission of department curriculum committee
Elective course in veterinary practice under the guidance of veterinarians in approved practice settings. Maximum of 6 credits in 2 credit increments.

V C S 422. Rotation at Blank Park Zoo.
Cr. 4. F.S.SS. Prereq: Fourth-year classification in veterinary medicine and completion of V C S 405. Enrollment by permission of instructor
Clinical experience in husbandry, nutrition and training of exotic animals in a zoo environment. Students will get instruction and learn the application of the clinical skills required when dealing with exotic animals, including the hands-on visual examination obtaining historical and clinical information from zookeepers, and the use of immobilization drugs for patient exams. Students will learn the common medical disorders of exotic species and treatment techniques.

V C S 436. Small Animal Internal Medicine.
(3-0) Cr. 3. F. Prereq: Third year classification in veterinary medicine
Clinical diagnosis and treatment of diseases of small animals.

(2-0) Cr. 2. Repeatable. Prereq: Fourth year classification in Veterinary Medicine
A 2-week elective rotation at an animal shelter/humane society that works with the public to place pets in homes. This rotation will encompass population medicine (medicine, surgery, intake, adoption, behavior and temperament, neglect and cruelty) that animal shelters deal with on a daily basis. The selected animal shelter/humane society must have a veterinarian(s) on staff and be approved by the course coordinator. More than one VCS 437 may be taken upon approval of the course coordinator.

V C S 440. Introduction to Clinics.
Cr. R. S. Prereq: Third year classification in veterinary medicine
Rotating assignments through multiple sections within the Veterinary Medical Center.
V C S 441. Canine Rehabilitation.
Cr. 2. Prereq: Fourth-year classification in veterinary medicine.
Elective clinical assignment in rehabilitation.

V C S 443. Equine Lameness.
(1-2) Cr. 2. S. Prereq: Second or third-year classification in veterinary medicine.
Orthopedic diseases of the equine.

(4-0) Cr. 4. F.S. Prereq: Third-year classification in veterinary medicine.
Clinical diagnosis and treatment of diseases of small animals.

(2-0) Cr. 2. F. Prereq: Third-year classification in veterinary medicine.
Clinical diagnosis and treatment of diseases of equine.

V C S 446. Clinical Neurology.
Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Clinical rotation in neurology with an emphasis on neurolocalization, disease processes, use of diagnostics in medical and surgical neurology and treatment options. Exposure to neurosurgical techniques.

V C S 447. Equine Veterinary Diagnostic Skills.
(3-0) Cr. 2. S. Prereq: Third-year classification in veterinary medicine - preference to equine track student. Limited to 16 students.
Hands on experience with equine veterinary diagnostic skills related to theriogenology, medicine, surgery, radiology, and ophthalmology.

V C S 448. Diagnostic Imaging and Radiobiology.
(2-2) Cr. 3. F.S. Prereq: Third-year classification in veterinary medicine.

V C S 449. Junior Surgery Laboratory.
(1-6) Cr. 3. F. Prereq: Third-year classification in veterinary medicine.
Pre-laboratory presentations and laboratories introduce the student to anesthetic and surgical principles and techniques that can be applied to all animal species.

(1-6) Cr. 3. F. Prereq: Third-year classification in veterinary medicine.
This laboratory introduces the student to anesthetic and surgical principles - and techniques that can be applied to all animal species. Consists of only neutering humane society animals throughout the laboratory.

(1-6) Cr. 3. F. Prereq: Third-year classification in veterinary medicine.
This laboratory introduces the student to anesthetic and surgical principles and techniques that can be applied to all animal species. Provides a broader range of surgical experiences throughout the laboratory.

V C S 451. Advanced Junior Surgery Laboratory.
(1-6) Cr. 2. S. Prereq: V C S 449.
8 weeks. Continuation of surgical laboratory experience. Techniques and advanced principles learned are applicable to all animal species.

V C S 451A. Advanced Junior Surgery Laboratory: Alternative Curriculum.
(1-6) Cr. 2. S. Prereq: V C S 449.
8 weeks. Continuation of surgical laboratory experience. Techniques and advanced principles learned are applicable to all animal species. Consists of only neutering humane society animals throughout the laboratory.

V C S 451B. Advanced Junior Surgery Laboratory: Traditional Curriculum.
(1-6) Cr. 2. S. Prereq: V C S 449.
8 weeks. Continuation of surgical laboratory experience. Techniques and advanced principles learned are applicable to all animal species. Exposure to more advanced surgical techniques with most surgical principles.

V C S 451C. Advanced Junior Surgery Laboratory: Traditional Curriculum.
(1-6) Cr. 2. S. Prereq: V C S 449.
8 weeks. Continuation of surgical laboratory experience. Techniques and advanced principles learned are applicable to all animal species. A second repeat for students with a special interest in small animal surgery.

V C S 452. Clinical Dermatology.
Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Must have instructor permission to repeat this course.
Study of clinical dermatological problems via computer-aided instruction, case simulations, and/or lectures. Clinical management of cases presented to Veterinary Medical Center.

V C S 453. Small Animal Medicine I.
Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in small animal medicine.

V C S 454. Small Animal Medicine II.
Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in small animal medicine.

Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in soft tissue surgery.

Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in orthopedic surgery.

Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in equine medicine.

V C S 458. Equine Surgery.
Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in equine surgery.

Cr. 2. Prereq: Fourth year classification in Veterinary Medicine.
A 2-week surgical emphasis, elective rotation at a humane society that addresses the issues facing veterinarians and non-veterinary humane society personnel who deal with small animal overpopulation issues. Each section can be taken for credit once.

V C S 459A. Small Animal Overpopulation Medicine and Surgery: Nebraska Humane Society, Omaha NE.
Cr. 2. Prereq: Fourth year classification in Veterinary Medicine.
A 2-week surgical emphasis, elective rotation at a humane society that addresses the issues facing veterinarians and non-veterinary humane society personnel who deal with small animal overpopulation issues. Each section can be taken for credit once.

V C S 459B. Small Animal Overpopulation Medicine and Surgery: Animal Rescue League of Iowa, Des Moines IA.
Cr. 2. Prereq: Fourth year classification in Veterinary Medicine.
A 2-week surgical emphasis, elective rotation at a humane society that addresses the issues facing veterinarians and non-veterinary humane society personnel who deal with small animal overpopulation issues. Each section can be taken for credit once.

Cr. 2. Prereq: Fourth year classification in Veterinary Medicine.
A 2-week surgical emphasis, elective rotation at a humane society that addresses the issues facing veterinarians and non-veterinary humane society personnel who deal with small animal overpopulation issues. Each section can be taken for credit once.

Cr. 2. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in veterinary radiology.

V C S 461. Advanced Small Animal Internal Medicine.
(1-1) S. Prereq: V C S 444 and V C S 436.
A discussion of advanced topics in small animal internal medicine.

V C S 463. Primary Care.
Cr. 2. Repeatable, maximum of 4 credits. Prereq: Fourth-year classification in veterinary medicine.
Clinical experience in hospital based general practice.

V C S 464. Equine Field Services.
Cr. 2. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in equine ambulatory practice.

V C S 465. Farrier.
Cr. 2. Prereq: Fourth-year classification in veterinary medicine; V C S 457 and V C S 458.
Elective clinical assignment on the principles and practices of normal and therapeutic horseshoeing and equine foot care.

V C S 466. Anesthesiology.
Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine.
Clinical assignment in small animal and large animal anesthesiology.

Cr. 1-2. Repeatable, maximum of 2 credits. Prereq: Fourth year classification in veterinary medicine.
Elective clinical assignment with emphasis on pain management.
Pharmacology of commonly used drugs. Specific protocols and management for the unique physiology and potential complications of anesthetized patients. Experience includes case work-up, management and recovery. Understanding assignments in equine, small animal, and large animal anesthesiology.

**VC S 476. Intensive Care.**
**Cr. 4. Repeatable. Prereq: Fourth-year classification in veterinary medicine**
Clinical assignment to provide supervision of hospital cases requiring intensive care and including emergency cases.

**VC S 469. Ophthalmology.**
**Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine**
Clinical assignment in ophthalmology.

**VC S 470. Radiology.**
**Cr. 2. Repeatable, maximum of 4 credits. Prereq: Fourth-year classification in veterinary medicine. Completion of VC S 460 is recommended.**
Elective clinical assignment in veterinary radiology.

**VC S 471. Animal Reproduction.**
**Cr. 2. Prereq: Fourth-year classification in veterinary medicine**
Elective clinical assignment in animal reproduction. Equine, Small Animal, Comparative, and Food Animal reproduction only.

**VC S 471C. Animal Reproduction: Comparative.**
**Cr. 2. SS. Prereq: Fourth-year classification in veterinary medicine.**
Elective comparative clinical assignment in animal reproduction.

**VC S 471E. Equine Reproduction.**
**Cr. 2. Prereq: Fourth-year classification in veterinary medicine**
Elective clinical assignment in animal reproduction. Equine and small animal reproduction only.

**VC S 471F. Food Animal Reproduction.**
**Cr. 2. Prereq: Fourth-year classification in veterinary medicine**
Elective clinical assignment in animal reproduction.

**VC S 471S. Small Animal Reproduction.**
**Cr. 2. Prereq: Fourth-year classification in veterinary medicine**
Elective clinical assignment in animal reproduction. Equine and small animal reproduction only.

**VC S 473. Small Animal Surgery.**
**Cr. 1. Prereq: Fourth-year classification in veterinary medicine**
Clinical assignment in small animal surgery split between soft tissue surgery (one week) and orthopedic surgery (one week).

**VC S 473O. Small Animal Surgery: Orthopedic.**
**Cr. 1. Prereq: Fourth-year classification in veterinary medicine**
Clinical assignment in small animal surgery split between soft tissue surgery (one week) and orthopedic surgery (one week).

**VC S 473S. Small Animal Surgery: Soft Tissue.**
**Cr. 1. Prereq: Fourth-year classification in veterinary medicine**
Clinical assignment in small animal surgery split between soft tissue surgery (one week) and orthopedic surgery (one week).

**VC S 474S. Surgery.**
**Cr. arr. Repeatable. Prereq: Fourth-year classification in veterinary medicine**
Elective clinical assignment in equine medicine or surgery.

**VC S 475. Cardiology Rotation.**
**Cr. 1-2. Repeatable, maximum of 2 credits. Prereq: Fourth-year classification in veterinary medicine**
Elective clinical assignment in cardiology.

**VC S 476. Veterinary Anesthesiology.**
**Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine**
Assignments in equine, small animal, and large animal anesthesiology. Experience includes case work-up, management and recovery. Understanding of the unique physiology and potential complications of anesthetized patients. Pharmacology of commonly used drugs. Specific protocols and management for both field and general anesthesia.

**VC S 476E. Equine Anesthesiology.**
**Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine**
Assignments in equine, small animal, and large animal anesthesiology. Experience includes case work-up, management and recovery. Understanding of the unique physiology and potential complications of anesthetized patients. Pharmacology of commonly used drugs. Specific protocols and management for both field and general anesthesia.

**VC S 476S. Small Animal Anesthesiology.**
**Cr. 2. Repeatable. Prereq: Fourth-year classification in veterinary medicine**
Assignments in equine, small animal, and large animal anesthesiology. Experience includes case work-up, management and recovery. Understanding of the unique physiology and potential complications of anesthetized patients. Pharmacology of commonly used drugs. Specific protocols and management for both field and general anesthesia.

**VC S 480. Veterinary Dentistry.**
**Cr. 1. F. Prereq: Third or Fourth-year classification in veterinary medicine**
All aspects of veterinary dentistry, prophylaxis, endodontics, and orthodontics. This course is an on-line course.

**VC S 481. Advanced Equine Dentistry.**
**Cr. 2. S. Prereq: Fourth year classification in veterinary medicine**
Clinical rotation in equine dentistry with an emphasis on routine equine dental examinations, specialized equipment, and corrective procedures. Offered only offered for one 2-week rotation. Enrollment is limited.

**VC S 490. Independent Study.**
**Cr. arr. Repeatable. Prereq: Permission of instructor and the VCS Associate Chair for Academic Affairs.**
Independent Study in veterinary medicine.

**VC S 492. Orientation for International Experience.**
**(2-0) Cr. 1. Repeatable. S. Prereq: Classification in veterinary medicine**
8 weeks. Predeparture orientation for group study abroad. Cultural considerations for the study abroad experience and a conversational language introduction. Out of class work may be assigned.

**VC S 495. Grand Rounds Presentations.**
**Cr. R. S. Prereq: Fourth-year classification in veterinary medicine**
Seminars and case presentations on selected subjects by fourth year students of the College of Veterinary Medicine. Completion of a seminar presentation is required for graduation. Offered on a satisfactory-fail basis only.

**VC S 496. International Preceptorship.**
**Cr. 1-12. Repeatable. Prereq: Second-year classification in veterinary medicine**
International Preceptorships and Study Abroad Group programs. Provides opportunities for students to be involved in applied clinical, production, and/or research experiences in international locations. The course consists of 40 hour per week experiential learning opportunities. Offered on a satisfactory-fail basis only.

Courses primarily for graduate students, open to qualified undergraduates:

**VC S 590. Special Topics.**
**Cr. 1-3. Repeatable.**

**VC S 590A. Special Topics: Medicine.**
**Cr. 1-3. Repeatable.**

**VC S 590B. Special Topics: Surgery.**
**Cr. 1-3. Repeatable.**

**VC S 590C. Special Topics: Theriogenology.**
**Cr. 1-3. Repeatable.**

**VC S 590D. Special Topics: Radiology.**
**Cr. 1-3. Repeatable.**

**VC S 590E. Special Topics: Anesthesiology.**
**Cr. 1-3. Repeatable.**

**VC S 590F. Special Topics - Ophthalmology.**
**Cr. 1-3. Repeatable, maximum of 3 credits. F.S. Special topics in Ophthalmology.**

**VC S 596. International Preceptorship.**
**(0-40) Cr. 1-12. Repeatable. F.S.SS. Prereq: Admission to graduate college**
International Preceptorships and Study Abroad Group programs. Provides opportunities for students to be involved in applied clinical, production, and/or research experiences in international locations. The course consists of 40 hour per week experiential learning opportunities.

**VC S 599. Creative Component.**
**Cr. arr. Prereq: Enrollment in nonthesis master's degree program**

Courses for graduate students:

**VC S 604. Seminar.**
**Cr. 1. Repeatable. F.S.**
(2-0) Cr. 2. Prereq: V C S 448
Detailed principles of clinical radiology with particular reference to radiographic interpretation.

(1-3) Cr. 2. Prereq: Permission of instructor
Course designed to discuss and perform advanced surgical procedures in soft tissue, orthopedic and neurological surgery. Minimally invasive surgical procedures and organ transplantation will be included.

V C S 672. Advanced Special Surgery.
(1-3) Cr. 2. Prereq: Permission of instructor
Innovative techniques in microvascular, thoracic, gastrointestinal, neurological and reconstructive surgery will be investigated.

V C S 676. Advanced Medicine.
(2-0) Cr. 2. Prereq: V C S 445
Principles of general medicine. A study in depth of factors that contribute to the development of clinical signs as related to the pathogenesis of disease.

V C S 677. Advanced Medicine.
(2-0) Cr. 2. Prereq: V C S 445
An advanced study of metabolic diseases.

V C S 699. Research.
Cr. arr. Repeatable.

V C S 699A. Research: Medicine.
Cr. arr. Repeatable.

Cr. arr. Repeatable.

V C S 699C. Research: Theriogenology.
Cr. arr. Repeatable.

V C S 699E. Research: Anesthesiology.
Cr. arr. Repeatable.

Cr. arr. Repeatable.
Graduate Level Research.