

**VETERINARY  
MEDICINE**

**VM**

**College of Veterinary Medicine**

**101 Veterinary Medicine in Society**  
Spring. 1(1-0)

Role of the veterinary profession in animal and human health. Impact of veterinary medicine on society.

**110 Veterinary Medical Terminology**

Fall. 1(1-0) R: Open only to Veterinary Technology majors. Approval of college.

Veterinary medical terminology, focusing on fundamental recognition, interpretation and usage of medical terms.

**120 Applied Biochemistry and Nutrients for Veterinary Technicians**

Fall. 2(2-0) P:M: BS 111 and BS 111L R: Open only to Veterinary Technology majors. Approval of college.

Basic fundamentals of cell structure and metabolism. Energy metabolism, nutrients and nutrient requirements of common domestic species.

**130 Comparative Anatomy for Veterinary Technicians**

Fall. 2(1-2) P:M: BS 111 and BS 111L R: Open only to Veterinary Technology majors. Approval of college.

Gross anatomy of the common animal species encountered in veterinary medicine. Overview of the functional anatomy of the musculoskeletal, digestive, cardiovascular, cutaneous, respiratory, urogenital, nervous, and endocrine systems and the special senses.

**140 Pharmacology for Veterinary Technicians**

Fall. 2(2-0) P:M: MTH 103 or MTH 110 or MTH 116 R: Open only to Veterinary Technology majors. Approval of college.

Fundamentals of characteristics, classification and usage of veterinary pharmaceuticals. Introduction to and application of dosage and formulation calculations.

**150 Hospital Procedures and Communication**

Spring. 2(2-0) P:M: VM 110 and VM 140 R: Open only to Veterinary Technology majors.

Development of various modalities of professional and client communication skills.

**155 Veterinary Technology Careers and Professional Development**

Fall. 1(1-0) R: Open only to Veterinary Technology majors. Approval of college.

Career options in veterinary technology, discussion of professional, ethical and legal considerations. Portfolio development, resume and cover-letter writing skills.

**160 Small Animal Nursing Skills**

Spring. 2(1-3) P:M: VM 110 and VM 130 and VM 140 R: Open only to Veterinary Technology majors.

Small animal nursing including principles of restraint, physical examination, medical management techniques, and behavior of common companion animals. Recognition of common canine and feline breeds.

**165 Large Animal and Laboratory Animal Nursing Care Techniques**

Fall. 2(1-2) P:M: VM 110 and VM 130 and VM 140 R: Open only to Veterinary Technology majors.

Fundamentals of the handling of equine, food animal and laboratory animal species. Breed identification, specimen collection, physical exam, medication administration and other nursing care procedures relevant to the species.

**170 Hematology and Immunology for Veterinary Technicians**

Spring. 2(2-0) P:M: VM 110 and VM 120 R: Open only to Veterinary Technology majors. C: VM 175 concurrently.

Structure and function of normal blood cells, cellular and humoral immunity, mechanisms of hemostasis, blood group serology, transfusion medicine and vaccinology.

**175 Clinical Pathology Laboratory I for Veterinary Technicians**

Spring. 1(0-2) P:M: VM 110 and VM 120 R: Open only to Veterinary Technology majors. C: VM 170 concurrently.

Veterinary clinical pathology laboratory including diagnostic procedures in hematology, serology and ELISA methodology.

**176 Clinical Pathology Laboratory II for Veterinary Technicians**

Fall. 1(0-2) P:M: VM 175 and VM 170 R: Open only to Veterinary Technology majors.

Comprehensive veterinary clinical pathology laboratory, including diagnostic procedures in urology, dermatology, cytology, and advanced methods in hematology

**210 Surgical Nursing for Veterinary Technicians**

Fall. 2(2-0) P:M: VM 160 R: Open only to Veterinary Technology majors. C: VM 215 concurrently or VM 303 concurrently.

Role of the veterinary technician as a member of the veterinary surgical team.

**215 Surgical Nursing and Anesthetic Management Laboratory**

Fall. 1(0-4) R: Open only to Veterinary Technology majors. C: VM 210 concurrently or VM 303 concurrently.

Principles and techniques in veterinary surgical nursing and anesthesia.

**245 Parasitology for Veterinary Technicians**

Spring. 2(1-2) P:M: VM 140 and VM 175 RB: VM 250 R: Open only to Veterinary Technology majors.

Parasites of veterinary and public health importance, including gross and microscopic morphology, transmission, and control.

**250 Veterinary Comparative Clinical Physiology**

Spring. 5(5-0) P:M: VM 110 and VM 120 and VM 130 R: Open only to Veterinary Technology majors.

Function, regulation and integration of organs and organ systems of common domestic species. Concepts with clinical relevance.

**255 Small Animal Diseases and Management**

Fall. 3(3-0) P:M: VM 160 and VM 170 and VM 250 R: Open only to Veterinary Technology majors.

Pathophysiology, transmission, diagnostic process, clinical management and prevention of canine and feline diseases.

**265 Dentistry Techniques for Veterinary Technicians**

Spring. 1(0-4) P:M: VM 215 R: Open only to Veterinary Technology majors.

Veterinary dental techniques and oral cavity assessment for companion animals.

**270 Health Care Development for Veterinary Technicians**

Spring. 1(0-3) P:M: VM 210 and VM 215 and VM 255 R: Open only to Veterinary Technology majors.

Service-oriented approach to the health care development in an operational animal care facility.

**275 Large Animal Diseases and Management**

Spring. 3(3-0) P:M: VM 165 and VM 170 and VM 250 R: Open only to Veterinary Technology majors.

Diseases, husbandry, preventative health care and client education for equine and food animal species.

**285 Clinical Nutrition for Veterinary Technologists**

Fall. 1(1-0) P:M: VM 250 R: Open only to Veterinary Technology majors.

Nutritional assessment and management of common domestic species in veterinary medicine.

**290 Special Studies in Veterinary Medicine**

Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to undergraduate students in the College of Veterinary Medicine. Approval of college.

Faculty-directed individual study on an experimental, theoretical or applied problem. May involve a supervised off-campus experience.

**295 Biomedical Research and Regulatory Issues for Veterinary Technologists**

Fall. 1(1-0) P:M: VM 150 R: Open only to Veterinary Technology majors.

Principles and techniques of biomedical research, governance and regulation of animal care and use.

**303 Anesthesiology for Veterinary Technicians**

Fall. 2(2-0) P:M: VM 140 and VM 250 R: Open only to Veterinary Technology majors. C: VM 215 concurrently or VM 210 concurrently.

Pharmacologic action of preanesthetic and anesthetic drugs. Principles and techniques of induction, maintenance, monitoring, and recovery of the patient. Humane methods of euthanasia.

**304 Radiology for Veterinary Technicians**

Spring. 2(2-0) P:M: VM 110 and VM 130 R: Open only to Veterinary Technology majors.

Production of radiographs, components of the x-ray machine, use of screens and grids, handling film, imaging quality, film processing, patient positioning, and radiation safety.

**305 Hospital Practice Management for Veterinary Technologists**

Spring. 2(2-0) P:M: VM 150 and VM 155 R: Open only to Veterinary Technology majors.

Veterinary practice economics, personnel management, inventory control and marketing techniques.

**310 Advanced Clinical Pathology Techniques**

Spring. 1(0-2) P:M: VM 175 and VM 176 R: Open only to Veterinary Technology majors.

Advanced cytologic techniques including sample collection, processing and evaluation.

## Veterinary Medicine—VM

- 369 Introduction to Zoo and Aquarium Science**  
Spring, 3(3-0) Interdepartmental with Fisheries and Wildlife and Landscape Architecture and Zoology. Administered by Zoology. P:M: (BS 110 or LBS 144 or LBS 148H)  
Fundamentals of zoo and aquarium operations including research, interpretation, design, nutrition, captive breeding, conservation, ethics and management.
- 410 Veterinary Technology Clerkship in Anesthesiology**  
Fall, Spring, Summer. 3 credits. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in anesthesiology.
- 411 Veterinary Technology Clerkship in Radiology**  
Fall, Spring, Summer. 3 credits. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in radiology.
- 412 Veterinary Technology Clerkship in Companion Animal Medicine**  
Fall, Spring, Summer. 3 credits. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of pre-clinical course work. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in restraint, examination, nursing care, monitoring, and preventive medicine of companion animals.
- 413 Veterinary Technology Clerkship in Companion Animal Surgery**  
Fall, Spring, Summer. 3 credits. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in surgical nursing.
- 414 Veterinary Technology Clerkship in Equine Medicine and Surgery**  
Fall, Spring, Summer. 3 credits. P:M: VM 415 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in equine medicine and surgery.
- 415 Veterinary Technician Clerkship in Food Animal and Equine Medicine and Surgery**  
Fall, Spring, Summer. 3 credits. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in food animal and equine medicine and surgery.
- 450 Veterinary Technology Clerkship in Emergency Medicine**  
Fall, Spring, Summer. 3 credits. P:M: VM 412 RB: (VM 410 and VM 411 and VM 413) and Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in emergency medicine.
- 451 Veterinary Technology Clerkship in Cardiology**  
Fall, Spring, Summer. 3 credits. P:M: VM 412 RB: (VM 410 and VM 411 and VM 413) and Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in cardiology.
- 452 Veterinary Technology Clerkship in Neurology**  
Fall, Spring, Summer. 3 credits. P:M: VM 412 RB: (VM 410 and VM 411 and VM 413) and Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in neurology and physical therapy.
- 453 Veterinary Technology Clerkship in Ophthalmology**  
Fall, Spring, Summer. 3 credits. P:M: VM 412 and VM 413 RB: (VM 410) and Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in ophthalmology.
- 454 Veterinary Technology Clerkship in Critical Care**  
Fall, Spring, Summer. 3 credits. P:M: VM 412 RB: (VM 410 and VM 411 and VM 413) and Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in critical care.
- 466 Veterinary Technology Clerkship in Large Animal Anesthesia**  
Fall, Spring, Summer. 3 credits. P:M: VM 410 and VM 415 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors. SA: VM 460, VM 472  
Application of principles and techniques of food animal and equine anesthesiology.
- 470 Veterinary Technology Clerkship in Food Animal Medicine**  
Fall, Spring, Summer. 3 credits. P:M: VM 415 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in food animal medicine.
- 480 Veterinary Technology Clerkship in Clinical Pathology**  
Fall, Spring, Summer. 3 credits. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in clinical pathology.
- 482 Veterinary Technology Clerkship in Necropsy**  
Fall, Spring, Summer. 3 credits. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in postmortem examination of common domestic species with emphasis on specimen description, collection, and submission.
- 483 Veterinary Technology Clerkship in Biomedical Research**  
Fall, Spring, Summer. 3 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: (VM 410 and VM 482) and Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in biomedical research involving laboratory animals.
- 484 Veterinary Technology Clerkship in Zoo and Wildlife Medicine**  
Fall, Spring, Summer. 3 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: (VM 410) or Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in zoo and wildlife medicine.
- 486 Veterinary Technology Clerkship in Clinical Parasitology**  
Fall, Spring, Summer. 3 credits. P:M: VM 245 RB: Completion of preclinical coursework. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in clinical parasitology.
- 487 Veterinary Technology Clerkship in Dermatology**  
Fall, Spring, Summer. 3 credits. RB: Completion of pre-clinical course work. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in dermatology.
- 490 Veterinary Technology Clerkship in Special Problems**  
Fall, Spring, Summer. 3 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P:M: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of the didactic core curriculum. R: Open only to Veterinary Technology majors.  
Application of principles and techniques in experimental, therapeutic, or laboratory medicine.
- 511 Veterinary Clinical Examination and Techniques**  
Fall. 2(1-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Introduction to history taking, physical examination, and techniques associated with examination of various species.
- 512 Veterinary Integrative Problem Solving I**  
Fall. 1(1-0) R: Open only to graduate-professional students in College of Veterinary Medicine.  
Integration of subject material from concurrent semester courses.
- 513 Ethical and Animal Welfare Issues in the Veterinary Profession**  
Fall. 2(1-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Identifying and communicating ethical challenges and animal welfare issues in the veterinary profession.

- 521 Veterinary Perspectives II**  
Spring. 2(2-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Identifying and communicating ethical challenges and animal welfare issues in the veterinary profession.
- 522 Veterinary Integrative Problem Solving II**  
Spring. 3(3-0) R: Open only to graduate-professional students in College of Veterinary Medicine.  
Integration of subject material from concurrent and previous semester courses.
- 532 Veterinary Integrative Problem Solving III**  
Fall. 3(1-4) RB: Completion of semester 2 of the graduate-professional program in the College of Veterinary Medicine.  
Integration of subject material from concurrent and previous semester courses.
- 533 Veterinary Epidemiology**  
Fall. 3(3-0) RB: Completion of Year 1 of the graduate-professional program in the college of Veterinary Medicine. R: Open to graduate-professional students in the College of Veterinary Medicine.  
Basic epidemiologic theory and study design. Veterinary descriptive and inferential biostatistics. Production veterinary medicine.
- 541 Veterinary Career Development and Practice Management**  
Spring. 2(2-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Foundations of career development and practice management skills.
- 542 Veterinary Integrative Problem Solving IV**  
Spring. 3(2-3) RB: Completion of semester 2 of the graduate-professional program in the College of Veterinary Medicine.  
Integration of subject material from concurrent and previous courses.
- 544 Veterinary Public Health**  
Spring. 2(2-0) RB: Completion of semester 2 of the graduate-professional program in the College of Veterinary Medicine.  
Veterinary environmental and occupational and public health. Milk and meat hygiene. Control of zoonotic diseases.
- 545 Principles of Anesthesia and Surgery**  
Spring. 4(3-2) RB: Completion of semester 2 of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in VM 570 or VM 578.  
Administering anesthetic agents. Fundamentals of surgery: sterile technique, tissue handling, suture patterns, wound healing, postoperative care.
- 546 Musculoskeletal Diseases**  
Spring. 5(5-0) RB: Completion of semester 2 of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in VM 582 or VM 592.  
Musculoskeletal diseases of domestic animals. Pathogenesis, diagnosis, and treatment.
- 547 Respiratory Diseases**  
Spring. 2(2-0) RB: Completion of semester 2 of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in VM 574.  
Respiratory diseases of domestic animals. Pathogenesis, diagnosis, and treatment.
- 552 Veterinary Integrative Problem Solving V**  
Fall. 3(2-3) RB: Completion of semester 4 of the graduate-professional program in the College of Veterinary Medicine.  
Integration of subject material from concurrent and previous semester courses.
- 553 Theriogenology and Urinary Diseases**  
Fall. 5(4-2) RB: Completion of semester 4 of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in VM 560 or VM 580.  
Urogenital diseases of domestic animals. Pathogenesis, diagnosis, and treatment.
- 556 Digestive, Metabolic and Endocrinological Diseases**  
Fall. 5(5-0) RB: Completion of semester 4 of the graduate-professional program in the College of Veterinary Medicine. Not open to students with credit in VM 540 or VM 576 or VM 586.  
Digestive, metabolic, and endocrinological diseases of domestic animals. Pathogenesis, diagnosis, and treatment.
- 557 Operative Surgery**  
Fall. 2(1-3) RB: Completion of Year 2 of the graduate-professional program in the College of Veterinary Medicine. R: Open to graduate-professional students in the College of Veterinary Medicine.  
Soft tissue and orthopedic surgery of domestic animals. Preoperative evaluation, surgery, and postoperative care.
- 611 Veterinary Externship**  
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of 5 semesters of the graduate-professional program in the College of Veterinary Medicine.  
Clinical or research experience in an off-campus setting.
- 690 Special Problems in Veterinary Medicine**  
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate-professional students in the College of Veterinary Medicine.  
Individual study directed by a faculty member on an experimental, theoretical, or applied problem. May involve off-campus experience in a preceptorial mode.
- 692 Career Development and Business Skills**  
Spring. 3 credits. RB: Open only to graduate-professional students who have completed semester 5 of the graduate professional program in the College of Veterinary Medicine.  
Development of leadership, business and interpersonal skills, career planning, and goal setting.
- 810 Food Safety Introduction and Professional Management**  
Fall, Spring, Summer. 2 to 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course. RB: One year of college level science including one semester of microbiology. R: Open only to students in the Master of Science degree in Food Safety or approval of college.  
Various food safety topics. Organizational, managerial, leadership and communication skills.
- 811 Evolution and Ecology of Foodborne Pathogens**  
Spring. 3 credits. R: Open only to students in the Master of Science degree in Food Safety or approval of college.  
Evolution of foodborne pathogens. Ecology of microbial organisms found in the food chain from introduction through human consumption.
- 812 Food Safety Toxicology**  
Spring. 3 credits. R: Open only to students in the Master of Science degree in Food Safety or approval of college.  
Nature and properties of toxic substances through the food chain. Nature and magnitude of hazards to human health.
- 813 Special Studies in Food Safety**  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to students in the Master of Science degree in Food Safety or approval of college.  
Faculty supervised independent study on an experimental, theoretical or applied project. May involve on-campus or off-campus experience.
- 814 Packaging for Food Safety**  
Fall, Spring. 3 credits. Interdepartmental with Packaging. Administered by Veterinary Medicine. RB: Enrollment in graduate program in related field. R: Open only to master's students in the Food Safety major or graduate students in the Packaging major or approval of college.  
Current issues in packaging and food safety.
- 815 Applied Project in Food Safety**  
Fall, Spring, Summer. 6 credits. P:M: VM 810 R: Open to masters students in the Food Safety major or approval of college.  
Faculty directed student project.
- 816 Food Irradiation**  
Fall, Spring. 3 credits. RB: Enrollment in graduate program in related field. R: Open only to master's students in Food Safety or approval of college.  
Principles and practice of the irradiation of food for pathogen reduction, food preservation, and the elimination of pests and insects.
- 817 Pre-Harvest Food Safety**  
Fall, Spring. 3 credits. RB: Enrollment in graduate program in related field. R: Open only to master's students in Food Safety or approval of college.  
Principles for improvement of pre-harvest food safety. Emphasis on microbial, chemical, and toxic hazards. Strategies to reduce pre-harvest risks in many food production species.

## Veterinary Medicine—VM

**818 The Epidemiology of Zoonotic Diseases**  
Spring of odd years. 3(3-0) Interdepartmental with Epidemiology. Administered by Epidemiology. RB: EPI 810 R: Open to graduate students in the Epidemiology major or approval of department. SA: HM 818

Human susceptibility to diseases of animals. Modes of transmission, surveillance, and strategies for prevention of specific zoonotic diseases.

**820 Current Topics in Comparative Medicine and Integrative Biology**

Spring. 1 to 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Enrollment in graduate-professional program or graduate program in the biomedical sciences.

R: Open to graduate students in the College of Veterinary Medicine.

Topics in comparative medicine using recently published literature to illustrate concepts.

**821 Food Protection and Defense**

Fall, Spring. 3 credits. Interdepartmental with Criminal Justice. Administered by Veterinary Medicine. R: Open only to graduate students in the College of Veterinary Medicine or Food Safety major or Criminal Justice major or approval of college.

Food systems and criminal justice approaches to prepare for and solve issues relating to food safety and defense.

**822 Aquatic Animal Medicine**

Fall. 3(2-2) Interdepartmental with Fisheries and Wildlife and Pathobiology and Diagnostic Investigation. Administered by Fisheries and Wildlife. RB: (FW 423) or prior course work in animal ecology, microbiology, parasitology or pathology

Health management techniques and pathobiological processes relating to the etiology, diagnosis, and control of diseases affecting aquatic animal populations and communities.

**828 Food Safety Seminar Series**

Fall, Spring. 1(1-0) Interdepartmental with Agriculture and Natural Resources and Natural Science and Social Science. Administered by Veterinary Medicine. RB: Enrollment in graduate program in related discipline

Selected current topics covering the broad areas of food safety as they relate to production, processing, transport, microbiology, toxicology, and social and human dimensions.

**829 Problems in Food Safety**

Fall. 1(1-0) Interdepartmental with Agriculture and Natural Resources and Natural Science and Social Science. Administered by Veterinary Medicine. RB: Enrollment in graduate program in related discipline

In-depth discussion of selected problems in food safety.

**831 Foodborne Disease Epidemiology for the Professional**

Summer. 3(3-0) R: Open to graduate students in the Food Safety major or approval of college.

Applied foodborne disease investigation through the use of case studies.

**832 Food Safety Disease Control**

Summer. 3(3-0) R: Open to graduate students in the Food Safety major or approval of college.

Applied approaches to food borne disease control using case studies.

**899 Master's Thesis Research**

Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 18 credits in all enrollments for this course.

Masters thesis research.

**999 Doctoral Dissertation Research**

Fall, Spring, Summer. 1 to 36 credits. A student may earn a maximum of 36 credits in all enrollments for this course.

Doctoral dissertation research.