

**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: Approval of college.  
Veterinary medical terminology, focusing on fundamental recognition, interpretation and usage of medical terms.
- 120 Veterinary Comparative Nutrition**  
Spring. 2(2-0) R: Approval of college.  
Energy metabolism, nutrients and nutrient requirements of common domestic species.
- 130 Comparative Anatomy for Veterinary Nurses**  
Fall. 2(1-2) P: ((Completion of Tier I Writing Requirement) and (BS 161 and BS 171)) or LB 145 R: Approval of college. C: VM 250 concurrently.  
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 Nurses**  
Fall. 2(2-0) P: ((MTH 101 and MTH 103) or MTH 103) and (MTH 114 or MTH 116 or MTH 124 or MTH 132 or MTH 152H) R: 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**  
Fall. 2(2-0) R: Approval of college. C: VM 110 concurrently and VM 140 concurrently.  
Development of various modalities of professional and client communication skills.
- 155 Veterinary Nursing Careers and Professional Development**  
Spring. 1(1-0) R: Approval of college.  
Career options in veterinary nursing, discussion of professional, ethical and legal considerations. Portfolio development, resume and cover-letter writing skills.
- 160 Small Animal Nursing Skills**  
Spring. 3(2-3) P: VM 110 and VM 130 and VM 140 and VM 150  
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: VM 160 and VM 205  
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 Nurses**  
Spring. 2(2-0) P: VM 250 and VM 110 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 Nurses**  
Spring. 1(0-2) P: VM 110 and VM 250 C: VM 170 concurrently.  
Veterinary clinical pathology laboratory including diagnostic procedures in hematology, serology and ELISA methodology.
- 176 Clinical Pathology Laboratory II for Veterinary Nurses**  
Fall. 1(0-2) P: VM 175  
Comprehensive veterinary clinical pathology laboratory, including diagnostic procedures in urology, dermatology, cytology, and advanced methods in hematology
- 205 Preventive Animal Health Care for Veterinary Nurses**  
Spring. 3(3-0) P: VM 150 and VM 110  
Development of husbandry techniques to enhance wellness and reduce the risk of disease, injury and stress in common domestic and exotic animals.
- 210 Surgical Nursing for Veterinary Nurses**  
Fall. 2(1-1) P: VM 160 and VM 130 and VM 250 R: Approval of department. C: VM 215 concurrently and VM 303 concurrently.  
Role of the veterinary nurse as a member of the veterinary surgical team.
- 215 Surgical Nursing and Anesthetic Management Laboratory**  
Fall. 1(0-4) P: VM 160 and VM 130 and VM 250 C: VM 210 concurrently and VM 303 concurrently.  
Principles and techniques in veterinary surgical nursing and anesthesia.
- 245 Parasitology for Veterinary Nurses**  
Spring. 2(1-2) P: VM 140 and VM 176 and VM 205 RB: VM 250  
Parasites of veterinary and public health importance, including gross and microscopic morphology, transmission, and control.
- 250 Veterinary Comparative Clinical Physiology**  
Fall. 4(4-0) P: ((Completion of Tier I Writing Requirement) and (BS 161 and BS 171)) or LB 145 R: Approval of college. C: VM 130 concurrently.  
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: VM 160 and VM 170 and VM 250 and VM 175  
Pathophysiology, transmission, diagnostic process, clinical management and prevention of canine and feline diseases.
- 265 Dentistry Techniques for Veterinary Nurses**  
Spring. 1(0-4) P: VM 215 and VM 210 and VM 303  
Veterinary dental techniques and oral cavity assessment for companion animals.
- 270 Advanced Skills Development for Veterinary Nurses**  
Spring. 1(0-3) P: VM 210 and VM 215 and VM 303  
Service-oriented approach to health care development in an operational animal care facility.
- 275 Large Animal Diseases and Management**  
Spring. 3(3-0) P: VM 165 and VM 250  
Diseases, husbandry, preventative health care and client education for equine and food animal species.
- 285 Clinical Nutrition for Veterinary Nurses**  
Fall, Spring. 1(1-0) P: VM 255 and VM 120  
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: 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 Nurses**  
Fall. 1(1-0) P: VM 150 and VM 205  
Principles and techniques of biomedical research, governance and regulation of animal care and use.
- 303 Anesthesiology for Veterinary Nurses**  
Fall. 2(1-1) P: VM 140 and VM 160 and VM 130 and VM 250 C: VM 215 concurrently and 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 Nurses**  
Spring. 2(1-2) P: VM 110 and VM 130  
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 Nurses**  
Spring. 2(2-0) P: VM 150  
Veterinary practice economics, personnel management, inventory control and marketing techniques.

## Veterinary Medicine—VM

- 337 Introduction to Foodborne Pathogens**  
Fall, Summer. 3(3-0) R: Open to graduate students in the Food Safety Major or approval of department.  
Microbial classification, growth, genetics, epidemiology, transmission and ecology of major food and waterborne pathogens including bacteria, viruses, parasites, prions and protozoa.
- 369 Introduction to Zoo and Aquarium Science**  
Spring. 3(3-0) Interdepartmental with Fisheries and Wildlife and Integrative Biology and Landscape Architecture. Administered by Integrative Biology. P: BS 162 or LB 144 or BS 182H SA: ZOL 369  
Fundamentals of zoo and aquarium operations including research, interpretation, design, nutrition, captive breeding, conservation, ethics and management.
- 410 Veterinary Nursing Clerkship in Anesthesiology**  
Fall, Spring, Summer. 3 credits. P: (VM 270 and VM 275 and VM 245 and VM 304) and completion of Tier I writing requirement RB: Completion of preclinical course work.  
Application of principles and techniques in anesthesiology.
- 411 Veterinary Nursing Clerkship in Radiology**  
Fall, Spring, Summer. 3 credits. P: VM 270 and VM 275 and VM 245 and VM 304 RB: Completion of preclinical coursework.  
Application of principles and techniques in radiology.
- 412 Veterinary Nursing Clerkship in Companion Animal Medicine**  
Fall, Spring, Summer. 3 credits. P: (VM 270 and VM 275 and VM 245 and VM 304) and completion of Tier I writing requirement RB: Completion of pre-clinical course work.  
Application of principles and techniques in restraint, examination, nursing care, monitoring, and preventive medicine of companion animals.
- 413 Veterinary Nursing Clerkship in Companion Animal Surgery**  
Fall, Spring, Summer. 3 credits. P: VM 270 and VM 275 and VM 245 and VM 304 RB: Completion of preclinical coursework.  
Application of principles and techniques in surgical nursing.
- 414 Veterinary Nursing Clerkship in Equine Medicine and Surgery**  
Fall, Spring, Summer. 3 to 6 credits. P: VM 270 and VM 275 and VM 304 RB: Completion of preclinical coursework.  
Application of principles and techniques in equine medicine and surgery.
- 415 Veterinary Nursing Clerkship in Food Animal and Equine Medicine and Surgery**  
Fall, Spring, Summer. 3 to 6 credits. P: VM 270 and VM 275 and VM 304 RB: Completion of preclinical coursework.  
Application of principles and techniques in food animal and equine medicine and surgery.
- 450 Veterinary Nursing Clerkship in Emergency Medicine**  
Fall, Spring, Summer. 3 credits. P: VM 412 RB: (VM 410 and VM 411 and VM 413) and Completion of preclinical coursework.  
Application of principles and techniques in emergency medicine.
- 451 Veterinary Nursing Clerkship in Cardiology**  
Fall, Spring, Summer. 3 credits. P: VM 412 RB: (VM 410 and VM 411 and VM 413) and Completion of preclinical coursework.  
Application of principles and techniques in cardiology.
- 452 Veterinary Nursing Clerkship in Neurology**  
Fall, Spring, Summer. 3 credits. P: VM 412 RB: (VM 410 and VM 411 and VM 413) and Completion of preclinical coursework.  
Application of principles and techniques in neurology and physical therapy.
- 453 Veterinary Nursing Clerkship in Ophthalmology**  
Fall, Spring, Summer. 3 credits. P: VM 412 and VM 413 RB: (VM 410) and Completion of preclinical coursework.  
Application of principles and techniques in ophthalmology.
- 454 Veterinary Nursing Clerkship in Critical Care**  
Fall, Spring, Summer. 3 credits. P: VM 412 RB: (VM 410 and VM 411 and VM 413) and Completion of preclinical coursework.  
Application of principles and techniques in critical care.
- 455 Veterinary Nursing Clerkship in Companion Animal Oncology**  
Fall, Spring, Summer. 3 credits. P: VM 412 and VM 413 RB: Completion of pre-clinical coursework.  
Application of principles and techniques in companion animal oncology.
- 456 Veterinary Nursing Clerkship in Companion Animal Physical Rehabilitation**  
Fall, Spring, Summer. 3 credits. P: VM 412 RB: Completion of preclinical coursework.  
Application of principles and techniques of companion animal physical rehabilitation, particularly those animals recovering from orthopedic and neurologic injuries and surgeries.
- 458 Veterinary Nursing Clerkship in Companion Animal Diagnostic Ultrasound**  
Fall, Spring, Summer. 3 credits. P: VM 411 RB: Completion of preclinical coursework.  
Application of principles and techniques of Diagnostic Ultrasound.
- 466 Veterinary Nursing Clerkship in Large Animal Anesthesia**  
Fall, Spring, Summer. 3 credits. P: VM 270 and VM 275 and VM 303 and VM 304 RB: Completion of preclinical coursework. SA: VM 460, VM 472  
Application of principles and techniques of food animal and equine anesthesiology.
- 470 Veterinary Nursing Clerkship in Food Animal Medicine**  
Fall, Spring, Summer. 3 to 6 credits. P: VM 270 and VM 275 and VM 304 RB: Completion of preclinical coursework.  
Application of principles and techniques in food animal medicine.
- 480 Veterinary Nursing Clerkship in Clinical Pathology**  
Fall, Spring, Summer. 3 credits. P: VM 270 and VM 275 and VM 303 and VM 245 RB: Completion of preclinical coursework.  
Application of principles and techniques in clinical pathology.
- 482 Veterinary Nursing Clerkship in Necropsy**  
Fall, Spring, Summer. 3 credits. P: VM 270 and VM 275 and VM 303 and VM 245 RB: Completion of preclinical coursework.  
Application of principles and techniques in postmortem examination of common domestic species with emphasis on specimen description, collection, and submission.
- 483 Veterinary Nursing 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: VM 270 and VM 275 and VM 303 and VM 304 and VM 245 RB: (VM 410 and VM 482) and Completion of preclinical coursework.  
Application of principles and techniques in biomedical research involving laboratory animals.
- 484 Veterinary Nursing 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: VM 270 and VM 275 and VM 303 and VM 304 and VM 245 RB: (VM 410) or Completion of preclinical coursework.  
Application of principles and techniques in zoo and wildlife medicine.
- 486 Veterinary Nursing Clerkship in Clinical Parasitology**  
Fall, Spring, Summer. 3 credits. P: VM 245 RB: Completion of preclinical coursework.  
Application of principles and techniques in clinical parasitology.
- 487 Veterinary Nursing Clerkship in Dermatology**  
Fall, Spring, Summer. 3 credits. P: VM 412 RB: Completion of pre-clinical course work.  
Application of principles and techniques in dermatology.
- 490 Veterinary Nursing 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: VM 270 and VM 275 and VM 303 and VM 304 and VM 245 RB: Completion of preclinical coursework.  
Application of principles and techniques in experimental, therapeutic, or laboratory medicine.

- 500 Veterinary Science I**  
Fall. 2(1-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Introduction to veterinary science. Evidence based medicine; host, animal and environmental interactions in health.
- 501 One Health I**  
Fall. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Introduction to one health. Interrelationships among environmental, human, and non-human animal health. Health-professionals team approach to solving health problems.
- 502 Veterinary Doctoring I**  
Fall. 1(0-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Introduction to professionalism, basic communication skills, effective use of teams, medical ethics, health records, confidentiality, professional use of social media, and safe veterinary practices. Clinical doctoring skills, with emphasis on cutaneous, hematologic, immunologic, reproductive, and respiratory systems in health.
- 503 Veterinary Career and Practice Management I**  
Fall. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Debt, budgets, financial risk assessment, financial planning, career development, work-life balance, and recognizing impaired physical or mental health and the need for professional help.
- 504 One Health II**  
Spring. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Veterinary medicine and public health. Introduction to veterinary interactions with the public, including disaster response and crisis communication. Relevant laws, regulations, and regulatory agencies.
- 505 Veterinary Doctoring II**  
Spring. 1(0-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Professionalism, communication, medical ethics, and social competence, including professional interactions, client communication, history taking, and recognizing cultural differences and their impact. Clinical doctoring skills, with emphasis on cardiovascular, digestive, endocrine, musculoskeletal, nervous, and urinary systems in health.
- 506 Veterinary Career and Practice Management II**  
Spring. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Health teams, leadership, workplace behavior, DVM job market, and the process of securing DVM employment.
- 507 One Health III**  
Fall. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Social issues of relevance to animals and the veterinary community. Emphasis on issues related to cutaneous, hematologic, immunologic, reproductive, and respiratory systems.
- 508 Veterinary Doctoring III**  
Fall. 1(0-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Professionalism, communication, medical ethics, social competence, and clinical doctoring skills, with emphasis on issues and skills involving disorders of the cutaneous, hematologic, immunologic, reproductive, and respiratory systems.
- 509 Veterinary Career and Practice Management III**  
Fall. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Veterinary business finance including financial statement literacy and ratio analysis. Cost-of-care estimates and their communication to clients. Giving and receiving feedback, building positive work relationships, conflict management.
- 510 One Health IV**  
Spring. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Social and medical issues of relevance to animals and the veterinary community. Emphasis on issues related to cardiovascular, digestive, endocrine, musculoskeletal, nervous, and urinary systems.
- 512 Veterinary Doctoring IV**  
Spring. 1(0-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Professionalism, communication, medical ethics, social competence, and clinical doctoring skills, with emphasis on issues and skills involving disorders of the cardiovascular, digestive, endocrine, musculoskeletal, nervous, and urinary systems. Writing prescriptions, discharge instructions, and patient records. Managing emotions in work settings.
- 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.
- 514 Comparative Lifestage Nutrition**  
Spring. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Nutritional assessment and management of the physiological stages of growth. Adult maintenance, gestation, lactation, performance, and geriatric concerns of common domestic species.
- 515 Animals in Society**  
Fall. 2(1-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Role of animals and veterinary medicine in society. Intersections of animal behavior, animal welfare, ethics, public health and regulatory medicine.
- 516 Musculoskeletal System I**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the musculoskeletal system in health.
- 517 Nervous System I**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the nervous system in health.
- 518 Cardiovascular System I**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the cardiovascular system in health.
- 519 Cutaneous System I**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the cutaneous system in health.
- 520 Respiratory System I**  
Spring. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the respiratory system in health.
- 523 Immunologic and Hematologic Systems I**  
Spring. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the immunological and hematologic systems in health.
- 525 Digestive System I**  
Spring. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the digestive system in health.
- 527 Endocrine System I**  
Spring. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the endocrine system in health.
- 528 Reproductive System I**  
Spring. 2(1-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the reproductive system in health.
- 529 Urinary System I**  
Spring. 2(1-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Structure and function of the urinary system in health.
- 530 Veterinary Science II**  
Fall. 4(2-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Host, agent, environment interaction for disease causation.
- 531 Immunologic and Hematologic System II**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Immunologic and hematologic disorders of animals.

## Veterinary Medicine—VM

- 532 Veterinary Integrative Problem Solving**  
Fall. 2(1-2) RB: Completion of Year 1 in the graduate-professional program in the College of Veterinary Medicine. R: Open to graduate-professional students in the College of Veterinary Medicine.  
Integration of subject material from concurrent and previous courses using a problem-based learning format.
- 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.
- 534 Cutaneous System II**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Cutaneous system disorders of animals.
- 535 Reproductive System II**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Reproductive system disorders of animals.
- 536 Respiratory System II**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Respiratory system disorders of animals.
- 537 Veterinary Career and Practice Management IV**  
Spring. 1(0-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Productivity and profitability, marketing, writing resumes and cover letters, interview strategies, professional development, and team selection, communication, and evaluation.
- 539 Veterinary Career and Practice Management V**  
Fall. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Medical records management, laws applicable to the practice of veterinary medicine, professional malpractice and board complaints, evaluating job offers, negotiating employment contracts, and interviewing.
- 543 Cardiovascular Diseases**  
Spring. 2(2-0) 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.  
Cardiovascular diseases of domestic animals. Pathogenesis, diagnosis, and treatment.
- 544 Veterinary Public Health**  
Fall. 2(2-0) 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.  
Veterinary environmental, 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 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.  
Administering anesthetic agents. Fundamentals of surgery including sterile technique, tissue handling, suture patterns, wound healing, and postoperative care.
- 546 Musculoskeletal Diseases**  
Spring. 4(4-0) 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.  
Musculoskeletal diseases of domestic animals. Pathogenesis, diagnosis, and treatment.
- 547 Respiratory Diseases**  
Fall. 2(2-0) 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.  
Respiratory diseases of domestic animals. Pathogenesis, diagnosis, and treatment.
- 549 Applied Diagnostic Imaging**  
Fall. 1(0-2) 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.  
Radiographic interpretation. Recognition of abnormalities. Development of verbal skills in image interpretation. Alternate imaging modalities.
- 553 Theriogenology and Urinary Diseases**  
Fall. 5(4-2) 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.  
Urogenital diseases of domestic animals. Pathogenesis, diagnosis, and treatment.
- 554 Hematological, Oncological and Dermatological Diseases**  
Fall. 3(3-0) 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.  
Hematological, oncological and dermatological diseases of domestic animals. Pathogenesis, clinical presentation, diagnosis, and treatment.
- 555 Neurological and Ophthalmological Diseases**  
Fall. 3(3-0) 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.  
Neurological and ophthalmological 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.
- 558 Digestive Diseases of Domestic Animals**  
Fall. 3 credits. 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.  
Digestive diseases of domestic animals. Diagnosis, therapy, prophylaxis, and management.
- 559 Metabolic and Endocrinological Diseases**  
Fall. 2(2-0) RB: Completion of Year 1 in the graduate professional program in the College of Veterinary Medicine. R: Open to graduate-professional students in the College of Veterinary Medicine.  
Pathogenesis, diagnosis, and treatment of metabolic and endocrinologic diseases of domestic animals.
- 561 Private Practice Ownership**  
Spring. 1(1-0) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Demographic studies, business entities, financing, leadership, business and marketing plans, and entrepreneurial ownership considerations when starting a practice or buying an existing practice.
- 565 Cardiovascular System II**  
Spring. 2(1-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Cardiovascular system disorders of animals.
- 568 Urinary System II**  
Spring. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Urinary system disorders of animals.
- 569 Musculoskeletal System II**  
Spring. 2(1-2) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Musculoskeletal disorders of animals
- 571 Nervous System II**  
Spring. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Nervous system disorders of animals.
- 575 Digestive System II**  
Spring. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Digestive system disorders of animals.
- 577 Endocrine System II**  
Spring. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Endocrine system disorders of animals.
- 578 Clinical Reasoning I**  
Fall. 8(2-12) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Clinical reasoning in veterinary medicine.
- 579 Clinical Reasoning II**  
Fall. 7(2-10) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Advanced clinical reasoning skill development. Complex cases that involve multiple systems, animal populations, and public health implications.

- 580 Veterinary Surgery and Anesthesia**  
Fall. 3(1-4) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Applied veterinary surgical and anesthesia skills.
- 581 Clinical Reasoning III**  
Spring. 5(2-6) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Advanced clinical reasoning skill development integrating societal, cultural, economic and ethical components of veterinary clinical decision-making.
- 582 Veterinary Clinical Experience**  
Spring. 3(0-6) R: Open to graduate-professional students in the College of Veterinary Medicine.  
Veterinary clinical workplace skill development.
- 611 Veterinary Externship**  
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 18 credits in all enrollments for this course. RB: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine. R: Open to graduate-professional students 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. R: Open to graduate-professional students in the College of Veterinary Medicine.  
Development of leadership, business and interpersonal skills, career planning, and goal setting.
- 693 Companion Animal Behavior Clerkship**  
Spring. 3(3-0) R: Open to veterinary medicine students in the College of Veterinary Medicine or approval of college.  
History acquisition, development of treatment plans in the context of veterinary behavior cases.
- 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**  
Fall, Spring, Summer. 3 credits. R: Open to master's students in the Food Safety major 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**  
Fall, Spring. 3 credits. R: Open to master's students in the Food Safety major 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 to master's students in the Food Safety major 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**  
Summer. 3 credits. Interdepartmental with Packaging. Administered by Veterinary Medicine. RB: Enrollment in graduate program in related field. R: Open to master's students in the Food Safety major and open to 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. 3 credits. P: VM 810 or approval of college R: Open to master's students in the Food Safety major or approval of college.  
Faculty directed student project.
- 817 Livestock Pre-Harvest Food Safety**  
Spring. 3 credits. RB: Enrollment in graduate program in related field. R: Open to master's students in the Food Safety Major 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.
- 820 Current Topics in Comparative Medicine and Integrative Biology**  
Fall, 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. 3 credits. Interdepartmental with Criminal Justice. Administered by Veterinary Medicine. R: Open to graduate students in the College of Veterinary Medicine or in the Food Safety major or in the Veterinary Medicine major or in the 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.
- 824 Global Food Safety**  
Fall. 3(3-0) RB: Professional or graduate status with knowledge of food safety. R: Open to graduate students in the Food Safety major or approval of college.  
Understanding food safety challenges in different geographic regions. Development of interventions for food safety in a global context.
- 825 Quantifying Food Risk**  
Fall. 3(3-0) RB: Professional or graduate status with knowledge of food safety. R: Open to master's students or graduate-professional students in the College of Veterinary Medicine or in the School of Criminal Justice or in the School of Packaging or in the Food Safety major or approval of college.  
Food risks based on quality, safety, fraud and intentional threats.
- 826 Creating a Food Safety Culture**  
Summer of odd years. 3(3-0) RB: Professional or graduate status with knowledge of food safety. R: Approval of college.  
Explores proven, evidence-based ways to change or strengthen the food safety culture of an organization and influence employee behavior.
- 827 Food Safety Modernization Act and Hazard Analysis and Critical Control Point Systems**  
Spring. 3(3-0) RB: Professional or graduate status with knowledge of food safety. R: Open to graduate students in the Food Safety Major or approval of college.  
Food safety requirements for food establishments subject to the Food Safety Modernization Act. Food safety management systems, with a focus on the Hazard Analysis and Critical Control Points (HACCP) Approach.
- 830 Food Safety Research Methods**  
Fall, Summer. 3(3-0) R: Open to graduate students in the College of Veterinary Medicine or approval of college.  
Conducting and interpreting food safety research. Interpretation and critique of the literature, study design, and communication of food safety research.
- 831 Foodborne Disease Epidemiology for the Professional**  
Fall, Summer. 3(3-0) R: Open to master's students in the Food Safety major or approval of college.  
Applied foodborne disease investigation through the use of case studies.
- 834 Current Issues in Food Safety**  
Fall, Spring, Summer. 1 to 9 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Open to graduate students in the College of Veterinary Medicine or in the Department of Large Animal Clinical Sciences or in the Food Safety Major or approval of college.  
Allergen control in the manufacturing setting, microbial control in the manufacturing setting, good manufacturing practices, ingredient safety, preventative control, produce food safety and other topics as needed.

## Veterinary Medicine—VM

### 835 Food Safety for Produce

Spring. 3(3-0) R: Open to graduate students in the Food Safety Major or approval of department.

Overview of food safety requirements for the produce sector with a focus on Good Agriculture Practices (GAPS).

### 836 Food Safety Issues by Commodity

Spring. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to graduate students in the College of Veterinary Medicine or in the Food Safety Major or approval of college.

Food safety issues specific to different commodity groups or segments of food industry including meat safety, dairy safety, beverage safety, pet food safety, ingredient safety, and food waste recovery.

### 840 Anti-Counterfeit Strategy and Product Protection

Summer. 3(3-0) Interdepartmental with Criminal Justice and Packaging. Administered by Veterinary Medicine. R: Open to graduate students in the School of Criminal Justice or in the School of Packaging or in the Food Safety major or approval of department.

Theory and applied techniques for anti-counterfeit strategies and product protection for food and consumer products.

### 844 Food Fraud Prevention

Fall. 3(3-0) R: Open to graduate students in the College of Veterinary Medicine or in the Department of Large Animal Clinical Sciences or in the Food Safety Major or approval of college.

Theory and applied techniques for food fraud prevention strategies.

### 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.