## PROFESSIONAL VCS 800-999 (Given for VM Credit only-Academic Affairs approve these courses.)
## YR1 – Fall: 800-814 Spring: 815-829
## YR2 – Fall: 830-844 Spring: 845-859
## YR3 – Fall: 860-874 Spring: 875-899
## YR 4: 900-999

| # / Type | Credits/ Grading | Offered | Standing | Course | Catalog Description | Coordinator |
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| VCS 809 /D | 1/CR | Fall | 1st yr | **Veterinary Clinical and Professional I** | ( 1) I. The course will be taught during the fall semester as a required introductory level course for first year veterinary students. This is the first in a series of foundational courses designed to introduce students to key clinical skills, including communication and critical thinking, that they will encounter in a clinical setting and to provide students with a problem-based approach to learning. | Lyon |
| VCS 816 /D | 1/CR | Spring | 1st yr | **Veterinary Clinical and Professional II** | ( 1) II. The primary objective of the course is to provide students with an opportunity to learn normal animal behavior for the most commonly evaluated large animal species in clinical practice (the horse and the cow); to safely handle and restrain them; and to practice basic physical examination skills. A secondary objective of the course is to introduce students to the basic principles of biosecurity, sterile technique, venipuncture, and intravenous catheterization.<br><br>In addition, students will build onto first-semester instruction in clinical communication, written documentation within the medical record, and introductory surgical skills.<br><br>The course will include introductory lectures as well as structured and self-directed laboratory sessions that will involve both live animals and non-animal teaching models. | Lyon |
| VCS 820 /D<br><br>Crosslisted<br><br>CS 820 | 1/G | Spring | 1st, 2nd yr. or Grad student w/ instructor permission | **Topics in Global Veterinary Medicine**<br>Renberg | (1) II. An overview of the role of veterinarians around the world. Topics include international uses and attitudes about animals, problems the world faces pertaining to livestock production, and social tensions. One hour lecture each week. Pr.: 1st or 2nd year standing in the College of Veterinary Medicine, or enrolled as a graduate student with instructor permission. | Renberg |
| VCS 821<br><br>Crosslisted | 1-4/CR | All | 1st, 2nd, 3rd or Grad | **International Veterinary Study Tours**<br>Various Faculty<br><br>[Distance course coordinated through OIP: Office of Internat'l Programs] | (1-4) I, II, S. Faculty-led trip for students to explore veterinary medicine in a foreign country. Prior to travel, students will learn about the country through lectures, research, presentations. During the trip they will interact with nationals in the veterinary profession and experience the culture. Pr.: Enrolled as a 1st-3rd year or grad | Renberg |

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| CS 821 | | | | | student in the College of Vet Med. Additional students admitted with discretion of faculty leading the tour. | |
| VCS 822 /D<br>Crosslisted<br>CS 822 | 1/G-IH | Fall | 1st,2nd, 3rd or Grad | **Introduction to Sustainable Beef Systems**<br>Lancaster, Dollarhide | The goal of this course is to provide veterinary students with an understanding of sustainability in beef systems. The course will focus on beef cattle production practices, principles of sustainable food systems, systems thinking, and impacts of food choices. It will include topics on US Roundtable for Sustainable Beef self-assessment guides, impact of management practices on sustainability, impact of beef industry on the economy, and beef's role in human dietary. It will include guest lectures and field trips for students to learn from those in the field. A large emphasis will be placed on systems thinking (i.e., how one change affects other aspects of the system). Pr.: 1st, 2nd, or 3rd Year Stand in the College of Veterinary Medicine or Graduate School Standing | Lancaster |
| VCS 839 /D | 1/CR | Fall | 2nd yr | **Veterinary Clinical and Professional III** | (1) I. A continuation of Veterinary Clinical and Professional Skills II. Introduces how to perform common diagnostic tests in clinical practice and interpret them. Builds upon basic palpation skills to practice isolating specific tissues and organs. Applies surgical principles to the practice of advanced suture patterns. | Lyon |
| VCS 840<br>Crosslisted<br>CS 840 | 2/CR | Spring | 2nd/3rd yr standing or Grad Student | **Communication with the Agricultural Worker**<br>White | (2) II. An elective course focused on improving the communications between veterinarians and animal caretakers in production agriculture and equine industries. The course will use face to face discussions and online seminars in KSOL to teach communications skills with a focus on common terminology and vocabulary necessary for effective communication. Audio-visual teaching utilizing immersion philosophy is utilized to provide the material course work. PR.: 2nd or 3rd year standing in the College of Veterinary Medicine or graduate student. | White |
| VCS 845 /D | 3/G | Spring | 2nd yr | **Radiology**<br>Biller, Cassel | (3) II. The theory and principles of x-rays, production and interpretation of radiographs and exposure factors, special radiographic methods, film storage and handling, processing, safety measures, and biologic effects of radiation. Two hours lec. a week. Pr.: Second-year standing in the College of Veterinary Medicine. | Biller |
| VCS 846 /D | 1/CR | Spring | 2nd yr | **Veterinary Clinical and Professional IV** | (1) II. A continuation of Veterinary Clinical and Professional Skills III. Introduces advanced organ-specific examination techniques including otoscopy and ophthalmoscopy. Expands the concepts of diagnostic testing and diagnostic test interpretation. Prepares students for surgical anesthesia and anesthetic monitoring through the use of non-animal teaching models. | Lyon |
| VCS 860 /D | 4/G | Fall | 3rd yr | **Medicine I**<br>Bagladi, Harkin, KuKanich, Schermerhorn | (4) I. Consideration of medical and pathophysiologic aspects of diseases affecting the urinary, endocrine, integumentary, respiratory, hemic, and neuromuscular systems. Four 1-hour lectures per week. Pr.: Third-year standing in the College of Veterinary Medicine. | Harkin |
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| VCS 861 /D | 4/G | Fall | 3rd yr | **Food Animal Medicine**<br>Apley, Miesner, Reppert<br>Others: Karriker | (4) I. A study of the etiology, clinical signs, diagnosis, treatment, and control of diseases which affect cattle, swine, and sheep. Four hours lec. a week. Pr.: Third-year standing in the College of Veterinary Medicine. | Miesner |
| VCS 862 /D<br><br>Crosslisted<br><br>CS862 | 3/G | Fall | 3rd yr | **Theriogenology**<br>Larson, Grady | (3) I. Consideration of prevention, diagnosis, and treatment of disease, and maintenance of health and productivity of the genital tract of domestic species. Three hours of lecture a week Pr.: Third-year standing in College of Veterinary Medicine or graduate student. | Larson |
| VCS 863 /D | 4/G | Fall | 3rd yr | **Veterinary Surgery I**<br>Hodgson, E. Klocke, Mason, D. Rankin, Renberg, Roush | (4) I. Introduction to the basics of veterinary anesthesia, surgical techniques, and patient management by a systems design. Problems common to all species of domestic animals will be presented to provide foundations of surgical knowledge and experience. Four hours lec. Pr.: Satisfactory completion of all required second year veterinary courses. | Klocke |
| VCS 864 /D | 1/G | Fall | 3rd yr | **Veterinary Surgery I Laboratory**<br>Klocke | (1) I, Introduction to the basics of veterinary anesthesia, surgical techniques, and patient management by a systems design. Problems common to all species of domestic animals will be presented to provide foundations of surgical knowledge and experience. Pr.: Concurrent with or successful completion of VCS 863. | Klocke |
| VCS 865 /D | 2/G | Fall | 3rd yr | **Exotic Pet Medicine**<br>Carpenter, Eshar<br>Others: Dryden, Okesson | (2) I. Entry-level knowledge base for the species likely to be encountered in a private practice setting including snakes/small reptiles, caged birds, and small mammals (ferrets, gerbils, hamsters, chinchillas). Pr.: Third-year standing in the College of Veterinary Medicine. | Carpenter |
| VCS 866 /D | 0.5/CR | Fall | 3rd yr | **3rd Year Clinical Skills I**<br>Various CS Faculty | (0.5) I. Demonstration, instruction and experience in physical examination and diagnostic skills necessary for routine veterinary practice. Pr.: Third-year standing in the College of Veterinary Medicine. Three hours lab a week. | KuKanich |
| VCS 874 /D | 1/CR | Fall | 3rd yr | **Ethics and Jurisprudence** | (1) I. Socratic ethics are discussed along with the American Veterinary Medical Association's Code of Ethics and practical situations with a fundamental ethical basis. The Kansas Practice Act is explored as an example of governance in veterinary medicine. The role of animals in humans' well being is addressed along with the philosophy of animal welfare. The law and the practicing veterinarian are discussed with emphasis upon professional liability. Pr.: Third year standing in College of Veterinary Medicine. | Roush |
| VCS 875 /D | 4/G | Spring | 3rd yr | **Medicine II**<br>L. Beard, Harkin, Higginbotham, A. Rankin, | (4) II. Consideration of the medical and pathophysiological aspects of diseases affecting the gastrointestinal, cardiovascular, and ophthalmic | Harkin |

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| | | | | J. Thomason, Wouda | systems, oncology, and dentistry. Four 1-hour lectures per week. Pr.: Third-year standing in the College of Veterinary Medicine. | |
| VCS 876 /D | 0.5/CR | Spring | 3rd yr | **3rd Year Clinical Skills II**<br>Various CS Faculty | (0.5) II. Demonstration, instruction and experience in physical examination and diagnostic skills necessary for routine veterinary practice. Pr.: Third-year standing in the College of Veterinary Medicine. Three hours lab a week. | Delph |
| VCS 877 /D<br><br>Crosslisted<br><br>CS877 | 2/G | Spring | 3rd yr | **Clinical Nutrition**<br>Lancaster<br>Others: Hill's | (2) II. A focus on practical aspects of nutrition as it relates to performance, health and animal well-being of food-producing animals and, programs designed for health and well-being of small animals including exotic animals. Nutritional aspects of the mechanisms of health and disease are taught primarily at the individual and population level with some molecular and cellular aspects included. Designed for all students to be able to properly nourish animals in their care during their career. Pr.: Third-year standing in the College of Veterinary Medicine or graduate student. | Lancaster |
| VCS 878 /D | 3/G | Spring | 3rd yr | **Veterinary Surgery II**<br>Apley, W. Beard, Hodgson, Mason, Miesner, Santschi | (3) II. A continuation of Veterinary Surgery I. Introduction to the basics of veterinary anesthesia, surgical techniques, and patient management by a systems design. Problems common to all species of domestic animals will be presented to provide foundations of surgical knowledge and experience. Three hours lec. | W. Beard |
| VCS 879 /D | 1/G | Spring | 3rd yr | **Veterinary Surgery II Laboratory**<br>W. Beard | (2) II, A continuation of Veterinary Surgery I Lab. Introduction to the basics of veterinary anesthesia, surgical techniques, and patient management by a systems design. Problems common to all species of domestic animals will be presented to provide foundations of surgical knowledge and experience. Pr. Concurrent with or successful completion of VCS 878. | W. Beard |
| VCS 880 /D | 1/G | Spring | 3rd yr | **Veterinary Business and Professional Development**<br>Kaufman<br>Other: S Lutter | (1) II. This course provides a foundation in business management and marketing to prepare veterinary students for success in private veterinary practice. Lectures include personal marketing, business organizational structure, gauging and monitoring production, management practice finance, recruitment, personnel management, effective practice marketing (internal and external), achieving better client satisfaction and retention, and the road to practice ownership. Pr.: Third-year standing in the College of Veterinary Medicine or consent of instructor. | Kaufman |
| VCS 881 /D | 2/G | Spring | 3rd yr | **Clinical Pharmacology** | (2) II. Course focuses on the clinical application of drugs in veterinary species. Clinical pharmacologists and clinicians from multiple clinical specialties will focus on commonly used drugs. Students will be expected to review and build upon their previous pharmacology and medicine courses. Emphasis will be placed on administration (including routes, dosing calculations, and methods), avoiding adverse drug reactions and interactions, evaluating patient response, written and verbal client communication, and utilizing | Apley |

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| | | | | | reference resources to select and properly use veterinary therapeutics. Pr.: Third-year standing in College of Veterinary Medicine. | |
| VCS 882 /D | 3/G | Spring | 3rd Yr | **Medicine III** L. Beard, Blevins, Davis, Delph, A Rankin, Meekins | (3) II. A study of the etiology, clinical signs, diagnosis, treatment, and control of common diseases which affect horses. Three hours lecture a week. Pr.: VCS 860. | Davis |
| VCS 891 | .5-3/G | All | 1st – 3rd yr | **CS Veterinary Medicine Elective - Graded** (Various Faculty) | (1-3) I, II. Special topics for veterinary students in the disciplines offered by the department. Lecture or combination lecture with lab. Pr: 1st, 2nd, or 3rd year students in Veterinary Medicine | Davis |
| Topic - A | 1/G | Fall | 1st, 2nd yr | **Shelter Basics: Medicine and Management** | (1) I. This course will acquaint students with the problems associated with overpopulation and the role that veterinarians can play in improving the care of shelter animals. Topics will include population management, infectious disease recognition and control, common HQHVSN techniques, behavioral evaluation and modification, ASV standards of care and much more. Pr: 1st or 2nd year students in Veterinary Medicine | Crauer |
| Topic – B,E | 1/G | Fall | 1st, 2nd yr | **Business Principles of a Veterinary Practice** | (1) I. The course will examine the leadership, management and financial skills necessary to achieve career satisfaction. The material will be taught through lectures, readings and discussions, and group projects. Students will be exposed to concepts including: Emotional Intelligence, assessment of personal strengths and weaknesses, financial metrics and benchmarking, and development and execution of business strategy. Students will learn through group case studies which will help to develop their abilities to identify management problems and offer collaborative solutions. Pr. 1st or 2nd year standing in the College of Veterinary Medicine | Kaufman |
| Topic - C | 1/G | Fall, Spring | 2nd, 3rd yr | **Applied Animal Behavior** | (1) I, II. Introduction to the commonly encountered canine and feline behavior topics in veterinary medicine. Students will learn how to address these behavioral concerns through behavior modification, desensitization, counter conditioning, and psychopharmacology An additional goal of the course is to discuss practices that reduce fear I these patients during visits to their veterinarian. Pr: 2nd, or 3rd year student standing in the College of Veterinary Medicine. | Nelson |

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| Topic - D | 1/G | Fall, Spring | 1st, 2nd, 3rd yr | **Equine Podiatry** | (1) I, II. This course will teach normal foot anatomy, abnormal foot anatomy, and a working knowledge of the techniques used to correct abnormal foot anatomy. Anatomy and pathologic conditions will be taught by a combination of lectures, autotutorials, and live animal instruction. The student will also learn to safely work on horses feet, properly trim horses' feet, use hoof knives by laboratory sessions devoted to developing these manual skills. The hands on instruction will be provided by veterinarians, experienced farriers, and Veterinarians that specialize in podiatry The student will also become conversant in commonly accepted terminology to be able effectively communicate with farriers. Farrier work is physically demanding. Those wishing to enroll should possess the strength and stamina to hold up and work on horse feet for laboratories lasting up to 4 hours. Pr: 1st, 2nd or 3rd year student standing in the College of Veterinary Medicine | W Beard |
| Topic - F | 1/G | Spring | 2nd yr | **Basic Emergency Medicine and Critical Care** | (1) II. Students will learn evaluation and triage of the critical/trauma patient, principles of fluid therapy, Acid-Base analysis, oxygenation and oxygen therapy, principles of transfusion therapy, cardiopulmonary resuscitation. The laboratory will be a 4-hour shift in the Veterinary Health Center Intensive Care unit where the students will be exposed to basic skills and protocols in the ICU. Pr: 2nd year students in Veterinary Medicine | McMurphy |
| Topic – G,H | 1/G | Spring | 3rd yr | **Bovine Palpation Techniques and Reproductive Evaluation** | (1) II. In 7 two-hour sessions, students will be instructed through weekly lecture and hands-on labs covering bovine rectal palpation techniques as well as evaluation and manipulation of the female reproductive tract. The labs will utilize teaching models, harvested reproductive tracts, and when available live animals. Objectives of the course will be to provide students with the basic knowledge in reproductive tract scoring, identifying and manipulating ovarian structures, palpating open reproductive tracts, pregnancy diagnosis, fetal aging, obstetrics, and utilization of ultrasound. Pre: 3rd year standing in the College of Veterinary Medicine | Wagner |
| Topic - J | 1/G | Spring | 3rd yr | **Advanced Zoological/Wildlife Medicine** | (1) I. Lectures on the diseases/pathology, medicine, immobilization procedures, and captive management of a variety of zoo/wild animals. Includes 2 Saturday morning labs (2-3 hr each) and a 1-day Saturday field trip to the Rolling Hills Zoo (Salina) to participate in veterinary procedures and rounds. Individual mentoring of students will also be offered.<br>Pr. 3rd year standing in the College of Veterinary Medicine | Carpenter |
| Topic - K | 1/G | Summer | 2nd, 3rd yr | **Integrating Veterinary Medicine with Shelter Systems**<br>Crauer | (1)S. Understanding of the critical role played by veterinarians in protecting the health and welfare of sheltered dogs and cats, and develop population wellness and management practices that optimize their wellbeing and best outcomes. This course is divided into nine modules and each module includes interactive activities, readings, recordings, group discussions and assignments to deepen student understanding as well as assess achievement. By the end of this course students will be able to use the Association for Shelter Veterinarians Guidelines as a guide for the practice of veterinary medicine in a shelter | Crauer |

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| | | | | | environment, develop population wellness and management practices, respond to common health threats, animal welfare issues and animal abuse, understand recent trends, issues and epidemiology related to animal homelessness, apply key concepts crucial to the practice of shelter medicine (e.g., HQHVSN, One Health, Five Freedoms), use communication and leadership skills in interactions with shelter personnel and peers. Pr.: 2nd, 3rd year standing in the College of Veterinary Medicine. Recommended: VCS 891A Topics in Shelter Basics: Medicine and Management. | |
| Topic - L | 1/G | Spring | 1st, 2nd, 3rd yr | **Issues in Rural Practice**<br>White, Larson | (1) I. The goal of this course is to provide veterinary students information on current issues impacting success in rural veterinary practice. Emphasis will be placed on including topics relevant to rural veterinary practices and can include topics such as veterinary business management, rural community development, changes in agricultural trends, and business development. This course will include a variety of topics affecting rural veterinary practice and the format is a short didactic lecture each week followed by facilitated discussion with the students. Speakers will include KSU CVM faculty, KSU faculty from other departments, and experts from outside KSU. Each presentation will describe an issue impacting rural practice and be followed by a question/answer and discussion session among students and guest speaker. Pre: 1st, 2nd,3rd year standing in the College of Veterinary Medicine | White |
| Topics - M | 1/G | Summer | 2nd yr | **Rural Business Practice Skills**<br>White, Larson | (1)S. This course will use a discussion and didactic environment to promote student learning in areas promoting success in rural practice. Students will actively participate in the discussion with a variety of speakers including Kansas State University faculty and experts from outside of KSU. Pr.: 2nd year standing in the College of Veterinary Medicine | White |
| Topics - N | 1/G | Fall | 3rd Yr | **Topics in Emergency Medicine**<br>McMurphy (25 student max.) | (1) I. Presentations of cases in the ICU or cases that were recently seen on emergency. Current literature that is relevant to the case will be discussed. Pr.: Third-year standing in the College of Veterinary Medicine and VCS 891 K "Basic Concepts in Emergency and Critical Care Medicine". | McMurphy |
| Topics - O | 1/G | Spring | 3rd yr | **Advanced Exotic Pet Medicine**<br>Carpenter, Eshar | (1) II. Advanced study of the diseases, medicine, and captive management of non-traditional species including companion birds, reptiles, rabbits, ferrets, and rodents; and an introduction to zoo animal and wildlife medicine. Pr.: Third-year standing in the College of Veterinary Medicine. | Eshar |
| Topics - P | 1/G | Fall, Spring | 1st, 2nd or 3rd yr | **The Basics of Bovine Theriogenology**<br>Elmore | (1) I, II. This class is designed to provide students enrolled in the veterinary curriculum a very practical knowledge base regarding bovine reproduction. Pr.: First, second or third year standing in the College of Veterinary Medicine. | Elmore |

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| Topics - Q | 1/G | Spring | 3rd yr | **Equine Medicine Elective**<br>L. Beard, Davis | (1) II. This course is designed to be complementary to CS 710. The material presented in this class will focus on diagnostic procedures and case presentations that will not be covered in the core curriculum. Pr.: Third-year standing in College of Veterinary Medicine. | L. Beard/Davis |
| Topics - R | 1/G | Fall | 1st, 2nd or 3rd yr | **The Learning Curve of Equine Practice**<br>L. Beard, Davis, Rush | (1) I. Elective will cover various aspects of equine practice, not usually covered in traditional didactic lectures. Topics include equine husbandry, communication issues and insurance, horse colors, genetics, and genetic related diseases, aspects of equine practice and practice management, drug and medication rules for performance horses, and preventative medicine. Pr.: 2nd or 3rd year standing in the College of Veterinary Medicine. | L. Beard |
| Topics - S | 1/G | Fall | 3rd yr | **Pain Management**<br>McMurphy | (1) I. Course will discuss mechanisms of pain and certain pain syndromes and the drugs and techniques available to provide analgesia. Pr.: Third-year standing in the College of Veterinary Medicine. | McMurphy |
| Topics – T,U | 1/G | Spring | CS 721, Surgery I Lab and 3rd year standing | **Surgical Skills**<br>W. Beard | (1) II. Manual surgical skills will be taught using surgical models and cadaver tissues. Students will be taught the following skills and techniques: instrument handling, speed and efficiency, hand ties, ligature under tension, suture patterns, closure under tension, anastomosis and enterotomy technique and excision of circular lesions. PR.: VCS 864, Surgery I Laboratory and 3rd year standing in the College of Veterinary Medicine. | W. Beard |
| Topics - V | 1/G | Spring | CS 729 Veterinary Surgery I and third-year standing in the College of Veterinary Medicine | **Advanced Concepts in Veterinary Clinical Anesthesia** | (1) II. The lectures will be divided among topics to enhance student preparation for practical clinical application of anesthetic principles in both small and large animal environments. Topics: anesthetic implications for certain disease states, management of intraoperative complications, and special topics in large animal anesthesia. Pr: VCS 863 Veterinary Surgery I Lecture and third-year standing in the College of Veterinary Medicine | Mason |
| Topics - W | 2/G | Spring | 3rd-yr or grad stud | **Veterinary Management of Sheep and Goats** | (2) II. Course content is delivered both as online seminars via KSOL and case-based discussions and problem solving exercises in the classroom on herd management, preventative health care, nutrition, medicine, diseases, reproduction, and surgery of sheep and goats. Pr.: 3rd year standing in College of Veterinary Medicine or graduate student on the Manhattan campus of Kansas State University. | |
| Topics - X | 1/G | Spring | 3rd yr | **Beef Production Medicine**<br>Kleinhenz, Larson, Huser<br>**Other Team Teachers: Dritz** | (1) II. The role of the veterinarian in livestock production units, including interactions with producers, nutritionists, investors and others in decision analysis. Emphasis is on the professional services that veterinarians provide to beef production systems. Pr.: Third-year standing in the College of Veterinary Medicine. | Kleinhenz |
| VCS 892 | .5-3/CR | All | 1st – 3rd yr | **CS Veterinary Medicine Elective – Credit/No Credit** | (1-3) I, II. Special topics for veterinary students in the disciplines offered by the department. Lecture or combination lecture with lab. | Davis |

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| | | | | (Various Faculty) | Pr: 1st, 2nd, or 3rd year students in Veterinary Medicine | |
| Topics - A | 1/CR | Spring | Satisfactory completion of all 2nd yr veterinary courses | **Equine Lameness I**<br>Santschi | (1) II. Lectures will cover common causes of lameness emphasizing specific portions of the lameness exam providing the foundation for diagnosis and treatment of specific equine musculoskeletal diseases. Students will perform lameness exams including diagnostic imaging to correctly diagnose the "unknown lameness" and prescribe appropriate therapeutic options. 12 lectures, 3 labs. Pr: Satisfactory completion of all required second year veterinary courses. | Santschi |
| Topics - B | 1/CR | All | 1st, 2nd and 3rd yr | **Pre-Clinical Food Animal (Mixed) Practice Mentorship** | (1) I,II,S. Structured one week (45 contact hrs) mentorship in a large animal (bovine) practice designed to promote clinical skills training in a private practice setting with practitioners who have expressed an interest in training and mentoring veterinary students. Pr.: First, second, or third year standing in the College of Veterinary Medicine. | Elmore |
| Topics - C | 1/CR | All | 1st, 2nd and 3rd yr | **Pre-Clinical Small Animal Practice Mentorship** | (1) I,II,S. Structured one week (45 contact hrs) mentorship in a small animal practice designed to promote clinical skills training in a private practice setting with practitioners who have expressed an interest in training and mentoring veterinary students. Pr.: First, second, or third year standing in the College of Veterinary Medicine. | Elmore |
| Topics - D | 1/CR | All | 1st, 2nd and 3rd year | **Pre-Clinical Non-Traditional Practice Mentorship** | (1) I,II,S. Structured one week (45contact hrs) mentorship in a nontraditional veterinary setting designed to promote skills training and awareness of nontraditional or exclusive practice experiences in a private or public practice setting with veterinarians who expressed an interest in training and mentoring veterinary students. Pr.: First, second, or third year standing in the College of Veterinary Medicine. | Elmore |
| Topics - E | 1/CR | Fall, Spring | 1st, 2nd or 3rd yr | **Practicing Veterinary Medicine in a Multicultural Society**<br>Elmore | (1) I, II. Diversity in the broadest sense of the word (cultural, racial, sexual, gender, age, religious, etc.) will be explored in the context of the practice of veterinary medicine. Understanding diversity issues can positively affect the bottom line of nearly every veterinary practice. Pr.: First, second or third year standing in the College of Veterinary Medicine. | Elmore |
| Topics - F | 1/CR | Fall | CS715 Radiology, 3rd yr standing | **Veterinary Ultrasonography** | (1) I. Course content will be delivered both as online seminars via KSOL and case-based discussions. The physics, principles of use, and common artifacts of ultrasound will be covered as it relates to veterinary diagnostic imaging. Ultrasound imaging of the thorax (non-cardiac), abdomen, musculoskeletal system, and other areas (eye, thyroid/parathyroid) will be covered, predominantly in small animals. The course will cover both normal and pathologic ultrasound findings. Pr: VCS 845 Radiology, 3rd year standing in the College of Veterinary Medicine or graduate student on the Manhattan campus of Kansas State University. | |

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| Topics – G | 1/CR | Spring | 1st or 2nd yr or Grad Student | **Disaster Response – ICS Deployment Certification**<br>Crauer | (1) II. This course will be a combination of lecture classes and online certification modules. The in-person lecture classes will introduce students to disaster response as it relates to animals and the role of veterinarians. Successful completion of the online modules will result in students being certified for disaster response deployment. Pr: 1st or 2nd year standing in the College of Veterinary Medicine or Graduate Student | Crauer |
| Topics – H | 1/CR | Fall | 3rd yr | **Introduction to Small Animal Dentistry**<br>Artzer, Kaufman | (1) I. Students will be instructed through weekly lectures or hands-on cadaver labs. Lecture topics will include dental anatomy, disease, diagnostics and treatments. Cadaver labs will include acquiring and interrupting dental radiographs, dental regional nerve blocks and tooth extractions. Pr: 3rd year standing in the College of Veterinary Medicine | Artzer |
| VCS 900 /C | 3/G-IH | All 3 week rotations | 4th yr | **Veterinary Diagnostic Imaging I**<br>Biller, Cassel, M Hallman | (3) I, II, S. Radiographic, ultrasonographic, and nuclear imaging in the clinical setting, with emphasis on making/identifying images of diagnostic quality, interpretation, indications for imaging, and radiation safety. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Biller |
| VCS 901 /C | 1-6/CR | All | 4th yr | **Clinical Externship/Programmed Study**<br>(including Amer. Royal) | (1-6) I, II, S. Provides the professional student with the opportunity to study with specialists not available at Kansas State University or in unique areas of veterinary medical practice or research. Pr.: Fourth-year standing in the College of Veterinary Medicine and the approval of the externship or program of study by the course coordinator. | Davis |
| VCS 903 /C | 2/G-IH | 2 week rotations<br><br>2A, 2C, 3A, 4B, 5C, 6A, 7A, 8A, 8C and 9A | 4th yr | **Laboratory Animal Medicine**<br>Olson | (2) I, II, S. The study of laboratory animal medicine or comparative medicine to include colony health monitoring, preventive medicine, surgery, investigator support, and regulatory oversight. Pr.: VDMP 891 – Topics in Laboratory Animal Sciences or requires coordinator approval. Fourth-year standing in the College of Veterinary Medicine. | Davis |
| VCS 904 /C | 3/G-IH | All 3 week rotations | 4th yr | **Clinical Anesthesia**<br>Hodgson, Mason, McMurphy, D. Rankin | (3) I, II, S. Practical instruction in the skills and techniques used in the practice of clinical veterinary anesthesia of both large and small animals. May be repeated once. Pr.: Fourth-year standing in the College of Veterinary Medicine. | McMurphy |
| VCS 905 /C | 3/G-IH | All 3 week rotations | 4th yr | **Exotic Animal, Wildlife, and Zoo Animal Medicine**<br>Carpenter, Eshar, Gardhouse | (3) I, II, S. Study of exotic, wildlife, and zoo animal medicine through participation in the clinical service in the Veterinary Medical Teaching Hospital. Problem solving, differential diagnosis, diagnostic procedures, and medical and surgical therapy of non-domestic animals will be emphasized. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Eshar |

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| VCS 906 /C | 2/G-IH | All 2 week rotations | 4th yr | **Ophthalmology**<br>A. Rankin, Meekins | (2) I, II, S. The study of the surgery and medical diagnosis and treatment of ocular disease in animals in the setting of the veterinary medical hospital. Problem solving, differential diagnosis, diagnostic procedures, and medical and surgical therapy will be emphasized using veterinary patients. Pr.: Fourth-year standing in the College of Veterinary Medicine. | A. Rankin |
| VCS 910 /C | 2/G-IH | All 2 week rotations | 4th yr | **Livestock Local Practice**<br>Huser, Wagner, Weaver | (2) I, II, S. A study of the role of the veterinarian in the practice of clinical medicine in livestock production units. Students will work under faculty supervision in ambulatory and local practice settings. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Miesner |
| VCS 912 /C | 2/G-IH | All 2 week rotations | 4th yr | **Livestock Medicine & Surgery**<br>Meisner, Reppert | (2) I, II, S. A study of individual livestock medicine and surgery. Students will work under faculty supervision in an in-house setting. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Miesner |
| VCS 913 /D | 2/G-IH | Summer, Fall<br><br>Offered 2A & 5A | 4th yr | **Advanced Feedlot Production Management**<br>Apley | (2) I, S. Students desiring feedlot/stocker production training. Focus on effects of nutrition, preventative medicine, environment, personnel training and other issues on the health of growing/finishing cattle. | Apley |
| VCS 915 /D | 2/G-IH | Spring, Summer<br><br>Offered 1C & 8B | 4th yr | **Advanced Cow-Calf Production Management**<br>Larson, White | (2) II, S. For students desiring in-depth cow-calf production training including management and assessment of production data, nutrition and ration balancing, reproductive strategies, quality assurance and economic and Standardized Performance Analysis of cow-calf enterprises. | White |
| VCS 917 /D | 1/G-IH | Spring, Fall | 4th yr | **Advanced Rural Food Animal Business Management** | (1). II. An elective course that incorporates economic and food animal practice management skills. Course will focus on business aspects of agricultural industries and skills to manage a food animal practice. Pr.: Fourth-year standing in College of Veterinary Medicine. | White |
| VCS 919 /C | 2/G-IH | Fall, Spring | 4th yr | **Food Animal Reproduction**<br>Larson, Huser | (2) I, II. Students will get hands-on experience and become competent performing a complete Breeding Soundness Exam. Other reproductive topics will be covered. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Huser |
| VCS 920 /C | 2/G-IH | All 2 week rotations | 4th yr | **Equine Medicine**<br>L. Beard, Delph | (2) I, II, S. This course will offer general exposure to equine internal medicine and theriogenology. Students will be responsible for diagnoses, treatment and nursing care of out-patients, in-patients and emergency duties. Pr.: Fourth-year standing in the College of Veterinary Medicine. | L. Beard |

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| VCS 921 /C | 2/G-IH | Spring, Summer<br><br>Offered only 1A, 1B, 1C, 8C, 9A and 9B | 4th yr | **Clinical Equine Theriogenology**<br>Grady | (2) II, S. Students will participate in routine procedures that develop skills in handling horses, rectal exams, ultrasonography, semen collection, artificial insemination, uterine therapies and minor surgical procedures. Pr.: Fourth-year standing in College of Veterinary Medicine. | Grady |
| VCS 922 /C | 2/G-IH | All 2 week rotations | 4th yr | **Equine Surgery**<br>W. Beard, Santschi, Lutter | (2) I, II, S. This course will offer general exposure to equine surgery and theriogenology. Students will be responsible for diagnoses, treatment and nursing care of out-patients, in-patients, and emergency duties. Pr.: Fourth-year standing in the College of Veterinary Medicine. | L. Beard |
| VCS 923 /C | 4/G-IH | Fall<br><br>4A/4B | 4th yr | **Advanced Equine Studies**<br>All equine faculty | (4) I. Students will have opportunities for routine and advanced clinical skills training and case management. Course discussions and case presentations will be targeted for the equine interested student and will therefore present advanced material; case discussion and rounds materials will differ from core rotations at other times of the year. Pr.: Fourth-year standing in the College of Veterinary Medicine. | L. Beard |
| VCS 924 /C | 2/G-IH | All 2 week rotations | 4th yr | **Equine Field Service**<br>C. Blevins, Grady | (2) I, II, S. This course will offer general exposure to equine field service and theriogenology. Students will be responsible for diagnoses, treatment and nursing care of out-patients, in-patients, and emergency duties. Pr.: Fourth-year standing in the College of Veterinary Medicine. | L. Beard |
| VCS 925 /C | 2/G-IH | All 2 week rotations | 4th yr | **Supplemental Equine Studies**<br>L. Beard, W. Beard, C. Blevins, Santschi, Delph | (2) I, II, S. An opportunity to pursue additional equine studies (medicine, surgery, etc.) in depth and assume substantial responsibility for care of hospitalized cases. Or students have the option to conduct research and present a seminar on a medicine or surgical subspecialty and pursue a special problem. Pr.: Fourth-year standing in the College of Veterinary Medicine. | L. Beard |
| VCS 930 /C | 3/G-IH | All 3 week rotations | 4th yr | **Small Animal Internal Medicine**<br>Harkin, Schermerhorn, Jugan, Whitehouse | (3) I, II, S. The study of internal medicine in the setting of the Veterinary Medical Teaching Hospital. Students will be engaged in the diagnosis and management of complex cases referred to the internal medicine service. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Harkin |
| VCS 931 /C | 2/G-IH | All 2 week rotations | 4th yr | **Clinical Oncology**<br>Higginbotham, Wouda, Azuma, Hocker | (2) I, II, S. The approach to diagnosis and treatment of cancer-bearing patients will be emphasized. Skills to master include fine needle aspirates and basic cytology, biopsy techniques (punch, wedge, pinch and tru-cut), bone marrow aspirate and core biopsy procedures and chemotherapy administration. A greater depth of understanding of the biologic behavior and treatment options of commonly seen tumor types (lymphoma, mast cell tumors, hemangiosarcoma, osteosarcoma, etc.) and chemotherapy safety will be emphasized. Medical management of | Higginbotham |

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| | | | | | cancer-related problems as well as treatment of therapy-induced side effects will also be covered. Pr.: Fourth-year standing in the College of Veterinary Medicine. | |
| VCS 932 /C | 3/G-IH | All 3 week rotations | 4th yr | **Small Animal General Medicine** Artzer, Boyer, Nelson, Kaufman | (3) I, II, S. The study of preventative medicine, general practice medicine, and specialty medicine. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Harkin |
| VCS 933 /C | 3/G-IH | All 3 week except 2D, 4D, 6E, 9A and 9B<br><br>Derm is 3 weeks in duration but only meets Tu, W, Th | 4th yr | **Dermatology / Medicine** Bagladi | (2) I, II, S. Designed to emphasize dermatology diagnostic work-up and management of dermatologic cases. May include proper techniques for performing procedures such as skin scrapings, bacterial and fungal culturing, performing cytology, obtaining skin biopsies, ear cleaning and trichography. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Bagladi |
| VCS 934 /C | 3/G-IH | All 3 week rotations | 4th yr | **Clinical Small Animal Soft Tissue Surgery** E. Klocke, Renberg, Roush, Berke, D Upchurch | (3) I, II, S. This course is designed to train senior or elective veterinary students in the diagnosis and treatment of small animal soft tissue and general surgical diseases through participation in the Small Animal Soft Tissue Service of the Veterinary Medical Teaching Hospital. Pr.: Fourth-year standing in the KSU College of Veterinary Medicine. | Renberg |
| VCS 935 /C | 2/G-IH | All 2 week rotations except 1C | 4th yr | **Comparative Cardiology** J. Thomason | (2) I, II, S. Designed to expose students to the cardiovascular system of domestic animals, emphasizing clinical management and understanding of common congenital and acquired cardiac diseases. Pr.: Fourth-year standing in the College of Veterinary Medicine. | J. Thomason |
| VCS 936 /C | 3/G-IH | All 3 week rotations | 4th yr | **Clinical Small Animal Orthopedic Surgery** Renberg, Roush, Berke | (3) I, II, S. Course is designed to train senior or elective veterinary students in diagnosis/treatment of small animal orthopedic surgical diseases through the Orthopedic Service of the Veterinary Medical Teaching Hospital. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Renberg |
| VCS 937 /C | 2/G-IH | All 2 week rotations | 4th yr | **Shelter Medicine** Crauer | (2) I, II, S. The rotation wil be a combination of in-class and laboratory exercises in Manhattan, and hands-on experience at regional shelters. Topics include population medicine, infectious disease recognition and control, surgical sterilization, behavioral testing, and legal issues common to shleter settings. Pr: Fourth-year standing in the College of Veterinary Medicine | Crauer |
| VCS 938 /C | 1/G-IH | All | 4th Yr | **General Dentistry** Artzer, Kaufman, Winter | (1)I, II, S. Skills and concepts common to general dentistry practice in the feline and canine, pre-operative exams, day-long wet lab to take and interpret digital intraoral radiographs, extract teeth, and | Artzer |

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| | | | | | perform dental nerve blocks. Also may participate in the evaluation, diagnosis, and treatment of primary care patients. Pr.: 4th-year standing in College of Veterinary Medicine. | |
| VCS 939 /C | 3/G-IH | All 3 week rotations | 4th yr | **Supplemental Clinical Small Animal Soft Tissue Surgery**<br>E. Klocke, Renberg, Roush, Berke, D. Upchurch | (3) I, II, S. Additional training in the diagnosis and treatment of small animal soft tissue and general surgical diseases through participation in the Small Animal Soft Tissue Service of the Veterinary Medical Teaching Hospital. Pr.: Fourth-year standing in the KSU College of Veterinary Medicine. | Renberg |
| VCS 940 /C | 2/G-IH | All 2 week rotations | 4th yr | **Small Animal Emergency**<br>Durbin, O | (2) I, II, S. Enhanced training in the management of small animal patients presented to the emergency service. Evaluation, management, and monitoring of small animal patients in the intensive care unit. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Durbin |
| VCS 941 /C | 3/G-IH | All 3 week rotations | 4th yr | **Supplemental Small Animal Internal Medicine**<br>Harkin, Schermerhorn, Jugan, Whitehouse | (3) I, II, S. Additional topics in internal medicine. The student may be required to participate in a special problem with a written or oral report. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Harkin |
| VCS 942 /D | 2/G-IH | Fall, Spring | 4th yr | **Advanced Surgical Experience**<br>Klocke, Berke, D. Upchurch | (2) I, II, S. Designed to increase exposure to soft tissue surgical theories and techniques by providing both hands on surgical experience on cadavers and literature review skills. Pr: Fourth-year standing in the College of Veterinary Medicine; ~~VCS 934~~ | Klocke |
| VCS 943 /C | 3/G-IH | All 3 week rotations | 4th yr | **Supplemental Clinical Small Animal Orthopedic Surgery**<br>Renberg, Roush, Berke | (3) I, II, S. Additional training in the diagnosis and treatment of small animal orthopedic surgical diseases through participation in the Small Animal Orthopedic Service of the Veterinary Medical Teaching Hospital. Pr.: Fourth-year standing in the KSU College of Veterinary Medicine. | Renberg |
| VCS 944 /C | 2/G-IH | All 2 week rotations | 4th yr | **Supplemental Small Animal Emergency**<br>Durbin, O | (2) I, II, S. An opportunity to pursue additional training in the management of small animal patients presented to the emergency services. Evaluation, management, and monitoring of small animal patients in the intensive care unit. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Durbin |
| VCS 945 /C | 1/G-IH | Summer, Fall, Spring | 4th yr | **Supplementary Dentistry for Small Animals**<br>Artzer, Kaufman | (1)I,II. A one week course where students will be instructed through lecture, cadaver labs, and live animal care. Topics covered will include dental evaluation techniques, instrumentation, dental radiography, tooth extraction techniques and regional anesthesia. Objectives of the course will be to provide 4th year students with additional training of basic dentistry knowledge and experience performing oral exams, dental probing, scaling, polishing, radiographs and tooth extractions. Pr.: Fourth-year standing in the College of Veterinary Medicine and successful completion of VCS 938 General Dentistry. | Artzer |

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| VCS 946 /C | 1/G-IH | Fall, Summer, Spring | CS 781, Shelter Medcine and 4th year standing | **Shelter Operations Consultation** Crauer | (1) I. II. S. This rotation will expose veterinary students to formal shelter consultation procedures. Students will learn how to take a critical look at the health of animal shelters to identify what is being done well and what needs to be improved. Students will also learn how to formulate recommendations in a way that does not overwhelm the administration of the shelters and can easily be implemented in a stepwise fashion. PR.: VCS 937, Shelter Medicine and 4th year standing in the College of Veterinary Medicine. | Crauer |
| VCS 947 /D | 2/G-IH | Fall | 4th yr | **Advanced Bovine Palpation** | (2) I. Provide numerous opportunities for the student to learn how to identify the different structures of the bovine reproductive tract through rectal palpation and transrectal ultrasound, accurately diagnose pregnancy both manually and via ultrasonography, and to identify various bovine reproductive abnormalities. Pre: 4th Year Standing in the College of Veterinary Medicine. Recommended: VCS 891 G 3rd year Bovine Palpation Technique & Reproductive Evaluation Elective is strongly encouraged and preference given to those who have taken VCS 891 for scheduling. | Huser |
| VCS 948 /C | 3/G-IH | All 3 week rotations | 4th yr | **Supplemental Small Animal General Medicine** Artzer, Boyer, Nelson, Kaufman | (3) I, II, S. Additional training in preventative medicine, general practice medicine, and specialty medicine. Pr: Fourth-year standing in the College of Veterinary Medicine | Harkin |
| VCS 950 /Var | 1-9/G | All | 4th yr | **Problems in Medicine or Surgery** | (1-9) I, II, S. The course provides for the study of medical or surgical problems. The student, in conference with the major professor, outlines the methodology and procedures, conducts the study, and prepares a detailed report. Pr.: Fourth-year standing in the College of Veterinary Medicine. | Davis |

**Courses that are Cross-listed as both VCS and CS** (Given for VM credit for veterinary students and graduate credit with the permission of the instructor for graduate students.) Faculty Senate approves these courses.

| # / Type | Credits/ | Offered | Standing | Course | Catalog Description | Coordinator |
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| | Grading | | | | | |
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| VCS 820 /D<br><br>Crosslisted<br><br>CS 820 | 1/G | Spring | 1st, 2nd yr. or Grad student w/ instructor permission | **Topics in Global Veterinary Medicine**<br>Renberg | (1) II. An overview of the role of veterinarians around the world. Topics include international uses and attitudes about animals, problems the world faces pertaining to livestock production, and social tensions. One hour lecture each week. Pr.: 1st or 2nd year standing in the College of Veterinary Medicine, or enrolled as a graduate student with instructor permission. | Renberg |
| VCS 821<br><br>Crosslisted<br><br>CS 821 | 1-4/CR | All | 1st, 2nd, 3rd or Grad | **International Veterinary Study Tours**<br>Various Faculty<br><br>[Distance course coordinated through OIP: Office of Internat'l Programs] | (1-4) I, II, S. Faculty-led trip for students to explore veterinary medicine in a foreign country. Prior to travel, students will learn about the country through lectures, research, presentations. During the trip they will interact with nationals in the veterinary profession and experience the culture. Pr.: Enrolled as a 1st-3rd year or grad student in the College of Vet Med. Additional students admitted with discretion of faculty leading the tour. | Renberg |
| VCS 822 /D<br><br>Crosslisted<br><br>CS 822 | 1/G-IH | Fall | 1st,2nd, 3rd or Grad | **Introduction to Sustainable Beef Systems**<br><br>Lancaster, Dollarhide | The goal of this course is to provide veterinary students with an understanding of sustainability in beef systems. The course will focus on beef cattle production practices, principles of sustainable food systems, systems thinking, and impacts of food choices. It will include topics on US Roundtable for Sustainable Beef self-assessment guides, impact of management practices on sustainability, impact of beef industry on the economy, and beef's role in human dietary. It will include guest lectures and field trips for students to learn from those in the field. A large emphasis will be placed on systems thinking (i.e., how one change affects other aspects of the system). Pr.: 1st, 2nd, or 3rd Year Stand in the College of Veterinary Medicine or Graduate School Standing | Lancaster |
| VCS 840<br><br>Crosslisted<br><br>CS 840 | 2/CR | Spring | 2nd/3rd yr standing or Grad Student | **Communication with the Agricultural Worker**<br>White | (2) II. An elective course focused on improving the communications between veterinarians and animal caretakers in production agriculture and equine industries. The course will use face to face discussions and online seminars in KSOL to teach communications skills with a focus on common terminology and vocabulary necessary for effective communication. Audio-visual teaching utilizing immersion philosophy is utilized to provide the material course work. PR.: 2nd or 3rd year standing in the College of Veterinary Medicine or graduate student. | White |
| VCS 862 /D<br><br>Crosslisted<br><br>CS862 | 3/G | Fall | 3rd yr | **Theriogenology**<br>Larson, Grady | (3) I. Consideration of prevention, diagnosis, and treatment of disease, and maintenance of health and productivity of the genital tract of domestic species. Three hours of lecture a week Pr.: Third-year standing in College of Veterinary Medicine or graduate student. | Larson |
| VCS 877 /D<br><br>Crosslisted | 2/G | Spring | 3rd yr | **Clinical Nutrition**<br>Lancaster<br>Others: Hill's | (2) II. A focus on practical aspects of nutrition as it relates to performance, health and animal well-being of food-producing animals and, programs designed for health and well-being of small animals including exotic animals. Nutritional aspects of the | Lancaster |

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| CS877 | | | | | mechanisms of health and disease are taught primarily at the individual and population level with some molecular and cellular aspects included. Designed for all students to be able to properly nourish animals in their care during their career. Pr.: Third-year standing in the College of Veterinary Medicine or graduate student. | |

## GRADUATE COURSES 800-899 (Given for graduate credit only)

| # / Type | Credits/ Grading | Offered | Standing | Course | Catalog Description | Coordinator |
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| CS 820 /D<br>Crosslisted<br>VCS 820 | 1/G | Spring | 1st, 2nd yr. or Grad student w/ instructor permission | **Topics in Global Veterinary Medicine**<br>Renberg | (1) II. An overview of the role of veterinarians around the world. Topics include international uses and attitudes about animals, problems the world faces pertaining to livestock production, and social tensions. One hour lecture each week. Pr.: 1st or 2nd year standing in the College of Veterinary Medicine, or enrolled as a graduate student with instructor permission. | Renberg |
| CS 821<br>Crosslisted<br>VCS 821 | 1-4/CR | All | 1st, 2nd, 3rd or Grad | **International Veterinary Study Tours**<br>Various Faculty<br>[Distance course coordinated through OIP: Office of Internat'l Programs] | (1-4) I, II, S. Faculty-led trip for students to explore veterinary medicine in a foreign country. Prior to travel, students will learn about the country through lectures, research, presentations. During the trip they will interact with nationals in the veterinary profession and experience the culture. Pr.: Enrolled as a 1st-3rd year or grad student in the College of Vet Med. Additional students admitted with discretion of faculty leading the tour. | Renberg |
| CS 822 /D<br>Crosslisted<br>VCS 822 | 1/G-IH | Fall | 1st,2nd, 3rd or Grad | **Introduction to Sustainable Beef Systems**<br>Lancaster, Dollarhide | The goal of this course is to provide veterinary students with an understanding of sustainability in beef systems. The course will focus on beef cattle production practices, principles of sustainable food systems, systems thinking, and impacts of food choices. It will include topics on US Roundtable for Sustainable Beef self-assessment guides, impact of management practices on sustainability, impact of beef industry on the economy, and beef's role in human dietary. It will include guest lectures and field trips for students to learn from those in the field. A large emphasis will be placed on systems thinking (i.e., how one change affects other aspects of the system). Pr.: 1st, 2nd, or 3rd Year Stand in the College of Veterinary Medicine or Graduate School Standing | Lancaster |
| CS 823 /O | 1/CR | Fall | Grad Student | **Advanced Diagnostic Imaging - Small Animal**<br>Biller | (1) I. Case presentation/discussion of diagnostic imaging techniques used in small animal veterinary practice, including radiography, ultrasonography, nuclear imaging, magnetic resonance imaging, and computer tomography. Clinical cases will demonstrate imaging methods and technology used in the various body systems, with an emphasis on interpretation and clinical diagnosis. Pr.: DVM degree. Students may re-enroll for a maximum of three credits. | Biller |
| CS 824 /D | 1/CR | Fall | DVM or consent | **Topics in Small Animal Internal Medicine I**<br>Harkin | (1) I. Various topics in small animal internal medicine will be presented. Different topics will be covered in various years at instructor's discretion. In depth discussion of pathophysiology and recent advances in diagnostics and therapeutics. Course may be repeated with approval of instructor. Pr.: DVM Degree | Harkin |

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| CS 825 /D | 1/G | Spring | DVM | **Topics in Small Animal Internal Medicine II** | (1) II. Various topics in small animal internal medicine will be presented. One topic will be covered in a one-hour conference weekly. In-depth discussion of pathophysiology and recent advances in diagnostics and therapeutics. Course may be repeated with approval of instructor. Pr.: DVM Degree | Harkin |
| CS 826 /D | 1/CR | Fall | DVM | **Introduction to Small Animal Endoscopy** Renberg | (1) I. Introduction to the fundamentals of small animal (canine and feline) endoscopy, including respiratory, gastrointestinal, endoscopy, laparoscopy, and arthroscopy. Thirteen lectures with 2 laboratories will be offered. Offered Fall Semester only. Pr.: DVM degree and approval from course coordinator. | |
| CS 827 | Var/CR | Fall, Spring | DVM or consent | **Advanced Topics in Small Animal Surgery** Renberg, Roush | (Var) I, II. Current and foundational information on techniques, theory, and management in small animal surgery. Pr.: DVM degree or approval of instructor. | Renberg |
| CS 828 /D | 2/G | Fall (every 3 years) | DVM | **Wound Healing** W. Beard | (2) I. Didactic lectures on the science of wound healing physiology and on the clinical application of wound healing principles. Laboratory sessions will be incorporated to cover the principles of reconstructive surgery. Pr.: DVM degree | W. Beard |
| CS 829 /D | 1/G | Fall, Spring | Grad Student | **Applied Production Medicine** Dritz, Larson, Renter, Sanderson, White | (1) I, II. Advanced training in agricultural production medicine research. Emphasis on answering production medicine problems through the appropriate design and interpretation of research models. Course is discussion-based and facilitated by a team of faculty members. Students will be expected to participate in weekly topic discussions. Pr.: Graduate Student. | White |
| CS 830 | 3/G | Spring | Grad Student | **Design and Interpretation of Clinical Trials** Larson, White | (3) II. Designing appropriate experimental studies to answer research that can be addresses in clinical and field settings, analyzing, interpreting and communicating the results in a suitable manner. | Larson |
| CS 831 | 3/G | Spring | Ophtho Resident at KSU VHC | **Veterinary Ophthalmic Surgery Techniques** A.Rankin | (3) II. Lectures will cover ophthalmic instruments and proper surgical techniques for commonly performed ophthalmic surgeries. Cadavers will be available to practice adnexal and corneal ophthalmic surgeries. Pr.: Ophthalmology resident at Kansas State University Veterinary Health Center. | A. Rankin |
| CS 833 | 2/GR | Spring – every 3 yrs | Grad Student | **Nephrology/Urology** | (1) II. Advanced studies about small animal nephrology/urology (various topics: Pathophysiology, clinical signs, differential diagnoses, diagnostic approach, and treatment consideration). Pr: DVM Degree and Graduate Student | |
| CS 834 | 1/CR | All | Sx Resident at KSU | **Surgical Pathophysiology I – Hematology, Anesthesia and Infection** | (1) I. II. S. Designed to expose small animal surgery residents to a standard curriculum set out by the American College of Veterinary | Roush |

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| | | | VHC and Grad Student | | Surgeons in preparation for the Phase I Surgery Qualification examination. Assigned textbook reading covers various topics: Hematology, Anesthesia and Infection. Meet for one hour weekly with faculty to guide the resident's self-study, answer questions, and correct deficiencies. Pr: Surgery resident at Kansas State University Veterinary Health Center and Graduate Student | |
| CS 835 | 1/CR | All | Sx Resident at KSU VHC and Grad Student | **Surgical Pathophysiology II – Analgesia and Wound Management** | (1) I. II. S. Designed to expose small animal surgery residents to a standard curriculum set out by the American College of Veterinary Surgeons in preparation for the Phase I Surgery Qualification examination. Assigned textbook reading covers various topics: Analgesia and Wound Management. Meet for one hour weekly with faculty to guide the resident's self-study, answer questions, and correct deficiencies. Pr: Surgery resident at Kansas State University Veterinary Health Center and Graduate Student | Roush |
| CS 836 | 1/CR | All | Sx Resident at KSU VHC and Grad Student | **Surgical Pathophysiology III – Soft Tissue Surgery** | (1) I. II. S. Designed to expose small animal surgery residents to a standard curriculum set out by the American College of Veterinary Surgeons in preparation for the Phase I Surgery Qualification examination. Assigned textbook reading covers Soft Tissue Surgery topics. Meet for one hour weekly with faculty to guide the resident's self-study, answer questions, and correct deficiencies. Pr: Surgery resident at Kansas State University Veterinary Health Center and Graduate Student | Roush |
| CS 837 | 1/CR | All | Sx Resident at KSU VHC and Grad Student | **Surgical Pathophysiology IV – Orthopedic and Neurosurgery** | (1) I. II. S. Designed to expose small animal surgery residents to a standard curriculum set out by the American College of Veterinary Surgeons in preparation for the Phase I Surgery Qualification examination. Assigned textbook reading covers various topics: Orthopedic and Neurosurgery. Meet for one hour weekly with faculty to guide the resident's self-study, answer questions, and correct deficiencies. Pr: Surgery resident at Kansas State University Veterinary Health Center and Graduate Student | Roush |
| CS 838 | 2/G | Spring - every 3 yrs | DVM Degree | **Advanced Small Animal Endocrinology** | (2) II. Advanced topics in small animal endocrinology. Emphasis on comparative aspects of endocrine gland disease and its clinical manifestations in dogs and cats. Primary literature, review articles, and advanced texts will be the principle source of information. Pr.: DVM Degree. | Schermerhorn |
| CS 840<br>Crosslisted<br>VCS 840 | 2/CR | Spring | 2nd/3rd yr standing or Grad Student | **Communication with the Agricultural Worker** White | (2) II. An elective course focused on improving the communications between veterinarians and animal caretakers in production agriculture and equine industries. The course will use face to face discussions and online seminars in KSOL to teach communications skills with a focus on common terminology and vocabulary necessary for effective communication. Audio-visual teaching utilizing immersion philosophy is utilized to provide the material course work. PR.: 2nd or 3rd year standing in the College of Veterinary Medicine or graduate student. | White |
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| CS 841 /O | 1/G | Spring, Fall | DVM and Grad Student | **Advanced Clinical Gastroenterology** Jugan | (1) II. Advanced study of gastrointestinal structure and function with discussions of material presented applicable to the general ACVIM board examinations. Assigned journal articles will cover literature references from sources on the ACVIM reading list, as well as general physiology taken from human literature. Pr: DVM degree and Kansas State University Graduate Student Standing | Jugan |
| CS 842 /O | 1/G | Spring, Fall | DVM and Grad Student | **Advanced Clinical Hepatology** Jugan | (1) II. Advanced study of hepatology with discussions of material presented applicable to the general ACVIM board examinations. Assigned journal articles will cover literature references from sources on the ACVIM reading list, as well as general physiology taken from human literature. Pr: DVM degree and Kansas State University Graduate Student Standing | Jugan |
| CS 850 /O | 1-6 /CR | All | Consent | **Research in Medicine** | (1-6) I, II, S. An attempted solution of some of the medical and parasitological problems confronting the practitioner of veterinary medicine. Pr.: Consent of staff. | Davis |
| CS 851 /D | 1-5/G | All | DVM or consent | **Breeding Diseases** | (1-5) I, II, S. Advanced studies of the breeding diseases of domestic animals. Pr.: DVM degree or consent of staff. | Davis |
| CS 852 /D | 3/G | Fall-Odd yrs | DVM or consent | **Interpretation of Radiology Studies of Body Systems** Biller | (3) I. Advanced discussions of radiologic interpretation, indications and interpretation of alternate imaging procedures (MRI, CT, nuclear medicine, ultrasound). Pr.: DVM degree or consent of department head prior to registration. | Biller |
| CS 854 /D | 1-3/G | All | DVM or consent | **Systemic Medicine I** | (1-3) I, II, S. Study of the medical aspects of diseases of the urinary, nervous, and integumentary systems, and special senses. Pr.: DVM degree or consent of department head. | Harkin |
| CS 855 /D | 1-3/G | Fall | DVM or consent | **Systemic Medicine II** | (1-3) I. Study of the medical aspects of diseases of the special senses, cardiovascular, respiratory, musculoskeletal, and endocrine systems. Pr.: DVM or consent of department head. | |
| CS 857 /O | 1/CR | Fall Spring | DVM or consent | **Clinical Interpretation of Equine Diagnostic Images** | (1) I, II. Graduate veterinary students will meet one hour weekly to review clinical equine images and review pertinent literature. Pr.: Graduate student in the College of Veterinary Medicine. | Santschi |
| CS 858 /O | 4/G | Spring, every 3rd yr – offered next in Spring 2016 | DVM or consent | **Orthopedic Surgery** Renberg, Roush | (4) II. Fundamentals, theory, and practice concerning genetic metabolic, infectious, neoplastic and traumatic diseases of bones and joints. Pr.: DVM degree or consent of department head. | Roush |

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| CS 859 /O | 1/G | Fall Spring | | **Clinical Sciences Seminar** All House Officers | **(1) I. II.** A required seminar for all house officers and graduate students in the Department of Surgery and Medicine. One-hour conference weekly. May re-enroll for a total maximum of two credits. | Renberg |
| CS 862 /D<br><br>Crosslisted<br><br>VCS862 | 3/G | Fall | 3rd yr | **Theriogenology** Larson, Grady | (3) I. Consideration of prevention, diagnosis, and treatment of disease, and maintenance of health and productivity of the genital tract of domestic species. Three hours of lecture a week Pr.: Third-year standing in College of Veterinary Medicine or graduate student. | Larson |
| CS 870 /C | 3/G | Summer | 2nd yr & 3.0 GPA | **Diagnostic Methods in Feedlot Management** Kennedy<br><br>This course is cross listed with the Diagnostic Medicine/Pathobiology (DMP 810) proposed course. | (3) S. Practical experience in feedlot operation and bovine necropsy diagnosis consisting of 40 hours in bovine necropsy and 320 hours of an on-location practicum in a cattle feedlot. Pr.: Successful completion of the first-year professional curriculum in the College of Veterinary Medicine with a cumulative GPA of 3.0 or better and no grade below a C. | |
| CS 877 /D<br><br>Crosslisted<br><br>VCS877 | 2/G | Spring | 3rd yr | **Clinical Nutrition** Lancaster Others: Hill's | (2) II. A focus on practical aspects of nutrition as it relates to performance, health and animal well-being of food-producing animals and, programs designed for health and well-being of small animals including exotic animals. Nutritional aspects of the mechanisms of health and disease are taught primarily at the individual and population level with some molecular and cellular aspects included. Designed for all students to be able to properly nourish animals in their care during their career. Pr.: Third-year standing in the College of Veterinary Medicine or graduate student. | Davis |
| CS 890 /O | Var/GR | All | Grad Student | **Clinical Science Problems** | (1-3) I, II, S. Advanced instruction in research topics and technologies, emphasizing various clinical disciplines. Pr.: DVM degree or dual degree student in the College of Veterinary Medicine. | Davis |
| CS 895 /O | 1/G | Fall - Odd yrs | Grad Student | **Research Methods** Mason, Roush, invited faculty | (1) I. Discussion of research design, grantsmanship, practical statistics, manuscript preparation, and ethics. Pr.: DVM degree or consent of department head. | Davis |
| CS 896 /O | 2/CR | ALL | Grad Student | **Advanced Topics in Clinical Ophthalmology I** Meekins, A. Rankin | (2) I, II, S Designed to expose comparative ophthalmology residents to the source material associated with the ABVO certifying examination. Assigned textbook reading covers various topics from the major required textbook reading list. Meet weekly with faculty to guide the resident's self-study, answer questions, and correct deficiencies. Pr.: Comparative Ophthalmology Resident at Kansas State University Veterinary Health Center and Graduate Student. | Meekins |

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| CS 897 /O | 2/CR | ALL | Grad Student | **Advanced Topics in Clinical Ophthalmology II**<br>Meekins, A. Rankin | (2) I, II, S Designed to familiarize comparative ophthalmology residents with the basic format of the ABVO certifying examination. The course will include written and image recognition examinations that collectively assess the students' comprehensive knowledge of clinical ophthalmology, including medical and surgical case management. Basic vision science concepts associated with embryology, anatomy, physiology, and optics will also be reviewed. Meet weekly to deliver mock examinations, including time to review the content, answer questions, and correct deficiencies. Pr.: Comparative Ophthalmology Resident at Kansas State University Veterinary Health Center and Graduate Student. | Meekins |
| CS 898 /O | 2/CR | All | Grad Student | **MS Report in Clinical Sciences** | (2) I. II. S. A written report of either a laboratory-based research, a field-based research, or a review paper on a topic in the major field. | Nagaraja |
| CS 899 /O | 1-6 /CR | All | Grad Student | **Thesis Research/Clinical Sciences**<br>L. Beard, W. Beard, Davis | (1-6) I, II, S. Individual research in any of the fields of Clinical Sciences. Pr.: Graduate standing. This work may form the basis for the MS Thesis or the MS Report. | Davis |

## Courses from other departments which our faculty team teach

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| VDMP 891 /D | 2/G | Spring | 2nd yr | **Laboratory Animal Science** Olson | (2) II. Management and health of common species of laboratory animals. Pr: VDMP 845 | S. Olson |
| VDMP 911 /C | 3/G-IH | Fall | 4th yr | **Dairy Production Medicine** | (3) I. This course will be conducted using both in-class discussions and field experiences on Kansas dairies. The discussion portion will incorporate about 60% of class time, and field experiences 40%. Pr. 4th year standing in the College of Veterinary Medicine | Hanzlicek |
| VAP 884 /D | 4/G | Fall | 2nd yr | **Pharmacology** CS Faculty participation by invitation of course director. Apley, Davis, Gehring, Harkin, Mason, McMurphy, Renberg, Schermerhorn | (4) I. The basic principles of pharmacology, the interactions of drugs and living systems including fundamental principles of pharmacokinetics, pharmacodynamics, receptor-coupling, and mechanisms of action. A systems-based approach to drug classes will be emphasized. Four hours of lecture a week. Pr: VAP 804 and 818 or equivalent. | B. KuKanich |
| VDMP 800/D | Zero credit | Fall | 1st yr | **Veterinary Career Development** | (0)I. Introduction to career opportunities in veterinary medicine.<br><br>(A required zero-credit class, no tuition is charged, class does not show up in the catalog) | Roush |

## --------Approved Courses NOT currently offered--------

**Course Type**

C: Clinical
D: Didactic
O: Other (Externs & Grad Study)

Red Highlight = Courses going through the approval process.
I: Fall II: Spring S: Summer
Purple = Proposed course changes, going through expedited approval process.

**Grading**

CR: Credit/No Credit (counts on hours, but has no effect on GPA)
G:A-F Grade
GA: Pass/Fail or A-F (A or F shows on GPA; B,C, or D counts on hours but not on GPA. Only students know if they signed up for it this way – instructor cannot know. ) This can be an option but can't be the only grading option offered for the class (per Sharon at Enrollment Svc)
G-IH: A-F Grade, incompletes will never turn to F