

Animal Science (ANSC)

Courses

ANSC 10301. Introductory to Animal Sciences Laboratory. 1 Hour.

Study of facilities used in production, processing, and management in animal agriculture. Identification, selection evaluation and testing of livestock, meat, and milk. Laboratory 3 hours per week. (Typically offered: Fall and Spring)

ANSC 10303. Introductory Animal Sciences. 3 Hours.

Students will be introduced to biological sciences associated with modern systems of care and management of livestock. Foundation sciences include topics in genetics, nutrition, reproduction, and animal health. The importance of livestock, equine, and companion animals and their allied industries will also be discussed. (Typically offered: Fall and Spring)

ANSC 103H3. Honors Introductory Animal Sciences. 3 Hours.

Students will be introduced to biological sciences associated with modern systems of care and management of livestock. Foundation sciences include topics in genetics, nutrition, reproduction, and animal health. The importance of livestock, equine, and companion animals and their allied industries will also be discussed. Prerequisite: Honors standing. (Typically offered: Fall and Spring)

ANSC 10602. Sustainable Integrated Small Animal Farming. 2 Hours.

Practical information on small scale animal production, including practical strategies for farm planning, issues of economic and environmental sustainability, best management practices, biosecurity, disease prevention, and farm safety will be presented. (Typically offered: Spring)

ANSC 17801. Career Preparation and Development. 1 Hour.

Course will cover concepts necessary for preparing for a career in the animal sciences and allied industries. Concepts of goal setting, effective written and verbal communications, interpersonal skills, professional behaviors, presentation skills, portfolio and resume development will be presented. (Typically offered: Fall)

ANSC 20003. Introduction to Equine Industry. 3 Hours.

Examination of careers and business opportunities in the equine industry. Students will gain the opportunity to identify high quality horses through evaluation of conformation and locomotion. Students will also gain skill at oral presentation and be knowledgeable of costs and responsibilities associated with horse ownership. (Typically offered: Spring)

ANSC 21131. Introduction To Animal Evaluation and Handling Lab. 1 Hour.

Laboratory component stressing fundamental concepts of animal structure, composition, and behavior, and animal handling as they relate to animal production, safety, well-being, and handler safety. One 3-hour lab weekly. Corequisite: ANSC 21133 (only for students majoring in Animal Science). Pre- or Corequisite: ANSC 10303. (Typically offered: Fall and Spring)

ANSC 21133. Introduction to Animal Evaluation and Handling. 3 Hours.

Fundamental concepts of the interrelationship of animal growth, structure, function, and animal handling as they relate to animal production, safety, well-being, and handler safety. Corequisite: ANSC 21131 (only for students majoring in Animal Science). Pre- or Corequisite: ANSC 10303. (Typically offered: Fall and Spring)

ANSC 22502. Introduction to Livestock and Meat Evaluation. 2 Hours.

Develop an understanding between live animal evaluation and carcass composition. Comparative judging including meat evaluation, classification and selection of beef cattle, sheep and swine. (Typically offered: Spring)

ANSC 23003. Introduction to Horsemanship. 3 Hours.

A study of modern horsemanship training techniques involving the psychology and ethology (reason for the behavior) of equine social behavior and how it pertains to learning patterns; application of fundamental behavioral concepts in training of horses, and modification of desirable and undesirable behavioral patterns. Prerequisite: Instructor consent. (Typically offered: Fall and Spring)

ANSC 23303. Introduction to Animal Health. 3 Hours.

This course will cover the fundamental principles of animal health and disease prevention. Course discussion will include sanitation, disinfection, immunization, nutrition, housing and husbandry, causes of diseases, parasitism, clinical signs of disease, prevention and treatment options for diseases. Prerequisite: BIOL 10103 and sophomore standing. (Typically offered: Fall)

ANSC 24131. Domestic Animal Microbiology Laboratory. 1 Hour.

This course is designed for students working on their Poultry Science, Animal Science, and/or Food Science degrees. Students enrolled in this course will learn how to collect samples aseptically from live birds and meat samples, transport samples, and culture samples on a variety of different microbiological media. In addition, students will have the opportunity to visit one of the microbiology labs in the local poultry production facilities. Students will learn how to handle samples, stain bacterial cells, and identify unknown bacteria from field samples. A lab period will be assigned to teaching students on how to use bacteria in food production by teaching students how to prepare and sample yogurt. Corequisite: ANSC 24133. (Typically offered: Fall)

ANSC 24133. Domestic Animal Microbiology. 3 Hours.

Basic concepts of domestic animal and poultry microbiology including diversity, genetics, metabolism, growth, control of growth, pathogenesis, and immunology. Corequisite: ANSC 24131. Prerequisite: (BIOL 10103 and BIOL 10101) and (CHEM 12103 or CHEM 14103 or CHEM 14203). (Typically offered: Fall)

ANSC 26102. Introduction to Animal Products. 2 Hours.

The course will provide an overview of the animal product industries, covering topics in meat, dairy, egg, wool, and leather production. The class will include meat as food, conversion of muscle to meat, conversion of milk to dairy product, food safety, food quality, inspection, and basic processing techniques for meat, dairy and egg. Additionally, we will also cover basic wool and leather production. (Typically offered: Fall and Spring)

ANSC 30003. Applied Animal Parasitology. 3 Hours.

The economically important parasites of domestic animals with emphasis on their host relationships and management considerations. Lecture 2 hours, laboratory 2 hours per week. Corequisite: Lab component. (Typically offered: Fall Even Years)

ANSC 30103. Parasitisms of Domesticated Non-Herbivores. 3 Hours.

Course will provide applied instruction and appreciation for the parasitisms of our domesticated swine, chickens, turkeys, dogs and cats. (Typically offered: Fall Odd Years)

ANSC 30303. Animal Physiology. 3 Hours.

Fundamental aspects of central nervous, musculoskeletal, reproductive, digestive, immune, cardiovascular, respiratory and renal systems will be covered. The normal structure and function of these systems will be emphasized. Lecture 3 hours per week. Prerequisite: BIOL 10103 and (CHEM 14203 or CHEM 12103). (Typically offered: Spring)

ANSC 30702. Equine Selection and Evaluation. 2 Hours.

Students will learn criteria for evaluation and selection of breeding and show animals and will gain expertise in the evaluation of breed types and show ring characteristics. Includes field trips to various breed operations. Students in this class will be well prepared to participate in equine judging team activities. Prerequisite: Instructor consent. (Typically offered: Spring)

ANSC 31203. Principles of Genetics. 3 Hours.

Fundamentals of heredity, with special emphasis on the improvement of farm animals. Lecture 3 hours per week. Prerequisite: BIOL 10103 and MATH 11003 or higher. (Typically offered: Fall)

ANSC 31303. Animal Breeding and Genetics. 3 Hours.

Application of the principles of genetics to the breeding of farm animals. Lecture 3 hours per week. Corequisite: Drill component. Prerequisite: MATH 11003 or higher. (Typically offered: Spring)

ANSC 31431. Animal Nutrition Laboratory. 1 Hour.

Animal Nutrition Laboratory (FA) Practical and quantitative approach to animal nutrition; use of various methods of feedstuff evaluation including ration balancing for domestic animals. Laboratory 2 hours per week. Corequisite: ANSC 31433 for ANSC majors only. Prerequisite: MATH 11003. (Typically offered: Fall)

ANSC 31433. Principles of Animal Nutrition. 3 Hours.

Scientific approach to animal nutrition involving the mechanisms through which feed nutrients are utilized by farm animals. Lecture 3 hours per week. Corequisite: ANSC 31431 (only a corequisite for students majoring in Animal Science). Prerequisite: ANSC 10303. (Typically offered: Fall)

ANSC 32103. Behavior of Domestic Animals. 3 Hours.

Behavior associated with domestication. Effects of selective breeding, physical and social environments, and developmental stage on social organization, aggressive behavior, sexual behavior, productivity, and training of domestic animals. (Typically offered: Spring)

ANSC 32802. Livestock Judging and Selection. 2 Hours.

Comparative judging, including grading, classification, and selection of beef cattle, swine, sheep and horses. Oral and written discussion. Laboratory 6 hours per week. Prerequisite: ANSC 10303 or ANSC 22502. (Typically offered: Fall)

ANSC 32901. Livestock Junior Judging Team Activity. 1 Hour.

Training for membership on judging teams, through participation. (Typically offered: Spring)

ANSC 33303. Diseases of Livestock. 3 Hours.

Introductory study of the diseases of farm animals with emphasis on fundamental principles of disease, body defense mechanisms, hygiene, and sanitation. Prerequisite: BIOL 10103 and ANSC 23303. (Typically offered: Spring)

ANSC 34303. Fundamentals of Reproductive Physiology. 3 Hours.

Principles of mammalian reproductive physiology with emphasis on farm animals. Lecture 3 hours per week. Pre- or Corequisite: ((CHEM 12103 and CHEM 12101) or (CHEM 14203 and CHEM 14201) or (CHEM 26103 and CHEM 26101) or (CHEM 36053 and CHEM 36051)) and junior standing. Prerequisite: BIOL 10103. (Typically offered: Fall)

ANSC 34901. Artificial Insemination in Cattle. 1 Hour.

Experience with artificial insemination technique in cattle including estrus detection, semen storage and handling, insemination equipment maintenance and technique. Laboratory 4 hours per week. The course is offered the second 8 weeks of the spring semester. Pre- or Corequisite: ANSC 34303 or instructor consent. (Typically offered: Fall)

ANSC 351H3. Honors Current Approaches in Agricultural Laboratory Research. 3 Hours.

A laboratory course to introduce students to current laboratory research techniques used in agricultural and life sciences. Hands-on laboratory exercises will emphasize current cellular and molecular research techniques, laboratory notebook keeping, data interpretation, and presentation of results. Prerequisite: BIOL 10103 and honors standing. (Typically offered: Spring Even Years)

ANSC 36103. Meat Science. 3 Hours.

The study of meat science and muscle biology. Topics will include animal/tissue growth and development and the relationship to meat quality. Meat processing, preservation, and meat safety concerns will also be considered. Lecture 3 hours per week. (Typically offered: Spring)

ANSC 37203. Horse and Livestock Merchandising. 3 Hours.

Various types of merchandising programs for specific livestock enterprises will be presented. Students will evaluate the effectiveness of merchandising programs including how to organize, advertise, and manage a purebred auction sale of livestock. (Typically offered: Fall)

ANSC 37503. Equine Assisted Activities and Therapies. 3 Hours.

Animal Science 3753 introduces students to the field of equine assisted activities and therapies. A variety of approaches, therapeutic settings and client populations will be addressed with an emphasis on equine behavior. Students will gain experience in the practical application of an equine assisted therapy program. (Typically offered: Fall)

ANSC 37601. Ranch Horse Riding. 1 Hour.

This course is designed for students to have the opportunity to practice and/or compete in ranch horse competition as well as experience horseback ranch work. The class will consist mostly of hands-on participation at the Whitaker Arena as well as various competition and ranch sites around the region and country. Students will learn the value of the horse in livestock production as well as the competition portion of the equine industry. The Ranch Horse Team is a flagship for the University of Arkansas, Bumper's College Department of Animal Science. (Typically offered: Fall and Spring) May be repeated for up to 6 hours of degree credit.

ANSC 37703. Equine Behavior. 3 Hours.

Students will be introduced to equine behavior and its application to equine management and training. Course will cover identifying behaviors, senses and memory of the horse, horse-human interaction, how horses learn, the application of classical conditioning and equine welfare. (Typically offered: Summer)

ANSC 4000V. Special Problems. 1-6 Hour.

Special problems in the animal sciences for advanced undergraduate students. (Typically offered: Fall, Spring and Summer) May be repeated for up to 6 hours of degree credit.

ANSC 4010V. Internship in Animal Sciences. 1-6 Hour.

Supervised work experience with private or government organizations Prerequisite: Junior standing. (Typically offered: Fall, Spring and Summer) May be repeated for up to 6 hours of degree credit.

ANSC 40702. Advanced Equine Selection and Evaluation. 2 Hours.

Advanced evaluation and selection of breeding and show animals, evaluation of breed types and show characteristics. Field trips to breeding operations. Competitive Judging team members come from this course and participation in competitive events will be required. Prior equine evaluation is not necessary, but instructor consent is required. Some Saturday activities. Prerequisite: ANSC 30702 or instructor consent. (Typically offered: Fall)

ANSC 4100V. Special Topics in Animal Sciences. 1-4 Hour.

Topics not covered in other courses or a more intensive study of specific topics in animal sciences. (Typically offered: Irregular) May be repeated for degree credit.

ANSC 410HV. Honors Special Topics in Animal Sciences. 1-4 Hour.

Topics not covered in other courses or a more intensive study of specific topics in animal sciences. Prerequisite: Honors standing. (Typically offered: Irregular) May be repeated for degree credit.

This course is equivalent to ANSC 4100V.

ANSC 41203. Legal Issues in Animal Agriculture. 3 Hours.

An issues-oriented course focusing on the legal issues involved in the production of poultry, swine and livestock. Emphasis will center on the laws, regulations and policy arguments involved in animal confinement, antibiotic use, humane slaughter and veterinary medicine, along with other related issues. The wide range of regulation- from local to state to federal, depending on the issue- will be studied and discussed. (Typically offered: Spring Odd Years)

ANSC 41402. Advanced Animal Handling Techniques. 2 Hours.

This course is designed to familiarize students with handling techniques of a variety of animals, including cattle, sheep, horses, pigs, dogs, and others. Students will learn and practice handling, restraint, and common husbandry procedures with a variety of domestic species. The course will provide valuable preparation for careers in livestock management, vet medicine, animal-based research, and other fields in animal science. Prerequisite: Junior standing or consent. (Typically offered: Fall and Spring)

ANSC 41603. Companion Animal Nutrition. 3 Hours.

This course is designed to focus on the digestive anatomy, physiology, and nutrient metabolism of non-herbivorous companion animals, primarily dogs and cats. Topics discussed will also include an overview of the pet food industry, its regulations and commonly utilized ingredients. Students will gain a deeper understanding of nutrition as it relates to life stages and various disease states that can affect both dogs and cats. This course will require a Saturday trip to one or two off campus facilities.

Prerequisite: ANSC 31433 or POSC 43403. (Typically offered: Spring)

ANSC 41703. Thoroughbred Horse Industry. 3 Hours.

This course is designed to give you an overview of the Thoroughbred breed and industry. Students will gain an understanding of the Thoroughbred industry, its history, and modern practices. Students will also gain an understanding of career potential in the Thoroughbred industry. Prerequisite: Instructor consent and Junior or Senior standing. (Typically offered: Spring Odd Years)

ANSC 41801. Kentucky Thoroughbred Tour. 1 Hour.

An overview of the Thoroughbred industry in central Kentucky through visiting major racetracks, world-class Thoroughbred breeding facilities, major equine veterinary practices, world class equine sales facilities, equine rehabilitation and retirement facilities, equine nutritional research facilities, and visit with horse trainers, veterinarians and farm managers. Successful completion of all course requirements and the tours will enable students to obtain 1 credit in animal science, network in the equine industry and critically assess potential careers. Prerequisite: Instructor consent. (Typically offered: Summer Odd Years)

ANSC 42502. Cow-Calf Management. 2 Hours.

Systems of cow-calf management including the practical application of the principles of breeding, feeding, and management to commercial and purebred beef cattle under Arkansas conditions. Prerequisite: Must be a student in the Bumpers College of Agricultural, Food and Life Sciences, ANSC 10303 and Junior standing or higher. (Typically offered: Fall)

ANSC 42602. Swine Production. 2 Hours.

Methods in producing purebred and commercial swine with specific emphasis on the management programs needed for profitable pork production in Arkansas. Prerequisite: Must be a student in Bumpers College of Agricultural, Food and Life Sciences, ANSC 10303 and Junior standing or higher. (Typically offered: Fall Even Years)

ANSC 42702. Sheep Production. 2 Hours.

Purebred and commercial sheep management emphasizing the programs of major importance in lamb and wool production in Arkansas. Prerequisite: Must be a student in Bumpers College of Agricultural, Food and Life Sciences, ANSC 10303 and Junior standing or higher. (Typically offered: Spring)

ANSC 42802. Horse Production. 2 Hours.

Production, use and care of horses and ponies including breeding, feeding, handling, and management. Lecture 1 hours, laboratory 2 hours per week. Corequisite: Lab component. Prerequisite: Junior standing or higher. (Typically offered: Spring)

ANSC 42901. Livestock Senior Judging Team Activity. 1 Hour.

Training for membership on judging teams, through participation. (Typically offered: Fall)

ANSC 43003. Comparative Veterinary Anatomy. 3 Hours.

Study of structures and principles of anatomy of major domestic species. The dog, horse, and cow will be used as models for anatomical structures and the application of anatomical knowledge in animal science; focus on veterinary applications. 3 hours of lecture each week. Spring semesters. Corequisite: Lab component. Prerequisite: ANSC 10303 or BIOL 10103, junior standing or instructor consent. (Typically offered: Fall and Spring)

ANSC 44103. Animal Welfare. 3 Hours.

This multi-disciplinary course introduces students to the principles and application of animal welfare and will emphasize farm animal welfare and production issues. (Typically offered: Spring)

ANSC 44502. Milk Production. 2 Hours.

Principles of breeding, feeding, and management of dairy cattle will be studied. Prerequisite: Must be a student in the Bumpers College of Agricultural, Food and Life Sciences, ANSC 10303 and Junior standing or higher. (Typically offered: Fall Odd Years)

ANSC 44802. Companion Animal Management. 2 Hours.

The study and application of principles of domestication, nutrition, reproduction, parasitology, diseases, behavior, and husbandry management to companion animals. Dogs, cats, and exotic animals will be the species of primary interest. Practical problems of care and management of these species will be solved. Prerequisite: BIOL 10103 or equivalent or consent of instructor. (Typically offered: Spring)

ANSC 45503. Forage-Ruminant Relations. 3 Hours.

Chemical, physical, and botanical characteristics of forage plants, the dynamics of grazing, intake, digestion, behavior, and nutrient cycling at the plant-animal interface. CSES 12003 recommended. Corequisite: Lab component. Prerequisite: ANSC 31433. (Typically offered: Fall Even Years)

ANSC 46103. Muscle Growth and Development. 3 Hours.

This is an undergraduate level course offering detailed insights into skeletal muscle morphological, physiological, cellular, and molecular factors affecting muscle structure and function, with special emphasis on cellular and molecular regulation of muscle growth and development, such as myo-, fibro-, and adipogenesis. And the relationship between the properties of skeletal muscle and meat quality. ANSC 30303 and/or CHEM 38103 are recommended as a prerequisite(s). (Typically offered: Fall)

ANSC 46502. Stocker-Feedlot Cattle Management. 2 Hours.

Production and management systems for stocker and feed-lot cattle including practical applications of forage systems, feeding, health management and economics of production of these livestock. Prerequisite: Must be a student in the Bumpers College of Agricultural, Food and Life Sciences, ANSC 10303 and Junior standing or higher. (Typically offered: Fall)

ANSC 46602. Comparative Studies in Panamanian and US Agricultural Practices. 2 Hours.

An experiential-learning course with an embedded trip to Panama designed to give students an overview of the agricultural industry and the impact of Panamanian history, culture and geography on agriculture and how this contrasts with practices in the US. Students will participate in a study tour to Panama where they will engage in learning experiences that explore the agriculture, history, and culture of this country. They will have the opportunity to visit and learn from successful producers of livestock and agricultural staples as well as tour the Panama canal and learn about Panamanian culture and history. Prerequisite: Instructors consent and approval from Study Abroad office. (Typically offered: Spring)

ANSC 49203. Brain & Behavior. 3 Hours.

Covers cellular through neural systems, major brain functions and comparative neuroanatomy. Topics include ion channels, membrane and action potentials, synaptic integration, neurotransmitters, major brain regions of mammals and birds, sensory systems and the autonomic nervous systems, neuroendocrine system, and control by the brain of critical functions and behavior. Lecture 3 hours per week. Prerequisite: (ANSC 30303 or POSC 30303) or PSYC 20003 or BIOL 24103 or BIOL 24003 or BIOL 25473. (Typically offered: Fall)

ANSC 49903. Animal Science Capstone. 3 Hours.

The purpose of this course is to provide students with an opportunity to apply and integrate knowledge from previous coursework in general education and animal science. This course is a multiple experience/ exercise capstone course and is designed for students to demonstrate mastery of a particular subject within Animal Science. Students will provide evidence of integrated knowledge through a variety of means including oral presentations, creation of a 1250-word reflective essay, writing a research abstract and applying problem solving and critical thinking skills. Prerequisite: Senior standing. (Typically offered: Fall and Spring)

ANSC 5000V. Special Problems. 1-6 Hour.

Work in special problems of animal industry. (Typically offered: Fall, Spring and Summer) May be repeated for up to 6 hours of degree credit.

ANSC 50103. Domestic Animal Energetics. 3 Hours.

Physical, physiological and biochemical aspects of energy metabolism of domestic animals and their applications to livestock production. Lecture 3 hours per week. Prerequisite: Graduate standing. (Typically offered: Spring Odd Years)

ANSC 50203. Legal Issues in Animal Agriculture. 3 Hours.

An issues-oriented course focusing on the legal issues involved in the production of poultry, swine and livestock. Emphasis will center on the laws, regulations and policy arguments involved in animal confinement, antibiotic use, humane slaughter and veterinary medicine, along with other related issues. The wide range of regulation- from local to state to federal, depending on the issue- will be studied and discussed. Graduate degree credit will not be given for both ANSC 41203 and ANSC 50203. (Typically offered: Spring Odd Years)

ANSC 50502. Cow-Calf Management. 2 Hours.

Systems of cow-calf management including the practical application of the principles of breeding, feeding, and management to commercial and purebred beef cattle under Arkansas conditions. Graduate degree credit will not be given for both ANSC 42502 and ANSC 50502. (Typically offered: Fall)

ANSC 5100V. Special Topics in Animal Sciences. 1-4 Hour.

Topics not covered in other courses or a more intensive study of specific topics in animal sciences. Prerequisite: Graduate standing. (Typically offered: Irregular) May be repeated for degree credit.

ANSC 51203. Advanced Animal Genetics. 3 Hours.

Specialized study of animal genetics. Lecture 3 hours per week. Prerequisite: ANSC 31203. (Typically offered: Fall Even Years)

ANSC 51403. Biochemical Nutrition. 3 Hours.

Interrelationship of nutrition and physiological chemistry; structure and metabolism of physiological significant carbohydrates, lipids, and proteins; integration of metabolism with provision of tissue fuels; specie differences in regulatory control of tissue and whole body metabolism of nutrients. Prerequisite: CHEM 38103. (Typically offered: Fall Even Years)

ANSC 51502. Protein and Amino Acid Nutrition. 2 Hours.

Students will be introduced to the basic processes of protein digestion, amino acid absorption, transport, metabolism, and utilization along with how biochemical function of proteins and their dynamic state affect nutritional status for animals and man. Prerequisite: CHEM 38103. (Typically offered: Spring Even Years)

ANSC 51603. Companion Animal Nutrition. 3 Hours.

This course is designed to focus on the digestive anatomy, physiology, and nutrient metabolism of non-herbivorous companion animals, primarily dogs and cats. Topics discussed will also include an overview of the pet food industry, its regulations and commonly utilized ingredients. Students will gain a deeper understanding of nutrition as it relates to life stages and various disease states that can affect both dogs and cats. This course will require a Saturday trip to one or two off campus facilities. Prerequisite: ANSC 31433 or POSC 43403. (Typically offered: Spring)

ANSC 52602. Swine Production. 2 Hours.

Methods in producing purebred and commercial swine with specific emphasis on the management programs needed for profitable pork production in Arkansas. Graduate degree credit will not be given for both ANSC 42602 and ANSC 52602. (Typically offered: Fall Even Years)

ANSC 52702. Sheep Production. 2 Hours.

Purebred and commercial sheep management emphasizing the programs of major importance in lamb and wool production in Arkansas. Graduate degree credit will not be given for both ANSC 42702 and ANSC 52702. (Typically offered: Spring)

ANSC 52803. Horse Production. 3 Hours.

Production, use and care of horses and ponies including breeding, feeding, handling, and management. Lecture 2 hours, laboratory 3 hours per week. Graduate degree credit will not be given for both ANSC 42802 and ANSC 52803. Corequisite: Lab component. (Typically offered: Spring)

ANSC 54103. Animal Welfare. 3 Hours.

This multi-disciplinary course introduces students to the principles and application of animal welfare and will emphasize farm animal welfare and production issues. (Typically offered: Spring)

ANSC 54502. Milk Production. 2 Hours.

Principles of breeding, feeding, and management of dairy cattle will be studied. Graduate degree credit will not be given for both ANSC 44502 and ANSC 54502. (Typically offered: Fall Odd Years)

ANSC 54802. Companion Animal Management. 2 Hours.

The study and application of principles of domestication, nutrition, reproduction, parasitology, diseases, behavior, and husbandry management to companion animals. Dogs, cats, and exotic animals will be the species of primary interest. Practical problems of care and management of these species will be solved. Graduate degree credit will not be given for both ANSC 44802 and ANSC 54802. Prerequisite: BIOL 10103 or equivalent or consent of instructor. (Typically offered: Spring)

ANSC 55503. Forage-Ruminant Relations. 3 Hours.

Advanced chemical, physical, and botanical characteristics of forage plants, the dynamics of grazing, intake and digestion, and techniques of measuring forage utilization and systems analysis at the plant-animal interface. Lecture 3 hours per week. CSES 12003 recommended. Corequisite: Lab component. Prerequisite: ANSC 31433. (Typically offered: Fall Even Years)

ANSC 56103. Muscle Growth and Development. 3 Hours.

This is a graduate level course offering detailed insights into skeletal muscle morphological, physiological, cellular and molecular factors affecting muscle structure and function, with special emphasis on cellular and molecular regulation of muscle growth and development, such as myo-, fibro-, and adipo-genesis. And the relationship between the properties of skeletal muscle and meat quality. Graduate students will focus on the scientific reading, problem solving, and generating research ideas. ANSC 30303, CHEM 38103 or ANSC 51403 or an equivalent course are recommended as a prerequisite. (Typically offered: Fall)

ANSC 56502. Stocker-Feedlot Cattle Management. 2 Hours.

Production and management systems for stocker and feed-lot cattle including practical applications of forage systems, feeding, health management and economics of production of these livestock. Graduate degree credit will not be given for both ANSC 46502 and ANSC 56502. Corequisite: Lab component. (Typically offered: Fall)

ANSC 56602. Comparative Studies in Panamanian and US Agricultural Practices. 2 Hours.

An experiential-learning course with an embedded trip to Panama designed to give students an overview of the agricultural industry and the impact of Panamanian history, culture and geography on agriculture and how this contrasts with practices in the US. Students will participate in a study tour to Panama where they will engage in learning experiences that explore the agriculture, history, and culture of this country. They will have the opportunity to visit and learn from successful producers of livestock and agricultural staples as well as tour the Panama canal and learn about Panamanian culture and history. Prerequisite: Instructor consent and approval from Study Abroad office. (Typically offered: Spring)

ANSC 57403. Advanced Analytical Methods in Animal Sciences Laboratory. 3 Hours.

Introduction into theory and application of current advanced analytical techniques used in animal research. Two 3-hour laboratory periods per week. (Typically offered: Fall)

ANSC 58503. Advanced Meats Technology. 3 Hours.

An intensive study of processed meats, relating the science, technology, and quality of further processed meat and poultry products. Product development, sensory and chemical analysis, microbiology, nutritional aspects, and product labeling are covered. Prerequisite: POSC 43104 or ANSC 36103. (Typically offered: Spring Even Years)

ANSC 59001. Seminar. 1 Hour.

Critical review of the current scientific literature pertaining to the field of animal science. Oral reports. Lecture 1 hour per week. (Typically offered: Fall)

ANSC 59203. Brain & Behavior. 3 Hours.

Covers cellular through neural systems, major brain functions and comparative neuroanatomy. Topics include ion channels, membrane and action potentials, synaptic integration, neurotransmitters, major brain regions of mammals and birds, sensory systems and the autonomic nervous systems, neuroendocrine system, and control by the brain of critical functions and behavior. Lecture 3 hours per week. Prerequisite: (ANSC 30303 or POSC 30303) or PSYC 20003 or BIOL 24103 or BIOL 24003 or BIOL 25473. (Typically offered: Fall)

ANSC 59302. Cardiovascular Physiology of Domestic Animals. 2 Hours.

Cardiovascular physiology, including mechanisms of heart function and excitation, and blood vessel mechanisms associated with the circulatory system in domestic animals and poultry. Lecture 3 hours; drill 1 hour per week (for second 8 weeks of semester). Pre- or Corequisite: CHEM 38103. Corequisite: Drill component. Prerequisite: POSC 30303 or ANSC 30303. (Typically offered: Fall)

ANSC 59403. Endocrine Physiology of Domestic Animals. 3 Hours.

Endocrine physiology, including mechanisms of hormone secretion, function, and regulation. Mechanisms associated with the endocrine system will be discussed for domestic animals and poultry. Prerequisite: POSC 30303 or ANSC 30303. Pre- or Corequisite: CHEM 38103. (Typically offered: Spring Even Years)

ANSC 59502. Respiratory Physiology of Domestic Animals. 2 Hours.

Respiratory physiology, including mechanisms of lung function and gas exchange. Mechanisms associated with the interaction of the respiratory system with other bodily systems in domestic animals and poultry will be discussed. Lecture 3 hours; drill 1 hour per week for first 8 weeks of semester. Pre- or Corequisite: CHEM 38103. Corequisite: Drill component. Prerequisite: POSC 30303 or ANSC 30303. (Typically offered: Fall)

ANSC 59602. Gastrointestinal/Digestive Physiology of Domestic Animals. 2 Hours.

Gastrointestinal and hepatic physiology, including mechanisms of digestion, absorption of nutrients with emphasis on cellular control mechanisms in domestic animals and poultry. Lecture 3 hours; drill 1 hour per week (for second 8 weeks of semester). Pre- or Corequisite: CHEM 38103. Corequisite: Drill component. Prerequisite: POSC 30303 or ANSC 30303. (Typically offered: Fall)

ANSC 59702. Renal Physiology. 2 Hours.

Renal physiology, including mechanisms of renal clearance with emphasis on cellular control mechanisms in domestic animals and poultry. Lecture 3 hours; drill 1 hour per week (for second 8 weeks of semester). Pre- or Corequisite: CHEM 38103. Corequisite: Drill component. Prerequisite: POSC 30303 or ANSC 30303. (Typically offered: Fall)

ANSC 6000V. Master's Thesis. 1-6 Hour.

Master's Thesis. Prerequisite: Graduate standing. (Typically offered: Fall, Spring and Summer) May be repeated for degree credit.

ANSC 61403. Minerals in Animal Nutrition. 3 Hours.

Mineral nutrients, their sources and functions, as related to nutrition of domestic animals. Lecture 3 hours per week. Prerequisite: ANSC 31433 or POSC 43403. (Typically offered: Fall; Spring Even Years)

ANSC 62403. Ruminant Nutrition. 3 Hours.

Anatomy and physiology of the rumen. The nutrient requirements of microbial organisms and the relation of microbial digestion in the rumen to the nutrition of cattle, sheep and other ruminants. Lecture 3 hours per week. Prerequisite: Graduate standing. (Typically offered: Fall Odd Years)

ANSC 63403. Vitamin Nutrition and Metabolism. 3 Hours.

The vitamins required for humans and domestic animals for a healthy life with emphasis on absorption, transport, metabolism, biopotency, mechanism of action, tissue retention and turnover. Prerequisite: CHEM 38103. (Typically offered: Fall Odd Years)

ANSC 68303. Reproduction in Domestic Animals. 3 Hours.

Comprehensive review of current theory of reproductive function in domestic animals. Lecture 3 hours per week. Prerequisite: ANSC 34303. (Typically offered: Spring Even Years)

ANSC 7000V. Doctoral Dissertation. 1-18 Hour.

Doctoral Dissertation. Prerequisite: Graduate standing. (Typically offered: Fall, Spring and Summer) May be repeated for degree credit.