Graduate Animal Science Courses

ANSC 5048. Animal Science Applied Project. 1-6 Credit Hours (Lecture: 1-6 Hours, Lab: 0 Hours).
Design, implement, and complete an independent project; integrate the knowledge and skills learned in the program; advance the application of scientific principles. Written report and oral communication of the results.

ANSC 5086. Animal Science Problems. 1-3 Credit Hours (Lecture: 0 Hours, Lab: 1-3 Hours).
Advanced studies in animal science problems and procedures. Problems assigned according to experience, interest, and needs of individual student.

ANSC 5088. Thesis. 1-6 Credit Hours (Lecture: 1-6 Hours, Lab: 0 Hours).
Scheduled when the student is ready to complete the thesis. No credit until the thesis is completed. Prerequisite: Approved research methodology course and approval of the instructor of record.

ANSC 5090. Special Topics in Animal Science. 3 Credit Hours (Lecture: 3 Hours, Lab: 2 Hours).
Selected topics in Animal Sciences offered as needed and dependant upon departmental, faculty, and student interests. May be repeated as topics vary. Instructor approval required prior to registration.

ANSC 5175. Journal Club: Topics in Animal Science. 1 Credit Hour (Lecture: 1 Hour, Lab: 0 Hours).
Perform critical evaluation of scientific writing and published works, assess the quality of the results, and become familiar with the publication process. This course is intended to provide a multi-specie discussion relevant to animal sciences research. Credit cannot be awarded for both ARSC 6175 and ANSC 5175.

ANSC 5185. Animal Science Seminar. 1 Credit Hour (Lecture: 1 Hour, Lab: 0 Hours).
Graduate seminar with content varying according to student and curricular needs. May be repeated for a total of three credit hours. Prerequisite: Graduate classification.

ANSC 5300. Advanced Equine Reproduction. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
Through a comprehensive exploration of current research in equine reproductive health, stallion fertility, mare cyclicity, and pregnancy, students will gain a profound understanding of the physiological processes governing reproduction in horses. Emphasis is placed on bridging the gap between theory and practice, while mastering common assistive breeding technologies, offering students a holistic perspective on equine reproductive science. Credit cannot be awarded for both ARSC 6300 and ANSC 5300.

ANSC 5301. Experimental Design in Agriculture. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Common and anomalous designs encountered in conduct of research in the agricultural and environmental sciences. Proper analysis of these designs and common pitfalls in experimental design. Students are expected to enter with a cursory knowledge of introductory statistics.

ANSC 5302. Forage Biology and Physiology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Biology of forage growth, metabolic pathways of the plant, and physiological response to stressors that contribute to pasture management. Credit will not be awarded for both ANRS 6332 and ANSC 5302.

ANSC 5303. Rumen Microbiology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Scientific and practical evaluation of the rumen microbiome, with emphasis on functional classes and substrate preferences, and its impact on animal nutrition and performance. Credit will not be awarded for both ANRS 6303 and ANSC 5303.

ANSC 5304. Ruminant Nutrition. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Survey of current knowledge and concepts in ruminant physiology and biochemistry, their literature and experimental basis and relation to current and future practice and investigation. Credit will not be awarded for both ANRS 6334 and ANSC 5304. Prerequisites: A course in Animal Nutrition and graduate classification.

ANSC 5306. Assisted Breeding Technology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Reproductive principles and techniques in modern breeding programs for farm livestock and other species. Prerequisites: Graduate Standing.

ANSC 5308. Measuring Animal Behavior. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
An advanced course in the principles and methods of quantitative studies of behavior, with an emphasis on techniques of observation, recording, and analysis. Credit will not be awarded for ANRS 6308, ANSC 5308, and WSES 5308.

ANSC 5309. Animal Welfare Assessments and Audits. 3 Credit Hours (Lecture: 2 Hours, Lab: 2 Hours).
Basic components of animal welfare assessments, review of current industry assessment tools and animal welfare audits. Credit will not be awarded for both ANRS 6339 and ANSC 5309. Prerequisite: Graduate status.

ANSC 5310. Muscle Chemistry, Ultrastructure, and Physiology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
A study of muscle development, structure, composition, growth, mechanisms of contraction, and rigor as related to livestock and meat production. Prerequisite: Graduate standing.

ANSC 5311. Data Management & Analysis in Animal Science. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Data collection practices, organization, and modification in various computer programs suited to the experimental designs used in animal science. Methods of data entry into statistical software, coding, and appropriate analyses. Students are expected to enter with a cursory knowledge of introductory statistics. Prerequisite: Graduate classification and previous coursework in statistics.

ANSC 5312. Domestic Animal Endocrinology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
The study of cell communication through endocrine, autocrine, paracrine, and neuroendocrine secretions. Detailed physiological and biochemical composition of hormones with special reference to domestic animal species. Students who successfully complete this course cannot receive credit for ARSC 6312. Prerequisite: Graduate student standing.

ANSC 5314. Food Quality Assurance. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
The basis behind food quality control/assurance is discussed along with its application to various food systems to control and improve the quality and safety of our food supply. Credit will not be awarded for ANSC 4341 and ANSC 5314. Lab fee: $2.

ANSC 5315. Animal Growth and Development. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
A study of the processes related to animal growth. Emphasis on cellular changes allowing for muscle, bone and adipose tissue growth as well as the role and functions of hormones related to development and age-related adaptation. Composition of muscle, bone, and adipose tissue in market animals will be discussed. Credit will not be awarded for ANRS 6325 and ANSC 5315. Prerequisites: A course in General Animal Science and approval of instructor.

ANSC 5316. Grant Writing and Funding Aquisition. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
A course in terminology and processes associated with grant writing and the acquisitions of research funds.

ANSC 5317. Advanced Livestock Production. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Overview of beef, dairy, swine, small ruminant and poultry production systems and their applications. Modern concepts, ideas, and methodology associated with the application of technology to reproduction, breeding, health, nutrition and nutrient utilization, across various management schemes. Prerequisite: Graduate student classification.

ANSC 5318. Ethical/Environmental Issues in Agriculture. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Ethical and environmental issues affecting public policy as related to agrieducation/industry/business. Credit for both ANSC 5218 and AGCR 5318 will not be awarded. Prerequisites: Approval of instructor.

ANSC 5319. Biotechnology in Agriculture. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
A study of modern biotechnology in agriculture today. This course will explore important advancements and tools in fields such as genetics, agronomy, and bioinformatics. It will also examine the legal constraints and ethical debates that surround these technologies. Credit will not be awarded for both ANSC 4319 and ANSC 5319.

ANSC 5324. Advanced Equine Nutrition. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Principles of digestive physiology and nutrition unique to equine species; integration of scientific principles into feeding management systems of horses; review and evaluation of current research in equine nutrition. Credit cannot be awarded for both ARSC 6354 and ANSC 5324. Prerequisite: Graduate standing; previous coursework in nutrition.

ANSC 5325. Equine Exercise Physiology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Studies of the influence of training and conditioning on muscle physiology, cardiovascular physiology, the biomechanics of locomotion, and energy utilization. Fundamental rehabilitation and treatment of sports injuries. Students can not receive credit for both ANSC 3325 and ANSC 5325. Prerequisite: Instructor approval.

ANSC 5326. Advanced Physiology of Reproduction. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
A study of physiology of reproduction with focus on historical and current research in reproductive neuroendocrinology, male fertility, female cyclicity, and pregnancy. This course will discuss research in rodent models, rabbits, sheep, cattle, pigs, and primates. Students who successfully complete this course cannot receive credit for ARSC 6326. Prerequisite: ANSC 5312.

ANSC 5328. Environmental Physiology of Farm Animals. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Environmental influence on biological rhythms; body temperature regulation; heat sources and conserving mechanisms; feed intake, behavior, growth and development and reproduction in farm animals. Credit given for only ANSC 5328 OR ANSC 4308. Prerequisite: Graduate classification.

ANSC 5338. Value-Added Processed Meats. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
The application of scientific principles and practices to further processed meat products. Interrelationships among tissue characteristics, ingredients, handling practices, processing technologies and storage conditions as they affect the quality, safety, and stability of muscle foods. Students cannot receive credit for both ANSC 4338 and ANSC 5338.

ANSC 5350. Laboratory Methods in Animal Research. 3 Credit Hours (Lecture: 2 Hours, Lab: 2 Hours).
Skill development in laboratory techniques and analysis related to animal science research. Application of live animal data collection. Introduction to institutional animal care and use protocols and ethical use of animals in research. Prerequisites: Graduate standing; instructor approval. Lab fee: $2.

ANSC 5355. Animal Metabolism. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
The course is structured to provide an overview of various regulatory mechanisms of metabolism and changes due to exercise, stress, pregnancy, nutrient imbalance, disease and toxic effects. Credit will not be awarded for both ANRS 6345 and ANSC 5355. Prerequisites: Graduate standing; 3 hours of animal or human nutrition AND 3 hours of anatomy and physiology OR department head approval.

ANSC 5356. Non-Ruminant Nutrition. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Advanced course in nutritional science focusing in advanced topics in intergrated nutrient metabolism; advanced digestive physiology, nutritional requirements and nutritional imbalances and subsequent disease states in non-ruminant animals. Prior coursework in metabolism or biochemistry is recommended. Credit will not be awarded for both ANRS 6356 and ANSC 5356. Prerequisite: ANSC 5355.

ANSC 5360. Lactation Physiology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Systematic overview of lactation physiology using dairy cattle as the main model. Course topics will include mammary gland anatomy, milk secretion, mammary gland development and disease impacts. Credit will not be awarded for both ANRS 6361 and ANSC 5360. Prerequisites: Graduate standing.

ANSC 5365. Minerals and Vitamins in Animal Nutrition. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
An in-depth study of vitamin and mineral chemistry, metabolism, interrelationships, and requirements for production in livestock animals. Prerequisite: Graduate standing.

ANSC 5380. Research and Writing for Agriculture. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Preparation of writing samples, technical reviews, and/or professional manuscripts related to various topics in agriculture. Prerequisites: Approved research methodology course and approval of instructor of record.

ANSC 5399. Internship. 3 Credit Hours (Lecture: 1 Hour, Lab: 8 Hours).
Prepared and supervised work experience in an Animal Science-related position with a public or private business organization. May be repeated for a total of 6 hours credit. Prerequisite: Approval of the student's graduate committee. Field experience fee $50.