The curricula in Animal Science are designed to prepare students for rewarding careers in animal-oriented agribusiness. The millions of domestic animals that provide food, fiber and recreation for humans offer a variety of career opportunities for animal science graduates.

Students completing the Bachelor of Science degree in Animal Science are in demand by both the private and public sectors. Career paths include livestock production and the extensive infrastructure that provides the products and services required for management, marketing and processing of livestock and livestock products. Students receive training in nutrition, breeding, reproductive physiology, meat science, dairy products, wool and mohair, and the production and management of livestock. Extensive laboratory facilities and livestock operations located on or near campus in the Animal Science Teaching, Research and Extension Complex facilitate practical application of the scientific principles.

Leadership skills are developed through participation in a wide array of extracurricular activities, including departmental clubs, judging teams and continuing education/youth programs. A substantial number of students gain experience in a variety of disciplines through high impact learning experiences such as internships, research, study abroad and field trips.

**Faculty**

Bazer, Fuller W, Distinguished Professor
Animal Science
PHD, North Carolina State University, 1969

Carstens, Gordon E, Professor
Animal Science
PHD, Colorado State University, 1998

Castillo, Alejandro, Associate Professor
Animal Science
PHD, Texas A&M University, 1998

Collins, Haley C, Lecturer
Animal Science
MS, Sam Houston State University, 2015

Cooke, Reinaldo F, Associate Professor
Animal Science
PHD, University of Florida, 2008

Cross, H Russell, Professor
Animal Science
PHD, Texas A&M University, 1972

Daigle, Courtney L, Assistant Professor
Animal Science
PHD, Michigan State University, East Lansing, MI, 2013

De Carvalho Cardoso, Rodolfo, Assistant Professor
Animal Science
PHD, Texas A&M University, 2014
DVM, Sao Paulo State University, 2005

Dunlap, Kathrin A, Assistant Professor
Animal Science
PHD, Texas A&M University, 2006

Forrest, David W, Professor
Animal Science
PHD, University of Wyoming, 1979

Garcia, Leslie L, Instructional Assistant Professor
Animal Science
PHD, Texas A&M University, 2015

Gehring, Kerri B, Professor
Animal Science
PHD, Texas A&M University, 1994

Gill, Clare A, Professor
Animal Science
PHD, University of Adelaide, Australia, 2000

Gill, Jason J, Assistant Professor
Animal Science
PhD, University of Guelph, 2006

Heird, James C, Executive Professor
Animal Science
PHD, Texas Tech University, 1978

Herring, Andy D, Professor
Animal Science
PHD, Texas Tech University, 1999

Ing, Nancy H, Professor
Animal Science
PHD, University of Florida, 1988

Kerth, Christopher R, Associate Professor
Animal Science
PHD, Texas Tech University, 1999

Lamb, Graham C, Professor
Animal Science
PHD, Kansas State University, 1998

Leatherwood, Jessica L, Assistant Professor
Animal Science
PHD, Texas A&M University, 2013

Mies, William L, Visiting Professor
Animal Science
PHD, University of Missouri, 1971

Miller, Rhonda K, Professor
Animal Science
PHD, Colorado State University, 1983

Osburn, Wesley N, Associate Professor
Animal Science
PHD, University of Nebraska–Lincoln, 1996

Ramsey, W S, Professor
Animal Science
PHD, New Mexico State University, 1996
Riggs, Penny K, Associate Professor
Animal Science
PHD, Texas A&M University, 1996

Riley, David G, Professor
Animal Science
PHD, Texas A&M University, 2000

Sanders, James O, Professor
Animal Science
PHD, Texas A&M University, 1977

Satterfield, Michael C, Associate Professor
Animal Science
PHD, Texas A&M University, 2008

Savell, Jeffrey W, Professor
Animal Science
PHD, Texas A&M University, 1978

Sawyer, Jason E, Associate Professor
Animal Science
PHD, New Mexico State University, 2000

Skaggs, Chris L, Professor
Animal Science
PHD, Iowa State University, 1992

Smith, Gary C, Visiting Professor
Animal Science
PHD, Texas A&M University, 1968

Smith, Stephen B, Professor
Animal Science
PHD, University of California, Davis, 1980

Taylor, Thomas M, Associate Professor
Animal Science
PHD, University of Tennessee, Knoxville, 2006

Tedeschi, Luis O, Professor
Animal Science
PHD, Cornell University, 2001

Tomaszewski, Michael A, Visiting Professor
Animal Science
PHD, North Carolina State University, 1972

Vogelsang, Martha M, Senior Lecturer
Animal Science
PHD, Texas A&M University, 1986

Welsh Jr, Thomas H, Professor
Animal Science
PHD, North Carolina State University, 1980

White, Sarah H, Assistant Professor
Animal Science
PHD, University of Florida, 2014

Wickersham, Tryon A, Associate Professor
Animal Science
PHD, Kansas State University, 2006

Wu, Guoyao, Professor
Animal Science
PHD, University of Alberta, Canada, 1989

**Majors**

- Bachelor of Science in Animal Science, Production/Industry Option
  (http://catalog.tamu.edu/undergraduate/agriculture-life-sciences/animal-science/bs-production-industry-option)
- Bachelor of Science in Animal Science, Science Option
  (http://catalog.tamu.edu/undergraduate/agriculture-life-sciences/animal-science/bs-science-option)

**Certificates**

- Equine Science Certificate
  (http://catalog.tamu.edu/undergraduate/agriculture-life-sciences/animal-science/equine-science-certificate)
- Meat Science Certificate
  (http://catalog.tamu.edu/undergraduate/agriculture-life-sciences/animal-science/meat-science-certificate)

**Courses**

**ANSC 101 Introductory Seminar for Animal Science**
Credit 1. 1 Lecture Hour.
Orientation to programs and opportunities in the Department of Animal Science, to create an awareness of campus resources for financial aid and tutoring, to develop goals for college career and to initiate planning for internship and job opportunities.

**ANSC 107 General Animal Science**
Credits 3. 3 Lecture Hours.
(AGRI 1319, 1419*) General Animal Science. General understanding of all aspects of the livestock industry; basic agriculture nomenclature of breeds, species and types of livestock; reproduction, nutrition, genetics, food safety, growth and development of beef cattle, sheep, horses, swine, dairy cattle and poultry; brief description of the companion animal industry.

**ANSC 108 General Animal Science Laboratory**
Credit 1. 1 Lecture Hour.
(AGRI 1419*, AGRI 1119) General Animal Science Laboratory. General overview of the beef cattle, dairy cattle, horse, sheep, swine and poultry industries; information on major breeds, anatomy, phenotypic and genotypic selection criteria and production practices for each species; major disciplines of the animal industry including breeding and genetics, nutrition, reproductive physiology and products; utilization of live animals, models and feedstuffs/equipment to enhance experiential learning approach.
**Prerequisite:** Concurrent enrollment in ANSC 107.

**ANSC 111 Animal Production Systems**
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Transformative experiences related to beef cattle, dairy cattle, equine, sheep, swine, goats, companion animals, meats, food products and food safety; exposure to available animal science careers and potential areas of future/additional study.
**Prerequisites:** Grade of C or better in ANSC 107 and ANSC 108.

**ANSC 113 Farm Animal Biosystems**
Credits 2. 2 Lecture Hours.
Information regarding the processes by which networks of cells are controlled and coordinated within the farm animal.
**Prerequisites:** Grade of C or better in ANSC 101, ANSC 107 and ANSC 108.
ANSC 117 Texas Barbecue  
Credit: 1.  1 Lecture Hour.  
Survey, demonstration and participation in preparation techniques of Texas barbecue; comparison of regional and international barbecue methods.

Prerequisite: First year students.

ANSC 201 Introductory Equine Care and Use  
Credits: 2.  2 Lecture Hours.  
Survey of basic equine care and use; breeds of horses and their use; care and maintenance of equines including feeding, health care, housing and equipment.

ANSC 207 Art and Heritage of Livestock  
Credits: 3.  3 Lecture Hours.  
Using art as a venue to understand the legacy and heritage of livestock production and livestock’s contribution to civilization and society; from man as hunter, agriculturalist, and finally, as industrialist; from cave paintings to Russell and Remington; history of the effects of painting, poetry, architecture and sculpture on agriculture.

ANSC 210 Companion Animal Science  
Credits: 3.  3 Lecture Hours.  
Types, care, physiology, common diseases and common treatments of companion animals (dogs, cats, exotic pets); careers including biomedical research; solutions for problems such as behavior and overpopulation.

Prerequisite: ANSC 107.

ANSC 211 Equine Industry and Career Preparation  
Credits: 2.  2 Lecture Hours.  
Identify opportunities and skill sets required to pursue a career in the equine industry; development of resume, communication, professional etiquette and interview skills.

ANSC 215 Introduction to Livestock Evaluation  
Credits: 2.  1 Lecture Hour.  3 Lab Hours.  
Live market animal appraisal in relation to carcass and composition; criteria for selection of breeding livestock; techniques for preparation and delivery of oral reason.

ANSC 221 Equine Handling and Safety  
Credits: 3.  2 Lecture Hours.  2 Lab Hours.  
Working around horses safely and effectively; includes equine behavior, proper handling techniques, controlling movement of horses, health assessment and basic management.

Prerequisite: ANSC 201.

ANSC 230 Animal and Research Experience  
Credits: 2.  1 Lecture Hour.  2 Lab Hours.  
Hands-on experience with farm animals; development and understanding of the scientific method; demonstration of critical thinking skills to evaluate scientific information.

ANSC 242 Growth and Development of Livestock  
Credits: 3.  2 Lecture Hours.  2 Lab Hours.  
Evaluation of slaughter livestock as related to growth and development, production efficiency, carcass value; selection of breeding animals based on performance, production records, visual appraisal; principles of growth biology; biotechnological tools used to manage growth and development.

Prerequisites: ANSC 107 and ANSC 108.

ANSC 289 Special Topics in...  
Credits: 1 to 4.  1 to 4 Lecture Hours.  0 to 4 Lab Hours.  
Selected topics in an identified area of animal science. May be repeated for credit.

Prerequisite: Approval of instructor.

ANSC 291 Research  
Credits: 0 to 4.  0 to 4 Other Hours.  
Research conducted under the direction of faculty member in animal science. May be repeated 2 times for credit.

Prerequisites: Freshman or sophomore classification and approval of instructor; 2.0 GPR in major and overall.

ANSC 302 Basic Beef Cattle Production  
Credits: 3.  3 Lecture Hours.  
Fundamental concepts of beef management and production principles. Service course recommended for non-animal science majors.

Prerequisites: ANSC 107 and ANSC 108.

ANSC 303/NFSC 303 Principles of Animal Nutrition  
Credits: 3.  3 Lecture Hours.  
Scientific approach to nutritional roles of water, carbohydrates, proteins, lipids, minerals, vitamins, and other dietary components; emphasis on the comparative aspects of gastrointestinal tracts and on digestion, absorption, and metabolism of nutrients.

Prerequisites: Grade of C or better in ANSC 113; CHEM 101, CHEM 222 or CHEM 227; junior classification or approval of instructor.

Cross Listing: NFSC 303/ANSC 303.

ANSC 305 Animal Breeding  
Credits: 3.  2 Lecture Hours.  2 Lab Hours.  
A systems approach to selection and mating of livestock; gene frequency, heritability, relationship, inbreeding, linebreeding, heterosis, crossbreeding, direct and correlated response to selection, and use of pedigree, family, progeny testing and indices for selection.

Prerequisites: Grade of C or better in ANSC 111 and ANSC 113; GENE 301; STAT 301, STAT 302, STAT 303, or ANSC 309; junior classification or approval of instructor.

ANSC 307/NFSC 307 Meats  
Credits: 3.  2 Lecture Hours.  3 Lab Hours.  
Integrated studies of the meat animal processing sequence regarding the production of meat-type animals and the science and technology of their conversion to human food.

Prerequisites: Grade of C or better in ANSC 111 and ANSC 113; junior classification or approval of instructor.


ANSC 309 Applied Animal Record Keeping  
Credits: 3.  2 Lecture Hours.  2 Lab Hours.  
Keeping, analyzing and interpreting records to make fully-informed decisions on a day-to-day basis for production and management scenarios; practical application unique to animal science and meat processing.

Prerequisite: Junior or senior classification.

ANSC 311 Equine Behavior and Training  
Credits: 3.  1 Lecture Hour.  5 Lab Hours.  
Equine behavior and application of principles of psychology to training horses; systematic approaches to horse training emphasizing principles of learning; equipment and its use; stable management and preparation of horses for competition; separate laboratory sections for students with varying backgrounds.

ANSC 312 Equestrian Technology  
Credits: 2.  1 Lecture Hour.  3 Lab Hours.  
Advanced scientific methods and techniques for execution of equine performances in hunter, dressage and stock horse events; anatomical, physiological and psychological implications; preparation of horses and riders.
ANSC 314 Wool Evaluation and Grading
Credits 2. 1 Lecture Hour. 3 Lab Hours.
Evaluation of U.S.D.A. grades for wool and mohair; steps involved in processing raw wool into finished fabric; genetic and environmental factors affecting quality characteristics of wool and mohair; grading, evaluation and selection of fleeces for economic value; oral and written defense of judgments.

ANSC 315 Livestock Judging
Credits 2. 1 Lecture Hour. 3 Lab Hours.
Selection and evaluation of beef cattle, swine, sheep and horses. Ability to present accurate, clear and concise oral and written reasons stressed. 
Prerequisites: ANSC 107 and ANSC 108; junior or senior classification.

ANSC 316 Equine Selection and Judging
Credits 2. 1 Lecture Hour. 3 Lab Hours.
Detailed evaluation and comparison of horses; selection and critique of athleticism and performance in horses; industry trends addressed; oral and written defense of judgments also explained and expected; required for participation on the Horse Judging Team.
Prerequisite: Junior or senior classification or approval of instructor.

ANSC 317 Meat Selection, Evaluation and Grading
Credits 2. 1 Lecture Hour. 3 Lab Hours.
Selection and grading of carcasses and wholesale cuts of beef, pork and lamb; principles of evaluation included in carcass contests and progeny testing.
Prerequisites: ANSC 107 and ANSC 108.

ANSC 318 Animal Feeds and Feeding
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Scientific approaches associated with precision feeding and diet formulation to match nutrient availabilities of feedstuffs with requirements of various classes of livestock species; emphasis on cost-effective feeding strategies to optimize animal productivity, and end-product quality and safety, while mitigating environmental impacts and enhancing animal health and welfare.
Prerequisite: Grade of C or better in ANSC 111, ANSC 113 and ANSC 303/NFSC 303; junior classification or approval of instructor.

ANSC 320 Animal Nutrition and Feeding
Credits 3. 3 Lecture Hours.
Nutritional functions of water, protein, carbohydrates, fats, minerals and vitamins and their digestion, absorption, use and excretion; energy, protein and forage feedstuff characteristics and processing; nutritional requirements, ration formulation and feeding methods for farm animals; general course for non-animal science majors.
Prerequisite: Junior or senior classification or approval of instructor; restricted to students in the college of agriculture and life sciences.

ANSC 325 Advanced Livestock and Product Evaluation
Credits 2. 1 Lecture Hour. 3 Lab Hours.
Advanced evaluation of cattle, swine, sheep and equine; products produced or associated with each species; advanced oral or written defense of judgments associated with changing trends in these industries. May be repeated three times for credit.
Prerequisite: Junior or senior classification.

ANSC 333 Reproduction in Farm Animals
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Physiological principles of reproductive processes in cattle, sheep, swine, and horses including sperm and ova production, estrus, fertilization, gestation and parturition.
Prerequisites: Grade of C or better in ANSC 111 and ANSC 113; junior classification or approval of instructor.

ANSC 335 Purebred Beef Cattle Management
Credits 2. 1 Lecture Hour. 2 Lab Hours.
Information and skills needed to be successful in the production, management and merchandising of purebred beef cattle; purpose and organization of the purebred beef cattle industry, and career opportunities in the industry.
Prerequisite: Junior or senior classification.

ANSC 337 Meat Merchandising
Credits 2. 1 Lecture Hour. 3 Lab Hours.
Steps of meat processing and merchandising of retail and foodservice; merchandising practices such as selection, identification, fabrication, pricing, packaging and distribution.
Prerequisites: ANSC 307/NFSC 307; junior or senior classification.

ANSC 351 Current issues in Animal Agriculture
Credits 3. 3 Lecture Hours.
Preparation to project a professional image and the use of communication skills to describe animal agriculture; converse about the strengths and weaknesses of animal agriculture.
Prerequisite: Junior or senior classification.

ANSC 399 Animal Science Experience
Credits 0. 0 Lecture Hours.
Participation in an approved high-impact learning practice; reflection on professional outcomes from animal science body of knowledge; documentation and self-assessment of learning experience at mid and final curriculum points.
Prerequisite: Junior or senior classification.

ANSC 402 Exploring Animal Industries
Credits 2. 2 Lecture Hours.
Instruction for students nearing the end of their undergraduate studies; theoretical understanding of organizations and human resources available to students; awareness and understanding of the job application process, resume and cover letter writing; networking, professional and business attire; ethics related to job searches and retention.
Prerequisite: Junior or senior classification.

ANSC 404 Behavior and Management of Domestic Animals
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Application of behavior of cattle, horses, sheep, goats and swine to their management; basic principles, physiology of behavior, perception, training, predators, use of dogs in livestock production, stress and animal welfare.
Prerequisites: Grade of C or better in ANSC 305, ANSC 307/NFSC 307, ANSC 318 and ANSC 333; junior or senior classification or approval of instructor.

ANSC 406 Beef Cattle Production and Management
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Principles involved for profitable and sustainable, integrated beef cattle production as considered from the perspective of the U.S. cow-calf sector and from an overall systems-based approach.
Prerequisites: Grade of C or better in ANSC 305, ANSC 307/NFSC 307, ANSC 318, and ANSC 333; junior or senior classification or approval of instructor.
ANSC 408 Management of Stocker and Feedlot Cattle
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Basic principles involved in feeding, management, marketing and disease control of stocker and feeder cattle from weaning through slaughter for economical production of beef.
Prerequisites: Grade of C or better in ANSC 305, ANSC 307/NFSC 307, ANSC 318, and ANSC 333; STAT 301, STAT 302, STAT 303, or ANSC 309; junior or senior classification.

ANSC 411 Equine Nutrition and Health
Credits 3. 3 Lecture Hours.
Designed to provide knowledge of nutrition and health in the horse; gastrointestinal anatomy, nutrient utilization, feeding management and nutritional requirements; metabolic diseases, infectious diseases, internal and external parasites, and herd health management.
Prerequisite: Junior or senior classification.

ANSC 412 Swine Production and Management
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Basic principles and their practical application in efficient, economical pork production; all areas of production—breeding and selection, nutrition, housing and equipment, marketing, herd health and economic management.
Prerequisites: Junior or senior classification or approval of instructor.

ANSC 414 Sheep and Goat Production and Management
Credits 4. 3 Lecture Hours. 2 Lab Hours.
In-depth hands-on experiences related to sheep and goat production and management providing an advanced understanding of small ruminant production.
Prerequisites: Grade of C or better in ANSC 305, ANSC 307/NFSC 307, ANSC 318, and ANSC 333; junior or senior classification or approval of instructor.

ANSC 415 Brazil: Comparative Ruminant Production
Credits 3. 3 Lecture Hours.
Contrast two scenarios of ruminant production in Brazil; the effects of globalization on the two different production systems.
Prerequisites: ANSC 303/NFSC 303 or ANSC 320 or approval of instructor.

ANSC 418 Equine Exercise Physiology
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Changes within the systems of the horse resulting from the physical stresses of exercise, adaptations of systems in response to a training regimen; methodology for measuring improvement in physical condition; foundation for development of training programs for horses in moderate, intense or prolonged performance activities.
Prerequisites: Junior or senior classification and approval of instructor.

ANSC 419 Equine Reproduction
Credits 3. 3 Lecture Hours.
Reproductive anatomy of the stallion and mare; industry and scientific practices; comprehensive analysis of the body of scientific research; development of critical thinking ability to assess and discuss previous research in comparison of needed research.
Prerequisites: ANSC 201 and junior or senior classification or approval of instructor.

ANSC 420 Equine Production and Management
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Application of biological and biotechnological principles and concepts in areas including genetics, breeding, nutrition, reproduction, immunology, parasitology, anatomy and exercise physiology to efficient production of horses for market; management of equine enterprises.
Prerequisites: ANSC 201 and ANSC 333; junior or senior classification.

ANSC 421 Stock Horse Advanced Training
Credits 3. 3 Lecture Hours. 2 Lab Hours.
Theory and practice of applying scientific principles of psychology and behavior modification to advanced training of the stock horse; exercise conditioning and humane training methods to maximize learning effectiveness; current industry trends for preparing horses and showing in stock horse events.
Prerequisites: ANSC 311 and previous riding experience.

ANSC 423 Issues in the Equine Industry
Credits 3. 3 Lecture Hours.
Integration of cumulative knowledge acquired in the equine science curriculum to demonstrate critical thinking and communication skills to address critical issues in the equine industry.
Prerequisites: Junior or senior classification; approval of instructor.

ANSC 424 Equine Sales Management
Credits 3. 2 Lecture Hours.
Hands-on horse sale management experience through planning and conducting the Texas A&M University Department of Animal Science Horse Sale.
Prerequisite: Junior or senior classification and approval of instructor.

ANSC 431 Equine Marketing and Development
Credits 3. 3 Lecture Hours.
Scope of domestic and international equine industry; safe handling and transport of horses for export or import; career opportunities in the equine field.
Prerequisite: Junior or senior classification or approval of instructor.

ANSC 434 Animal Reproduction Management
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Available and emerging technologies including control of ovulation, artificial insemination, embryo manipulation and transfer, in vitro fertilization and animal cloning for managing reproduction of farm animals; hands-on sessions using available technologies including artificial insemination of cattle.
Prerequisites: Grade of C or better in ANSC 305, ANSC 307/NFSC 307, ANSC 318 and ANSC 333; junior or senior classification or approval of instructor.

ANSC 436 Texas Panhandle Beef Production Tour
Credits 2. 2 Lecture Hours.
Facets of beef production from cow/calf operations to retail product; experiential knowledge of technologies and practices to enhance efficiency to enlighten students regarding the array of career opportunities in the beef production industry.
Prerequisites: Junior or senior classification or approval of instructor.

ANSC 437 Marketing and Grading of Livestock and Meats
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Study of USDA livestock and carcass grades; understanding current market trends for beef, pork, lamb and goat; review of branded and certified programs; principles applied in contracting, breakeven determination, hedging, and grid or formula pricing.
Prerequisite: Junior or senior classification.

ANSC 439 Feedlot Risk Management
Credits 2. 2 Lecture Hours.
Advanced study of livestock marketing techniques; cash sales, video sales, futures and options markets, forward contracting; problem solving in real-time livestock marketing situations; risk of ownership of hypothetical livestock operations.
Prerequisites: junior or senior classification or approval of instructor.
ANSC 447 Advanced Meat Science and Technology  
Credits 4. 3 Lecture Hours. 3 Lab Hours.  
Advanced basic and applied studies of meat science and/or technology utilizing the underlying physiological and structural components for conversion to human food; understanding the influence of pre- and post-harvest factors on meat quality, composition, color, packaging, sensory and preparation factors; applying scientific and business principles to manufacturing and process flow of commercial meat food products and demonstrating knowledge of these principles through development of meat products.  
Prerequisites: Grade of C or better in ANSC 305, ANSC 307/NFSC 307, ANSC 318 and ANSC 333; GENE 301; STAT 301, 302, 303, or ANSC 309; junior or senior classification or approval of instructor.

ANSC 457/NFSC 457 Hazard Analysis and Critical Control Point System  
Credits 3. 3 Lecture Hours.  
Hazard Analysis and Critical Control Point (HACCP) principles specifically related to meat and poultry; microbiological and process overviews; good manufacturing practices and standard operating procedures development.  
Prerequisite: NFSC 326/DASC 326 or approval of instructor.  
Cross Listing: NFSC 457/ANSC 457.

ANSC 470/NFSC 470 Quality Assurance for the Food Industry  
Credits 3. 3 Lecture Hours.  
Principles of food system process control including statistical process control (SPC) and the tools required to assure uniform communication and understanding of quality assurance systems.  
Prerequisite: Junior or senior classification.  
Cross Listing: NFSC 470/ANSC 470.

ANSC 481 Seminar  
Credit 1. 1 Lecture Hour.  
Review of literature and research problems related to the livestock and food industries; preparation of a technical report including an oral presentation supported by a written technical paper.  
Prerequisite: Senior classification.

ANSC 484 Livestock Practicum  
Credit 1. 2 Other Hours.  
Provides an opportunity to learn skills required in livestock production; planned for students who have had limited farm and ranch experience in one or more species.  
Prerequisite: Junior or senior classification in animal science or approval of instructor.

ANSC 485 Directed Studies  
Credits 0 to 4. 0 to 4 Other Hours.  
Directed individual study of selected problem in field of animal science.  
Prerequisites: Junior or senior classification; written approval of professor supervising the activity; 2.0 GPR in major and overall.

ANSC 487/NFSC 487 Sensory Evaluation of Foods  
Credits 3. 2 Lecture Hours. 2 Lab Hours.  
Application of sensory science principles and practices to food systems including an understanding of discriminative, descriptive and consumer sensory techniques.  
Prerequisites: CHEM 222 or CHEM 227; junior or senior classification.  
Cross Listing: NFSC 487/ANSC 487.

ANSC 489 Special Topics in...  
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 8 Lab Hours.  
Selected topics in an identified area of animal science. May be repeated for credit.  
Prerequisite: Junior or senior classification.

ANSC 491 Research  
Credits 0 to 4. 0 to 4 Other Hours.  
Research conducted under the direction of faculty member in animal science. May be repeated 3 times for credit. Registration in multiple sections of this course is possible within a given semester provided that the per semester credit hour limit is not exceeded.  
Prerequisite: Junior or senior classification and approval of instructor; 2.0 GPR in major and overall.

ANSC 494 Animal Science Internship  
Credits 0 to 5. 0 to 5 Other Hours.  
Independent study and supervised field experience related to the student's professional interest.  
Prerequisites: Junior or senior classification or approval of instructor; 2.0 GPR in major and overall.

ANSC 498 Animal Science Capstone  
Credits 4. 3 Lecture Hours. 2 Lab Hours.  
Senior capstone project for students preparing to enter a career related to animal science or a professional school; individual projects based on a self-selected topic in animal science; includes a paper containing both translational and technical descriptions plus statements regarding the expected financial and social impacts of selected topic.  
Prerequisites: Grade of C or better in ANSC 399 and one from the following: ANSC 404, ANSC 406, ANSC 408, ANSC 412, ANSC 414, ANSC 420, ANSC 434, ANSC 447 or DASC 418; junior or senior classification or approval of instructor.