ANSC-ANIMAL SCIENCE (ANSC)

ANSC 100. Introductory Animal Science
3 Credits
Orientation and survey of livestock industry in the United States; introduction to feeding, breeding, and management practices for producing farm animals and select companion animals.

ANSC 100 L. Introductory Animal Science Laboratory
1 Credit
Students will observe and participate in activities related to farm animal management and will include areas of livestock selection, nutrition, reproductive physiology, animal ID and animal health. This lab is required for animal science majors. Pre/Co-requisite(s): ANSC 100.

ANSC 103. Introductory Horse Science
3 Credits (2+2P)
The light horse industry; breeds; introduction to feeding, breeding, marketing and management; handling and selecting horses for breeding and performance.

ANSC 112. Companion Animals in Society
3 Credits
Examination of the historical, current, and potential future roles of companion animals in human society. Topics include animal domestication, breeds, exotic companion animals, the companion animal industry, and competitions and sports involving companion animals. Emphasis is on canine and feline species. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

ANSC 190. Western Equitation I
2 Credits
Basic principles of Western riding, including care and management of the riding horse, equitation equipment, and development of riding skills.

ANSC 200. Introduction to Meat Animal Production
3 Credits (2+2P)
Production and utilization of beef cattle, sheep and swine; emphasis on feeding, breeding, management problems and marketing; selection of animals for breeding and market.

ANSC 201. Introduction to Genetics for Animal Production
3 Credits
Introduction to genetics and inheritance relative to livestock production. Introduction to procedures for collection and use of performance information in livestock improvement programs.
Prerequisite(s): BIOL 111G.

ANSC 220. Animal Science Career Development
1 Credit
Introduction to scientific disciplines and career options in animal-agriculture career-skill development, including resume preparation, networking, importance of internships, and leadership experiences in animal agriculture.

ANSC 250. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

ANSC 261. Introduction to Animal Metabolism
3 Credits
Principles underlying the mechanisms of animal metabolism as they relate to production, maintenance, and health of animals.
Prerequisite: CHEM 111G.

ANSC 262. Introduction to Meat Science
3 Credits (2+3P)
Fundamental aspects of the red meat industry. Lecture topics and laboratory exercises include the nutrient value of meat, meat preservation, meat safety, muscle structure and contraction, slaughter and processing of beef, lamb, and pork, sausage manufacture, meat curing, meat cookery, and muscle and bone anatomy.

ANSC 285. Introduction to Companion Animal Science
3 Credits
Introduction to the care of common companion animal species. Species specific housing and nutrition are covered in the context of maximizing animal health and well-being and reducing disease. May be repeated up to 3 credits.

ANSC 288. Horse Fitting and Selling
3 Credits
Preparation of horses for sale; planning and conduct of auction sale; application of marketing principles relating to selling horses.
Prerequisite: ANSC 103 or consent of instructor.

ANSC 289. Management of Equine Operations
3 Credits
Introduction and application of business skills necessary to effectively manage the equine operation. Students will learn how to use strategic thinking and sound business management practices to succeed in the demanding equine industry.
Prerequisite(s): ANSC 103 or consent of instructor.

ANSC 290. Western Equitation II
2 Credits
Intermediate principles of Western riding, including reading horse behavior, limbering-up exercises, and developing riding skills. Introduction to rollbacks, turnarounds and stops.
Prerequisite: consent of instructor.

ANSC 295. Team Competition in Animal Science
1-2 Credits
Training in team competition in the animal sciences. May be repeated for a maximum of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

ANSC 301. Animal and Carcass Evaluation
3 Credits (2+2P)
Determination of the market value of meat animals by relating live animal and carcass traits. Topics include the identification of economically important traits, grading, growth and development, wholesale and retail pricing, and futures and options markets.

ANSC 302. Therapeutic Horseback Riding I
3 Credits
Basic principles and understanding of horsemanship and therapeutic riding, including equipment, safety, how to be an effective volunteer, side walker, and horse handler. Consent of instructor required.

ANSC 303. Livestock, Meat and Wool Evaluation
4 Credits (3+2P)
Selection, classification, grading, and judging of livestock, meat, and wool.
ANSC 304. Feeds and Feeding
3 Credits (2+2P)
Digestibility of feeds, their nutritive values, grades, and classes, principles of ration formulation and computer ration formulations, and practical feeding of farm animals.
Prerequisite(s): CHEM 111G, General Chemistry I.

ANSC 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: AGRO 305, BIOL 305, HORT 305 and GENE 305
Prerequisite(s): BIOL 111G, BIOL 211G and either CHEM 111G or CHEM 115.

ANSC 308. Horse Evaluation
4 Credits (2+4P)
Students will acquire a working knowledge of selection and classification of horses, learn criteria for evaluation and selection of breeding and show animals, gain a broad understanding of judging conformation and performance in the horse, and learn effective oral and written communication skills through defense of class placings. This course is considered an introduction to the NMSU Horse Judging Team.

ANSC 310. Exhibiting Livestock
3 Credits (1+4P)
Fitting and showing beef cattle, dairy cattle, sheep and swine.

ANSC 312V. Companion Animals and the Human-Animal Interaction
3 Credits
The science behind human-animal interactions (HAI). An examination of the interactions between humans and companion animals and the effects on human and animal health and wellness. Cultural differences in HAI will be explored. Topics will include Animal Assisted Activity (AAA), Animal Assisted Therapy (AAT), and service animals. Emerging and future uses of companion animals in HAI will be discussed.

ANSC 320. Equine Behavior and Training
3 Credits
Basic principles, methods and philosophies of handling, breaking and training the two-year-old Western horse. May be repeated up to 6 credits.
Prerequisite(s): ANSC 290 or consent of instructor.

ANSC 321. Advanced Equine Behavior and Training
3 Credits
Continuation of ANSC 320. Further development of skills required to advance the training of the two-year-old Western horse. Emphasis will be placed on lateral work, lead changes, turn-arounds, obstacles, and making the horse accustomed to ranch and trail riding situations.
Prerequisite(s): ANSC 320 or consent of instructor.

ANSC 325. Food and Agribusiness Finance and Planning
3 Credits
Same as AG E 325. May be repeated up to 3 credits. Crosslisted with: AG E 325.

ANSC 350. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

ANSC 351V. Agricultural Animals of the World
3 Credits
Global study of the development and use of animals for production of food and nonfood products. Climatic, cultural, and economic influences on systems of livestock production and species and breeds of livestock utilized will be evaluated.

ANSC 353. Advanced Livestock Evaluation
2 Credits
Advanced selection, classification and grading of livestock. May be repeated up to 2 credits. Consent of Instructor required.

ANSC 363. Meat Technology
3 Credits
Structure and composition of muscles; factors influencing conversion of muscle to meat; buying, palatability and nutritive value of meat and meat products.

ANSC 370. Anatomy and Physiology of Farm Animals
4 Credits (3+2P)
Structure and function of the animal body. Includes studies of the horse, cow, sheep, pig, and comparisons with the human body.
Prerequisite(s): CHEM 111G and BIOL 111G or BIOL 211G.

ANSC 383. Equine Reproductive Management
3 Credits (1+4P)
Anatomy, physiology, and endocrinology of reproduction of the mare and stallion; training in modern reproductive techniques employed in the horse industry.
Prerequisites: ANSC 103, ANSC 289, and ANSC 370.

ANSC 390. Internship
1-3 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 3 credits toward a degree. Graded S/U
Prerequisite: consent of instructor.

ANSC 391. Undergraduate Research Experience
1-3 Credits (1-3)
Formal laboratory, library, or field study of problems related to animal sciences, emphasizing hypothesis development, testing, and reporting results. Projects are preplanned, reviewed, and approved. Students submit periodic written reports and final written and oral reports. May be repeated for a maximum of three credits. Consent of Instructor required.
Prerequisite(s): Consent of Instructor.
Corequisite(s): NO.

ANSC 392. Animal Sciences Teaching/Extension Experience
1-3 Credits (1-3)
Formal teaching experience related to animal sciences supervised by a faculty member. May involve classroom instruction, educational material development, and/or student evaluation and assessment. Students may also be involved in development, implementation, or assessment of adult or youth educational programs related to animal sciences, supervised by a faculty member. Students submit periodic written reports and a final written and oral report. May be repeated for a maximum of three credits. Consent of Instructor required.

ANSC 395. Team Competition II
1-2 Credits
Advanced training in team competition in the animal sciences. May be repeated for a maximum of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.
ANSC 402. Animal Science Seminar
1 Credit
Review of the current literature in animal sciences. Oral and written reports.

ANSC 411. Canine and Feline Behavior and Training
3 Credits
The influence of domestication, breeds, genetics, and physiology on the behavior of canine and feline species. Training methods and modification of problem behaviors are examined. The impact of the pet parent on their animal's behavior is addressed. May be repeated up to 3 credits.
Prerequisite(s): Junior or Senior status or consent of the instructor.

ANSC 412. Canine and Feline Health and Diseases
3 Credits
A review of common infectious and non-infectious diseases and the basics of the immune response. Pathophysiology and treatment of these diseases and the role the pet parent plays in pre-disposing their animals to disease. May be repeated up to 3 credits.
Prerequisite(s): ANSC 285 or consent of instructor.

ANSC 421. Physiology of Reproduction
4 Credits (3+2P)
Fertility and the role of hormones, nutrition, selection, management and environment in the maintenance of high reproductive rate.
Prerequisite(s): ANSC 370.

ANSC 422. Animal Nutrition
3 Credits
Nutrient utilization and measurement and nutrient requirements for the various body functions.
Prerequisite(s): CHEM 211 or CHEM 313 or ANSC 261.

ANSC 423. Animal Breeding
3 Credits (2+2P)
Mating systems, and selection procedures; calculation of inbreeding coefficients, genetic relationships, and gene frequency.
Prerequisite(s): ANSC 201 or 305.

ANSC 424. Swine Production
3 Credits (2+2P)
Breeding, feeding, and care of swine.
Prerequisite(s): ANSC 304.

ANSC 425. Horse Science and Management
3 Credits (2+2P)
Senior level course requiring students to apply basic knowledge acquired in the previous courses to solve typical problems encountered in the horse industry. Specific topics include genetics and animal breeding, business and legal issues, reproduction, health, nutrition and exercise physiology.
Prerequisite(s): ANSC 304 and ANSC 370 or concurrent registration.

ANSC 426. Beef Production: Cow-Calf Management
3 Credits (2+2P)
Senior level course examining management practices for the cow-calf producers. Specifically focusing on nutrition, reproduction, genetics, marketing, and health. May be repeated up to 3 credits.
Prerequisite(s): ANSC 304 and (ANSC 201 or ANSC 305) or concurrent registration.

ANSC 427. Dairy Production
3 Credits (2+2P)
Breeding, nutrition, physiology and management of dairy cattle.
Prerequisite(s): ANSC 304 and (ANSC 201 or ANSC 305) or concurrent registration.

ANSC 428. Sheep and Wool Production
3 Credits (2+2P)
Genetics, nutrition, physiology and management of sheep. Wool grading, shearing, and disease control.
Prerequisite(s): ANSC 304 and junior status.

ANSC 429. Beef Production: Feedlot Management
3 Credits
Senior level course in feedlot management of beef cattle. Topics of interest include cattle handling and processing, health and nutrition, intake management, and growth. Feed mill operation, marketing strategies, and regulatory concerns associated with finishing cattle production may also be discussed.
Prerequisite(s): ANSC 304 or Consent of Instructor.

ANSC 448. Problems
1-4 Credits
Individual investigation in a specific area of animal science. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

ANSC 458. Livestock Behavior, Welfare and Handling
3 Credits (2+3P)
Principles of animal behavior and evaluation of management practices on animal welfare in confined and rangeland livestock operations. Low stress livestock handling techniques. Design of livestock handling facilities. Crosslisted with: RGSC 458
Prerequisite(s): RGSC 294 or ANSC 100.

ANSC 462. Parasitology
3 Credits
Same as EPWS 462.

ANSC 468. Advanced Dairy Herd Management
3 Credits
The course is offered through the Southern Great Plains Dairy Consortium in Clovis, NM, and will include breeding, nutrition, physiology, health and management of large herd dairies of the Southwest. Students must apply for the course through the Consortium, and can take it more than once, as topics vary. Consent of instructor required.
Prerequisite(s): ANSC 304.

ANSC 480. Environmental Physiology of Domestic Animals
3 Credits
Influence of environmental factors on physiological processes of domestic animals.
Prerequisite: ANSC 370.

ANSC 484. Ruminant Nutrition
3 Credits
Energy, nitrogen, and mineral nutrition of ruminants with special emphasis on digestive physiology and metabolism of nonprotein nitrogen compounds.
Prerequisite: ANSC 422.
### ANSC 488. Equine Nutrition and Exercise Physiology
3 Credits (2+2P)
Students will gain an in-depth understanding of nutrition and exercise physiology in the horse. Students will investigate the response of major physiological systems to exercise, conditioning and training, gastrointestinal physiology, nutrition requirements and clinical nutrition of the horse.
Prerequisite(s)/Corequisite(s): Junior standing or consent of instructor.

### ANSC 501. Advanced Animal Nutrition (so)
3 Credits
Emphasis on digestive physiology and metabolism. Basic mechanisms involved in the intake, digestion, and absorption of nutrients studied. Crosslisted with: HNDS 501
Prerequisite(s): CHEM 211 or consent of instructor.

### ANSC 504. Animal Physiology Techniques (se)
4 Credits
Radioimmunoassay procedures. Methods and procedures for conducting reproductive physiology research in livestock. Includes animal preparation, sample collection, laboratory and cell culture procedures.
Prerequisite: consent of instructor.

### ANSC 507. Laboratory Techniques in Nutrition (f)
4 Credits (2+6P)
Methodology and experimental procedures in measuring nutrient requirements and value of diets. Same as HNDS 507.
Prerequisites: ANSC 422 or consent of instructor.

### ANSC 509. Endocrinology of Domestic Animals (f)
3 Credits
The role of hormones in growth, development, metabolism, temperature regulation, lactation, and reproduction of domestic animals, including commercial applications.

### ANSC 510. Range Nutrition Techniques (se)
3 Credits
Animal and plant methods of determining quantity and quality of range forage. Same as RGSC 510.
Prerequisite: ANSC 484 or consent of instructor.

### ANSC 512. Research Methods in Animal Science (s)
4 Credits (3+2P)
Procedures used in animal science research, including planning and conduct of investigations and interpretation of results. Same as HNDS 512.

### ANSC 515. Graduate Seminar
1 Credit
Current topics. Same as HNDS 517.

### ANSC 520. Advanced Nutritional Management I: Feedlot (se)
3 Credits
Emphasis on feeding systems for beef cattle from weaning to slaughter. Primary focus on feedlot nutrition and management.
Prerequisite: ANSC 484 or consent of instructor.

### ANSC 521. Advanced Nutritional Management II: Cow Calf/Stocker (so)
3 Credits
Emphasis on nutritional management for cow-calf and stocker operations. Primary focus on applications to range animal nutrition and management.
Prerequisite: ANSC 484 or consent of instructor.

### ANSC 522. Animal Nutrition (f)
3 Credits
Nutrient utilization and measurement; nutrient requirements for the various body functions. Taught with ANSC 422 and same as HNDS 522 with additional requirements for graduate students. Recommended for nonmajors. Crosslisted with: HNDS 522
Prerequisite(s): CHEM 211.

### ANSC 560. Rumen Microbiology (so)
3 Credits
Issues in ruminal and gastrointestinal microbiology. Includes physiological and genetic mechanisms in carbohydrate and nitrogen utilization. Same as FSTE 560.
Prerequisites: ANSC/HNDS 501 and CHEM 546.

### ANSC 580. Environmental Physiology of Domestic Animals
3 Credits
Influence of environmental factors on physiological processes of domestic animals. Specific focus on fetal and developmental programming, heat and cold stress.

### ANSC 588. Equine Nutrition and Exercise Physiology
3 Credits
Students will gain an in-depth understanding of nutrition and exercise, conditioning and training, gastrointestinal physiology, nutrition requirements and clinical nutrition of the horse.
Prerequisite(s)/Corequisite(s): ANSC 304 and ANSC 422.

### ANSC 598. Special Research Programs
1-4 Credits (1-4)
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

### ANSC 599. Master's Thesis
15 Credits

### ANSC 600. Research
1-15 Credits
This course is for Ph.D. students before they have completed qualifiers. Consent of Instructor required. Thesis/Dissertation Grading.
Prerequisite(s): ANSC 421 or consent of instructor.

### ANSC 602. Advanced Reproductive Physiology (fo)
3 Credits
Mechanisms of reproductive function; research methodology.
Prerequisite(s): ANSC 421 or consent of instructor.

### ANSC 602 L. Molecular Techniques in Reproductive Physiology (fo)
2 Credits
Molecular biology techniques used in the study of reproductive physiology in domestic animals. Extraction of RNA, DNA from endocrine tissues, northern analysis, culture of pituitary/ovarian tissue. Mechanisms of hormone action.
Prerequisite: consent of instructor.

### ANSC 604. Hypothalamo-Hypophyseal-Pineal Endocrinology (fe)
1 Credit
Hormones and other neurochemicals synthesized and secreted by the hypothalamus, pituitary, and pineal glands. Neuroendocrinology of the hypothalamo-hypophyseal axis.
Prerequisite: ANSC 509.
ANSC 605. Gonadal and Uterine Endocrinology (fe)
1 Credit
Endocrinology of mammalian ovaries, testes, and uteri including developing trophoblasts.
Prerequisite: ANSC 509.

ANSC 606. Endocrinology of Pregnancy, Parturition, and Lactation (fe)
1 Credit
Hormones and other chemical messengers involved in maintenance of pregnancy, control of parturition, and initiation and maintenance of lactation in farm animals.
Prerequisite: ANSC 509.

ANSC 621. Metabolic Functions and Dysfunctions (fe)
3 Credits
Physiological chemistry of ruminants and other domestic animals, with attention to metabolic dysfunctions and nutritional toxicology. Same as HNDS 621.
Prerequisites: CHEM 345 and ANSC 501.

ANSC 625. Nutrient Metabolism I: Mineral, Vitamin, and Nitrogen Metabolism (fo)
4 Credits
Cellular metabolism, physiological function(s), toxicities, and deficiencies of minerals, vitamins and nitrogen in ruminants and nonruminants. Same as HNDS 625.
Prerequisite: ANSC/HNDS 501.

ANSC 626. Nutrient Metabolism II: Carbohydrates, Lipids, and Energetics (se)
4 Credits
Basic principles of carbohydrate, lipid, and energy metabolism; integration of metabolism with emphasis on nutritional and biochemical processes related to efficiency of nutrient use. Same as HNDS 626.
Prerequisite: ANSC 501 or HNDS 501.

ANSC 698. Special Research Programs
1-4 Credits
Advanced individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

ANSC 700. Doctoral Dissertation
15 Credits