

## ASC

## Animal Sciences

### **ASC 101 DOMESTIC ANIMAL BIOLOGY. (3)**

The first in a sequence of two courses providing an introduction to the subject of animal science. Emphasis is placed on a fundamental understanding of anatomy, physiology, nutrition, reproduction, genetic and behavior of domestic animals.

### **ASC 102 APPLICATIONS OF ANIMAL SCIENCE. (3)**

The second in a sequence of two courses providing an introduction to the subject of animal science. Emphasis is placed on the application of scientific disciplines of anatomy, physiology, nutrition, reproduction, genetics and behavior in the management of domestic animals. Prereq: ASC 101.

### **ASC 106 ANIMAL AGRICULTURE IN THE MODERN WORLD. (3)**

Relationships of food production and consumption to income of humans throughout the world; major livestock (beef and dairy cattle, sheep, swine, poultry and horses) production areas of the world; relationships between live animal merit and yield of retail cuts of meat; identification of skeletal components; identification and functions of reproductive and digestive tract components; characteristics of breeds of beef and dairy cattle, sheep, swine, poultry and horses.

### **ASC 205 LIVESTOCK, PEOPLE AND THEIR INTERACTIONS. (1)**

Local experts in a wide variety of animal production enterprises and associated support services will give presentations on their area of expertise. Following the presentation, students will have the opportunity to discuss the topic of the day and potential employment opportunities in that field with the speaker. Prereq: ASC 101, ASC 102 (or concurrent enrollment).

### **ASC 300 MEAT SCIENCE. (4)**

A historical perspective of the meat industry together with major changes in body type and composition in both the live animal and its end product meat. Students will evaluate live market animals (swine, cattle, sheep), harvest the market animals, and follow their carcasses and cuts through fabrication and distribution channels. Major topics of discussion will focus on growth and development, inspection, grading, physical and chemical composition of meat and postmortem changes that affect meat quality. Additional information will cover meat marketing trends, nutrition, meat cookery, meat selection, health issues and consumer information. Lecture: two hours; laboratory two hours per week. Prereq: ASC 106.

### **ASC 301 LIVESTOCK SELECTION AND EVALUATION. (3)**

Selection principles of purebred and commercial beef cattle, sheep, swine and horses. Evaluation of live animal and carcass characteristics of beef cattle, sheep and swine. Emphasis placed on oral reasons. Laboratory, six hours. Not open to freshmen. Prereq: ASC 106.

### **ASC 303 EVALUATION AND GRADING OF MEATS. (2)**

A detailed consideration of the factors involved in the selection, grading and evaluation of carcasses and wholesale cuts of beef, pork and lamb. Specific emphasis will be given to cutability, quality and maturity as they relate to palatability and acceptance by the consumer. Laboratory, four hours. Prereq: FSC 304 or FSC 306.

### **ASC 309 ADVANCED EVALUATION AND GRADING OF MEAT. (2)**

Further consideration of the factors involved in selecting, grading and evaluating carcasses and wholesale cuts of beef, pork, and lamb. Emphasis will be placed on writing reasons. Laboratory, four hours. Prereq: ASC 303 or consent of instructor.

### **ASC 310 EQUINE ANATOMY AND CONFORMATION. (2)**

Anatomy of the horse with emphasis on the feet and legs. Topics will also include analysis of gaits, movement and the causes of common unsoundness with particular attention to the relationship between conformation and soundness and the application of visual appraisal to the selection of horses for performance and breeding. Prereq: ASC 106 and ASC 120.

### **ASC 311 ADVANCED EQUINE EVALUATION. (1)**

Advanced study of conformation and performance in the horse. Selection of horses of different breeds based on confirmation, breed character and movement. Emphasis will be placed on developing a knowledge of industry standards and preparation of oral reasons. Prereq: ASC 310.

### **ASC 312 ADVANCED LIVESTOCK SELECTION AND EVALUATION. (2)**

Selection of purebred and commercial beef cattle, sheep, swine and horses. Special emphasis on oral reasons, livestock contest procedures and herd improvement principles. Laboratory, six hours. Prereq: ASC 301 or consent of instructor.

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- ASC 320 EQUINE MANAGEMENT. (3)**  
Study of the basic principles associated with horse management. Topics will include equine behavior, equine diseases and herd health programs, facilities and environmental management, nutrition and feeding management. Lecture, two hours; laboratory, three hours per week. Prereq: ASC 106 and ASC 120.
- ASC 321 DAIRY CATTLE EVALUATION. (2)**  
Evaluation of dairy cattle for type characteristics. Laboratory, four hours.
- ASC 323 ADVANCED DAIRY CATTLE EVALUATION. (1)**  
Open only to those who have consent of instructor. Laboratory, two hours. Prereq: ASC 321.
- ASC 325 ANIMAL PHYSIOLOGY. (3)**  
An introduction to the functional anatomy and physiology of major body systems in domestic animals. Emphasis will be on how these systems interact to regulate circulation, gas exchange, acid-base balance, digestion and metabolism, locomotion and adapting to environmental changes. Prereq: BIO 152, CHE 115 or equivalent.
- ASC 340 POULTRY PRODUCTION. (2)**  
A study of the application of avian biology to modern poultry production. Topics include anatomy, physiology, reproduction, incubation and embryonic development, breeding and genetics, nutrition and feeding, disease control, housing and environmental control, management, poultry and egg products, and the structure of the poultry industry. For majors and non-majors. Prereq: ASC 101 or ASC 102 or equivalent or permission of the instructor.
- ASC 362 ANIMAL GENETICS. (4)**  
Study of genetics as applied to specific companion animals and livestock species. Roles of selection and mating systems and their expected consequences are examined when applied to qualitative and quantitative traits expressed by specific companion animals and various livestock species. Prereq: ASC 101.
- ASC 364 REPRODUCTIVE PHYSIOLOGY OF FARM ANIMALS. (4)**  
Introduction to anatomy and physiological processes related to reproduction with a focus on farm animals. Evaluations of management procedures as they relate to reproductive physiology. Prereq: ASC 101 or BIO 152, CHE 230 or CHE 236. (Chemistry may be taken concomitantly.)
- ASC 378 ANIMAL NUTRITION AND FEEDING. (4)**  
A fundamental study of the nutrients, their utilization and their role in the animal in conjunction with an applied understanding of the manner in which feedstuffs are evaluated and blended to meet the various species needs for those nutrients. Prereq: CHE 230 or 236.
- ASC 380 FEEDS AND FEEDING. (3)**  
The composition and nutritional characteristics of common feedstuffs. The digestive systems, nutritional requirements, formulated rations and economical feeding programs for farm animals. Lecture, two hours; laboratory, two hours. Prereq: ASC 378.
- ASC 382 ANIMAL PRODUCTION PRINCIPLES. (3)**  
A broad survey of animal agricultural management covering cattle, horses, poultry, swine, sheep and goats. Emphasis is placed on the practical application of scientific disciplines including anatomy, physiology, nutrition, reproduction and genetics. For nonmajors only.
- ASC 395 SPECIAL PROBLEM IN ANIMAL SCIENCE/FOOD SCIENCE. (1-4)**  
Independent study in animal and food science under the supervision of a faculty member. May be repeated for a maximum of eight credits. Prereq: Consent of appropriate instructor. (Same as FSC 395.)
- ASC 399 EXPERIENTIAL LEARNING IN ANIMAL SCIENCES/FOOD SCIENCE. (1-6)**  
A field-based learning experience in animal sciences and food science under the supervision of a faculty member. May be repeated to a maximum of six credits as an elective on a pass/fail basis. Prereq: Consent of instructor and department chairperson and completion of a departmental learning contract before registration. (Same as FSC 399.)

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- ASC 404G SHEEP SCIENCE. (4)**  
History and importance of the sheep industry; application of the principles of selection, breeding, feeding and management of sheep for efficient lamb and wool production. Lecture, two hours per week; laboratory, four hours per week. Prereq: ASC 300, ASC 362, ASC 364 and ASC 380 or consent of instructor.
- ASC 406 BEEF CATTLE SCIENCE. (4)**  
Scope and importance of the beef cattle industry; roles of the major cattle breeds and organizations associated with the beef cattle industry; application of equipment, identification, nutrition, reproduction, genetics, health, marketing, taxation and management principles to beef cattle production; impact of current economic, social and environmental issues on the beef cattle industry. Lecture, three hours; laboratory, three hours. Prereq: ASC 300, ASC 362, ASC 364 and ASC 380 or consent of instructor.
- ASC 408G SWINE PRODUCTION. (2)**  
A study of scope and importance of the swine industry. Application of principles of breeding, reproduction, nutrition, housing, health, and management of swine in modern production systems. Prereq: ASC 101, 102, 378.
- ASC 410G EQUINE SCIENCE. (3)**  
Detailed study of the anatomy and physiology of the horse as they relate to the nutrition, reproduction, athletic ability, unsoundness and control of diseases and parasites. Lecture, two hours; laboratory, two hours. Prereq: ASC 362, ASC 364 and ASC 380 or consent of instructor.
- ASC 420G DAIRY CATTLE SCIENCE. (3)**  
Scope and importance of the dairy cattle industry; selection, breeding, housing, feeding and management of dairy cattle. Lecture, two hours; laboratory, two hours. Prereq: ASC 362, ASC 364 and ASC 380 or consent of instructor.
- ASC 470 CAPSTONE FOR ANIMAL AGRICULTURE. (3)**  
Discussion of the importance of livestock production to society and consideration of major issues impacting animal agriculture. Principles and practices learned in disciplinary and commodity Animal Sciences courses are integrated into a unified perspective, and the scientific method is employed as an approach to problem analysis and resolution. Refinement of skills in critical thinking, information gathering, writing, and oral communication is emphasized. Prereq: Senior standing in College of Agriculture, Animal Sciences major.
- ASC 564 MILK SECRETION. (3)**  
Anatomy of the mammary gland, physiology and biochemistry of milk secretion and management factors affecting yield and composition of milk. Prereq: ASC 380, VS 350.
- ASC 601 MAMMALIAN ENDOCRINOLOGY. (3)**  
An introduction to the basic anatomy, physiology and biochemistry of endocrine systems with emphasis on mechanisms of hormone synthesis, secretion and action. Lectures and reading assignments will focus on endocrine function in mammalian species, including laboratory animals, humans and livestock. Prereq: BCH 401G and BIO 350 or equivalents. (Same as PGY 601.)
- ASC 602 MICRONUTRIENT METABOLISM. (4)**  
Detailed study of the properties, metabolism, biochemical and physiological functions and interactions of vitamins and minerals, and their relationships to deficiency symptoms and toxicity. Prereq: BCH 401G or consent of instructor. (Same as NS 602.)
- ASC 630 ADVANCED MEAT SCIENCE. (4)**  
Advanced meat science with special reference to the histological, chemical, physical and microbiological properties as they relate to meat quality, organoleptic acceptability and processing procedures. Lecture, three hours; laboratory, two hours. Prereq: FSC 304, FSC 306 or equivalent; one course in histology or biochemistry or consent of instructor. (Same as FSC 630.)
- ASC 660 BIOLOGY OF REPRODUCTION. (3)**  
Advanced study of current topics in reproductive biology. The course is comprised equally of student-led discussions and lectures given by faculty with research expertise in selected topics. Readings will be taken from current and classic literature. Topics covered include (but are not limited to) molecular and cellular endocrinology, hormone receptors and mechanism of action, reproductive neuroendocrinology, reproductive behavior, gametogenesis, fertilization, sexual differentiation, puberty, menopause and environmental effects on reproduction. Emphasis will be placed on the analysis and understanding of the experimental basis for current concepts in reproductive biology. Prereq: ASC/PGY 601 and ASC 364 or BIO/PGY 502 or consent of instructor. (Same as PGY 660 and ANA 660.)

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- ASC 680 LABORATORY METHODS IN NUTRITIONAL SCIENCES. (4)**  
The use of laboratory techniques and instrumentation in the solution of fundamental problems of nutrition. Lecture, one hour; laboratory, six hours.
- ASC 681 ENERGY METABOLISM. (2)**  
An in-depth discussion of nutritional energetics, from the standpoint of factors which influence the utilization of dietary energy. A critical review of current literature. Prereq: ASC 378 or equivalent, BCH 502 or equivalent or consent of instructor.
- ASC 682 MICROBIAL ECOLOGY OF DIGESTION. (4)**  
Principles of microbiology as they relate to nutrition and digestion in ruminant and nonruminant animals. Procedures for cultivation, isolation and characterization of anaerobic bacteria from the gastrointestinal tract. Methods for measuring and evaluating microbial growth and activity in the gastrointestinal tract. Lecture, two hours; laboratory, four hours. Prereq: BIO 476G or equivalent and consent of instructor.
- ASC 683 PROTEIN METABOLISM. (2)**  
A study of the principles and present concepts of protein and amino acid nutrition and metabolism in the animal. Prereq: Graduate level biochemistry.
- ASC 684 ADVANCED RUMINANT NUTRITION. (3)**  
Principles of ruminant metabolism in the utilization of feedstuffs for meat, milk, and wool production. Prereq: ASC 682 and two or more courses from ASC 681, ASC 683, ASC 685 and ASC 687 or consent of instructor.
- ASC 685 MINERAL METABOLISM. (2)**  
An in-depth review of the function, requirement deficiency and toxicity of mineral elements in nutrition. Emphasis on the interactions between elements and current literature will be made. Prereq: ASC 378 or NFS 510 or equivalent, BCH 502 or equivalent or consent of instructor. (Same as NFS 685.)
- ASC 686 ADVANCED NONRUMINANT NUTRITION. (3)**  
A study of nutrient utilization as influenced by digestion, absorption and metabolism with emphasis on swine and poultry. Prereq: One course each in nutrition and biochemistry.
- ASC 687 VITAMIN METABOLISM. (2)**  
Detailed study of the metabolism of vitamins and the role of vitamins in the metabolism of carbohydrates, proteins, lipids, and minerals. Prereq: BCH 502 or CHE 552 or consent of instructor.
- ASC 688 EQUINE NUTRITION. (2)**  
Detailed study of anatomical, physiological and microbiological factors influencing the nutritive requirements of the equine for maintenance, growth, reproduction, lactation and work. Prereq: One course in nutrition and physiology or biochemistry or consent of instructor.
- ASC 689 PHYSIOLOGY OF NUTRIENT DIGESTION AND ABSORPTION. (3)**  
An analysis and comparison of the structure and function of mammalian and avian gastrointestinal tracts, of feedstuff digestive processes, and of specific mechanisms responsible for nutrient absorption in various cell types. Emphasis is placed on livestock and avian species. Prereq: Graduate level Biochemistry.
- ASC 748 MASTER'S THESIS RESEARCH. (0)**  
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.
- ASC 749 DISSERTATION RESEARCH. (0)**  
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

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- ASC 767 DISSERTATION RESIDENCY CREDIT. (2)**  
Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.
- ASC 768 RESIDENCE CREDIT FOR THE MASTER'S DEGREE. (1-6)**  
May be repeated to a maximum of 12 hours.
- ASC 769 RESIDENCE CREDIT FOR THE DOCTOR'S DEGREE. (0-12)**  
May be repeated indefinitely.
- ASC 771 ANIMAL SCIENCE SEMINAR. (1)**  
May be repeated twice for a maximum of three credits.
- ASC 780 SPECIAL PROBLEMS IN ANIMAL DERIVED FOODS. (1-4)**  
May be repeated for a maximum of nine credits. Prereq: Consent of graduate adviser. (Same as FSC 780.)
- ASC 781 SPECIAL PROBLEMS IN GENETICS AND ANIMAL BREEDING. (1-4)**  
May be repeated to a maximum of nine credits. Prereq: Consent of graduate adviser.
- ASC 782 SPECIAL PROBLEMS IN ANIMAL NUTRITION. (1-4)**  
May be repeated to a maximum of nine credits. Prereq: Consent of graduate adviser.
- ASC 783 SPECIAL PROBLEMS IN REPRODUCTIVE PHYSIOLOGY (Subtitle required). (1-4)**  
Intensive study or investigation of topics in physiology not covered in formalized courses. May be repeated under different subtitle to a maximum of nine credits. Prereq: Consent of graduate adviser.
- ASC 790 RESEARCH IN ANIMAL DERIVED FOODS. (1-6)**  
Problems involving original investigation. May be repeated for a maximum of nine credits. Prereq: Consent of graduate adviser. (Same as FSC 790.)
- ASC 791 RESEARCH IN GENETICS AND ANIMAL BREEDING. (1-6)**  
Problems involving original investigation. May be repeated for a maximum of nine credits. Prereq: Consent of graduate adviser.
- ASC 792 RESEARCH IN ANIMAL NUTRITION. (1-6)**  
Problems involving original investigation. May be repeated for a maximum of nine credits. Prereq: Consent of graduate adviser.
- ASC 793 RESEARCH IN REPRODUCTIVE PHYSIOLOGY (Subtitle required). (1-6)**  
Original investigation of mechanisms and problems related to mammalian reproduction. May be repeated under different subtitle to a maximum of nine credits. Prereq: Consent of graduate adviser.