

# ANIMAL SCIENCE (ASCI)

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## ASCI Courses

### ASCI 101. Introduction to the Animal Sciences. 2 units

Term Typically Offered: F

CR/NC

Economic, environmental and societal impact of the livestock, poultry and horse industries. Basic terminology, anatomy, and physical requirements of animals. Career and academic planning. Co-curricular, extra-curricular, and post-graduate opportunities. Required of all first-time students in the Animal Science Department. Credit/No Credit grading only. 2 lectures.

### ASCI 112. Principles of Animal Science. 4 units

Term Typically Offered: F, W, SP

2020-21 or later catalog: GE Area B2

2019-20 or earlier catalog: GE Area B2

Sustainability Related

Comparative physiology of digestive, endocrine, and reproductive systems in animals. Principles of nutrition, genetics, growth, behavior, food processing and safety of animals. Current issues including biosecurity, animal welfare, and government safeguards for human and animal health. Course may be offered in classroom-based or online format. 4 lectures. Fulfills GE Area B2.

### ASCI 200. Special Problems. 1-4 units

Term Typically Offered: TBD

CR/NC

Prerequisite: Consent of instructor.

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 3 units per quarter. Credit/No Credit grading only.

### ASCI 203. Animal Parasitology. 3 units

Term Typically Offered: TBD

Prerequisite: BIO 111 or BIO 161.

Identification, life cycles, prevention and control of the common external and internal parasites causing economic loss in livestock. 3 lectures.

### ASCI 211. Meat Science. 4 units

Term Typically Offered: F, W, SP

Muscle food processing methods and operations. Conversion of muscle to meat. Meat inspection, grading, composition, curing, preservation, food safety and related topics. Carcass beef, pork, and lamb processed into consumer ready products. Course may be offered in classroom-based or online format. 3 lectures, 1 laboratory.

### ASCI 212. Livestock Show Management. 3 units

Term Typically Offered: W

Application of the management and operations of Cal Poly's Western Bonanza Livestock Show. Principles and procedures in planning, organizing, financing, promoting and managing a major livestock show and the fair industry. Total credit limited to 6 units. Not open to students with credit for ASCI 412 or ASCI 413. 1 lecture, 2 activities.

### ASCI 214. Equine Management. 2 units

Term Typically Offered: F, W, SP

Prerequisite: Consent of instructor.

Application of safety, risk reduction, horsemanship skills. Develop a working equine/human relationship. Selection and application of nutrition, equipment, preventive health and farrier program, and equitation skills. Total credit limited to 6 units. 2 laboratories.

### ASCI 215. Safe Handling of Animal-Based Foods for Consumers. 4 units

Term Typically Offered: W

2020-21 or later catalog: GE Area B2

2020-21 or later catalog: GE Area B3

2019-20 or earlier catalog: GE Area B2

2019-20 or earlier catalog: GE Area B4

Safe food handling of meat, dairy and egg products, emphasizing consumer knowledge in food safety from farm to table. Ecology of microorganisms in the kitchen environment. Detection, enumeration, and identification of pathogens and indicator microorganisms in animal-based food products. 3 Lectures, 1 laboratory. Fulfills GE Areas B2 and B3 (GE Areas B2 and B4 for students on the 2019-20 or earlier catalogs).

### ASCI 220. Introductory Animal Nutrition and Feeding. 4 units

Term Typically Offered: F, W, SP

Prerequisite: BIO 111 or BIO 161; and CHEM 127.

Nutrient digestion and absorption; basic functions of major nutrient classes; NRC feed classification and feedstuff characteristics; Van Soest system of fiber analysis and practical applications; feed processing: effects on feeds and nutrient availability; nutrient requirements of animals; diet formulation techniques. 3 lectures, 1 laboratory.

### ASCI 221. Introduction to Beef Production. 4 units

Term Typically Offered: F, SP

Survey of industry characteristics, breeds, market classes, production systems, and current issues facing the beef industry. 3 lectures, 1 laboratory.

### ASCI 222. Systems of Swine Production. 4 units

Term Typically Offered: F, W, SP

Structure of the pork industry in the U.S.; production standards and new technologies; breed systems. Market classification, product quality and quality assurance. Swine behavior and husbandry systems; biosecurity, health and feeding systems and management. 3 lectures, 1 laboratory.

### ASCI 223. Systems of Small Ruminant Management. 4 units

Term Typically Offered: F, W, SP

Sheep and goat industry overview, populations, trends, cultural implications, breed identification, nutritional, reproductive, health, marketing, and herd management of sheep and goats. Field trip may be required. 3 lectures, 1 laboratory.

### ASCI 224. Equine Science. 4 units

Term Typically Offered: F, W, SP

History, status of the horse industry, breeds. Application of management skills, safety, conformation evaluation, hoof and leg conformation and care. Understanding equine behavior. Insurance and tax ramifications. Pedigree analysis. Alternate therapies. 3 lectures, 1 laboratory.

**ASCI 225. Introduction to Poultry Management. 4 units**

Term Typically Offered: F, SP

Introduction to modern techniques in poultry production, processing, marketing and price discovery. Consumption trends, breeds and consumer grades. Laboratory application of management skills, health care, keeping of production and accounting records and processing techniques. 3 lectures, 1 laboratory.

**ASCI 226. Livestock Evaluation. 3 units**

Term Typically Offered: TBD

Utilization of objective and subjective estimation measures in establishing economic worth of domestic animals of the three meat animal species and horses. 1 lecture, 2 laboratories.

**ASCI 227. Companion Animal Science. 4 units**

Term Typically Offered: F, W, SP

Companion animal anatomy and physiology, reproduction, nutrition, behavior, management, common parasites, and infectious diseases. Scientific method in studying the human-animal bond. Application of biological concepts to problems related to companion animals. Trends in pet industry including animal welfare issues. 3 lectures, 1 laboratory.

**ASCI 228. Equine Evaluation. 2 units**

Term Typically Offered: TBD

Appraisal of equine breeds at halter and in performance classes. Evaluate horse classes, decide their order of placement, and then orally justify these decisions to a judge. The relationship of equine anatomy and physiology on competitive performance. 2 laboratories.

**ASCI 229. Anatomy and Physiology of Farm Animals. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BIO 111 or BIO 161.

Comprehensive overview of the principal systems of farm animals using an integrative, systemic approach to learning the homeostasis of mammalian organisms so the information can be applied to their daily care and management. 3 lectures, 1 laboratory.

**ASCI 232. General Animal Science Laboratory. 1 unit**

Term Typically Offered: TBD

Basic handling skills of livestock; introductory selection of livestock; basic feedstuff identification and processing; and health care practices. 1 laboratory.

**ASCI 239. Principles of Rangeland Management. 4 units**

Term Typically Offered: F, SP

Sustainability Related

Characteristics of rangeland ecosystems, processes of directing ecological change, the history of their management, particularly in North America. Laboratory activities introduce basic ecological monitoring practices, including quantification of biomass, soil cover, and species composition. 3 lectures, 1 laboratory. Replaces ASCI 329.

**ASCI 260. Preparation of Livestock for Shows and Sales. 3 units**

Term Typically Offered: TBD

Techniques, equipment and knowledge necessary in order to properly condition, groom, and present beef cattle or horses for evaluation and merchandising. 3 activities.

**ASCI 265. Equine Behavior and Training. 3 units**

Term Typically Offered: F

Training of weanling and yearling horses at halter. Selection of proper attire for the handler and equipment for the horse. Application of safe, behavioral training techniques enabling the horse to accept handling, farrier and health care. 3 activities.

**ASCI 270. Selected Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Open to undergraduate students and consent of instructor.

Directed group study of selected topics. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

**ASCI 290. Animal Production and Management Enterprise. 1-5 units**

Term Typically Offered: F, W, SP

CR/NC

Prerequisite: Consent of instructor.

Beginning field experience in animal production systems. May include health, nutrition, reproduction, management, processing, budgeting, and/or marketing exercises. Total major credit for ASCI 290 limited to 6 units. Total credit for ASCI 290 limited to 10 units. Credit/No Credit grading only. 1-5 lectures.

**ASCI 302. Animal Genetics. 4 units**

Term Typically Offered: F, W

Prerequisite: BIO 111 or BIO 161; and STAT 218.

Mendelian, population, quantitative, and molecular genetics as related to animal management practices. Predicted responses to natural and artificial selection in domesticated and wild animal populations. 4 lectures.

**ASCI 304. Animal Genomics. 3 units**

Term Typically Offered: F, W, SP

Prerequisite: ASCI 302, BIO 302, BIO 303, or BIO 351.

Application of genetic principles for domestic animal improvement. Improving animal performance and health through use of genetic markers and diagnostics, gene mapping, and related current technologies. 3 lectures.

**ASCI 310. Technical Veterinary Skills. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: ASCI 229.

Restraint and handling of animals, physical examination, necropsy procedure, basic wound management, applied pharmacology. Reproduction and herd health programs. 3 lectures, 1 laboratory.

**ASCI 311. Advanced Beef Cattle System Management. 4 units**

Term Typically Offered: W

Prerequisite: ASCI 221.

Management principles for the sustainability of commercial beef cattle operations. Systems approach for goal setting, financial analysis, range management, breeding systems, nutrition, health programs, marketing, and production practices to enhance profitability of commercial cow-calf operations. 3 lectures, 1 laboratory.

**ASCI 312. Production Medicine. 3 units**

Term Typically Offered: TBD

Prerequisite: ASCI 221 or ASCI 223; ASCI 225 or ASCI 222; ASCI 224 or ASCI 227; and ASCI 229.

Basic disease concepts. Fundamentals of immunology and therapeutics. Disease prevention principles, infectious and non-infectious. Pre-harvest food safety and milk and meat quality assurance. Herd health management programs for production efficiency and product quality. 3 lectures.

**ASCI 315. Equine Biomechanics. 4 units**

Term Typically Offered: TBD

Prerequisite: ASCI 224.

Anatomy and physiology of the equine hoof and limb. An understanding of the art and science of the farrier's work. Evaluation of proper hoof care, trimming, and shoeing. Foot and leg conformation as it relates to sound locomotion. 3 lectures, 1 activity.

**ASCI 319. Physiological Chemistry of Animals. 4 units**

Term Typically Offered: F, SP, SU

2020-21 or later: Upper-Div GE Area B

2019-20 or earlier catalog: GE Area B5, B6, or B7

Prerequisite: Junior standing; completion of GE Area A with grades of C- or better; one course in GE Area B4 with a grade of C- or better (GE Area B1 for students on the 2019-20 or earlier catalogs); ASCI 229, BIO 231, or BIO 361; and CHEM 212, CHEM 216, or CHEM 312. Recommended: STAT 130, STAT 217, or STAT 218.

Integration of the principles of chemistry, biochemistry, physiology and nutrition to understand metabolism of carbohydrates, lipids and proteins at the cellular, organ and whole animal level. Regulation and coordination of metabolic function within and across tissues in domesticated and wild animals. Course may be offered in classroom-based or online format. 4 lectures. Fulfills GE Area Upper-Division B (GE Areas B5, B6, or B7 for students on the 2019-20 catalog).

**ASCI 321. Zoonoses and Veterinary Public Health Concerns. 4 units**

Term Typically Offered: TBD

Prerequisite: BIO 111 or BIO 161.

Public health concerns including: animal and bird diseases which may be transmitted to people; pre-harvest food safety and handling concerns; and environmental public health hazards. 3 lectures, 1 activity.

**ASCI 324. Advanced Equine Evaluation. 2 units**

Term Typically Offered: TBD

Prerequisite: ASCI 228.

Appraising the relative merit of individual horses in halter and performance through the application, development and refinement of deductive and inductive logical processes. Oral and written expression of the selection rationale. 2 laboratories.

**ASCI 325. Egg Production, Processing and Distribution. 4 units**

Term Typically Offered: TBD

Prerequisite: ASCI 225.

Management of replacement pullets and laying hens including flock scheduling, vaccination and handling procedures, nutrition management, costs of operation and production projections. Quality determination, processing, sales and distribution of shell eggs and egg products. 3 lectures, 1 laboratory.

**ASCI 326. Advanced Livestock Evaluation. 2 units**

Term Typically Offered: TBD

Prerequisite: ASCI 112 and ASCI 226.

Application of deductive and inductive logical processes in appraising the relative merit of individual animals within a group sample. Oral expression of the selection rationale. Total credits limited to 4 units. 2 laboratories.

**ASCI 330. Poultry Meat Production and Processing. 4 units**

Term Typically Offered: W

Prerequisite: ASCI 211 or ASCI 225.

Modern production techniques for the poultry meat industry. Management of hatcheries, poultry production, and poultry meat processing. 3 lectures, 1 laboratory.

**ASCI 333. Equine Reproduction. 5 units**

Term Typically Offered: SP

Prerequisite: ASCI 224.

Management of the breeding farm, breeding problems, diseases, study of estrus cycles, servicing the mare, handling stallions. Breeding systems, teasing, embryo transfer, ultrasound pregnancy diagnosis, new developments in breeding technology. 4 lectures, 1 laboratory.

**ASCI 339. Internship in Animal Science. 1-12 units**

Term Typically Offered: F, W, SP

CR/NC

Prerequisite: Consent of internship instructor.

Selected Animal Science students will spend up to 12 weeks with an approved agricultural firm engaged in production or related business. Time will be spent applying and developing production and managerial skills and abilities. One unit of credit may be allowed for each full week of completed and reported internship. Major credit limited to 6 units. Total credit limited to 12 units. Credit/No Credit grading only.

**ASCI 340. Animal Welfare and Ethics. 4 units**

Term Typically Offered: W, SP

Prerequisite: BIO 111 or BIO 161; and Junior Standing.

Introduction to moral principles that have shaped the field of animal welfare science. Definition of Animal Welfare. Identification of science-based measures of welfare. Current welfare concerns with companion, laboratory, production, and exotic animals. 4 lectures.

**ASCI 342. Poultry Business Management. 4 units**

Term Typically Offered: TBD

Prerequisite: ASCI 225.

Organization and management of vertically integrated poultry operations. Personnel management, cash flow analysis, cash vs. accrual accounting, structuring of financial statements, projecting product outputs and cash flow needs, employee benefit programs and insurance needs for poultry companies. 4 lectures.

**ASCI 344. Equine and Human Communication. 3 units**

Term Typically Offered: F, W, SP

Prerequisite: ASCI 214.

Behavior of the horse and its relationship with people. Learning, motivation, social behavior and communication with techniques to improve the safety and understanding between people and horses. Total credit limited to 6 units. 3 activities.

**ASCI 345. Equine Behavior Modification. 5 units**

Term Typically Offered: F

Prerequisite: ASCI 344 and consent of instructor.

Advanced principles of equine behavior modification for training young horses under saddle. Identifying differences in individual horse's attitudes, techniques to teach horses to respond to different stimuli, management of young equine athlete. 5 activities.

**ASCI 346. Equine Nutrition. 4 units**

Term Typically Offered: SP

Prerequisite: ASCI 220 with a grade of C- or better.

Equine digestion, diet development considerations and evaluations, nutritional management, and the relationship of respective topics to recommended feeding practices, research data, and nutritional portfolios. Information is based on recent advances in horse nutrition and the National Research Council's Nutrient Requirements for Horses. 3 lectures, 1 laboratory.

**ASCI 347. Equine Exercise Physiology. 3 units**

Term Typically Offered: TBD

Prerequisite: ASCI 224.

Applied physiology of the exercising horse. Examine different physiological systems: muscular, cardiovascular, respiratory, and nutritional. Gait analysis, lameness, and treatment. The athletic horse: sports medicine, conditioning, drugs, and necropsy evaluation. A distance learning course. 3 lectures.

**ASCI 350. Nonruminant Nutrition. 4 units**

Term Typically Offered: W

Prerequisite: ASCI 220 with a grade of C- or better or consent of instructor.

Comparison of nonruminant and ruminant digestive systems, nutrient requirements, risk management for ingredients, formulation and nutritional management. Influence of growth and production curves, consumption patterns, and feeding management in commercial poultry and swine industries. Feed manufacturing and governmental regulations. 3 lectures, 1 laboratory.

**ASCI 351. Reproductive Physiology. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: ASCI 229.

Reproductive anatomy of male and female farm animals. General endocrinology and systemic physiology. Endocrine system effects on the various aspects of reproduction, such as: gametogenesis, estrus, gestation, parturition, mothering and seasonality. Introduction to reproductive biotechnology and embryo manipulation. 3 lectures, 1 laboratory.

**ASCI 355. Ruminant Nutrition. 4 units**

Term Typically Offered: W

Prerequisite: ASCI 220 with a grade of C- or better or consent of instructor; and one of the following: ASCI 319, ASCI 320, CHEM 313, CHEM 314, CHEM 369, or CHEM 371.

Digestive physiology and nutrition of ruminants. Anatomy and physiology of the digestive tract. Rumen microbial fermentation. Nitrogen utilization and metabolism. Energy partitioning. Net energy system. Range livestock and feedlot nutrition. Supplementation. Common metabolic and nutritional dysfunctions. Diet formulation. 3 lectures, 1 laboratory.

**ASCI 360. Holistic Management. 4 units**

Term Typically Offered: F, W, SP

2020-21 or later: Upper-Div GE Area B

2019-20 or earlier catalog: GE Area B5, B6, or B7

Sustainability Focused

Prerequisite: Junior standing; completion of GE Area A with grades of C- or better; completion of GE Areas B1 through B4, with a grade of C- or better in one course in GE Area B4 (GE Area B1 for students on the 2019-20 or earlier catalogs).

Application of holistic management, a goal-oriented, value-driven framework for making ecologically, economically, and socially sound decisions. Holistic approach to management, especially of land-based resources, aimed toward greater biodiversity and sustainability. 3 lectures, 1 laboratory. Crosslisted as AG/ASCI 360. Fulfills GE Area Upper-Division B (GE Areas B5, B6, or B7 for students on the 2019-20 catalog).

**ASCI 363. Undergraduate Seminar. 2 units**

Term Typically Offered: F, W, SP

Prerequisite: Junior standing.

Major developments in the chosen field of the student. Discussion of new developments, policies, practices, and procedures. Each individual is responsible for the development and presentation of a topic in the chosen field, resume, and cover letter. 2 seminars.

**ASCI 366. Veterinary Pharmacology. 4 units**

Term Typically Offered: TBD

Prerequisite: CHEM 111 or CHEM 127, and ASCI 229.

Investigation of pharmacological principles applied to animal systems. Overview of drugs acting on the nervous, endocrine, circulatory, urinary systems, and reproductive systems, specialty areas of pharmacology, and pharmacogenomics of livestock and companion animals. 3 lectures, 1 activity.

**ASCI 370. Rangeland Improvements. 3 units**

Term Typically Offered: W

Prerequisite: ASCI 239 or ASCI 329.

Review of practices used for improving the productivity or ecological functions of rangeland landscapes managed for grazing livestock, wildlife, or for ecological and/or aesthetic values. 3 lectures.

**ASCI 372. California Rangeland & Ranch Resource Management. 3 units**

Term Typically Offered: SP

Sustainability Related

Prerequisite: ASCI 239 or ASCI 329.

Natural resource management practices recommended for regulatory compliance and resource protection of rangeland ecosystems in California. Regulations that impact rangeland management under the Clean Water and Porter-Cologne Acts, and State and Federal endangered species protections. 3 lectures.

**ASCI 400. Special Problems for Advanced Undergraduates. 1-4 units**

Term Typically Offered: TBD

CR/NC

Prerequisite: Consent of instructor.

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 4 units per quarter. Credit/No Credit grading only.

**ASCI 403. Applied Biotechnology in Animal Science. 5 units**

Term Typically Offered: W

Prerequisite: BIO 161; BIO 162; and upper division genetics course (BIO 302 or BIO 303 or BIO 351 or ASCI 304).

Coverage of current resources, techniques and methodologies used in animal research and biotechnology as well as experimental design, model assessment, and data interpretation with application to an experimental setting in the laboratory. 3 lectures, 2 laboratories.

**ASCI 405. Domestic Livestock Endocrinology. 4 units**

Term Typically Offered: F

Prerequisite: ASCI 229 or BIO 361.

Endocrine homeostasis with emphasis on the influence of hormones involved in digestion, metabolism, calcium and phosphorous, thyroid gland, adrenal gland, reproduction, and pregnancy. Signaling pathways. 4 lectures.

**ASCI 406. Applied Animal Embryology and Assisted Reproduction. 4 units**

Term Typically Offered: W

Prerequisite: ASCI 229 and ASCI 351.

Comparative physiology and molecular understanding of oocyte development, fertilization, culturing, cryopreservation and micromanipulation of gametes and embryos. 3 lectures, 1 activity.

**ASCI 407. Assisted Reproduction Technologies of Gametes and Embryos Laboratory. 3 units**

Term Typically Offered: TBD

Prerequisite: ASCI 229; ASCI 351; and ASCI 406. Recommended: ASCI 319, ASCI 320, CHEM 369, or CHEM 371.

Coverage of current resources, advanced techniques and methodologies of assisted reproduction of gametes and embryos involving in-vivo collection, in-vitro fertilization, cryopreservation and micromanipulation. Mouse, cattle and horse gametes used for learning the techniques involved in embryology and assisted reproduction 1 lecture, 2 laboratories.

**ASCI 410. Applied Animal Behavior Science. 4 units**

Term Typically Offered: W, SP

Prerequisite: BIO 111 or BIO 161; and ASCI 229 or BIO 162.

Principles of behavior applied to animals in managed environments. Observation and measurement of behavior, including sampling and recording methods. Learning, including training and operant conditioning. Discussion of issues related to behavioral welfare. Etiology and management of maladaptive behavior. 3 lectures, 1 laboratory.

**ASCI 412. Advanced Livestock Event Planning. 3 units**

Term Typically Offered: W

Prerequisite: ASCI 212, AGB 314 and consent of instructor.

Organization and planning for the Western Bonanza Junior Livestock Show. Establishment of committee assignments and show manager responsibilities. Corporate partnerships established and fund raising begun. Planning for activities and guest speakers and new student recruitment. Total credit limited to 6 units. 1 lecture, 2 activities.

**ASCI 413. Advanced Livestock Event Management. 1 unit**

Term Typically Offered: F, SP

Prerequisite: ASCI 412 and consent of instructor.

Student management of the Western Bonanza Junior Livestock Show. Leadership skills, team building, media relations, use of computer applications, livestock and fair industry contacts and mentoring to new students. Application of knowledge learned in ASCI 412. Total credit limited to 2 units. 1 activity.

**ASCI 415. HACCP for Meat and Poultry Operations. 3 units**

Term Typically Offered: W, SP

Prerequisite: ASCI 211.

Using Hazard Analysis and Critical Control Point (HACCP) principles to develop regulatory inspection plans for meat and poultry operations; development and use of prerequisite programs; microbiological and process overviews. 3 lectures.

**ASCI 419. Animal Metabolism and Nutritional Modeling. 4 units**

Term Typically Offered: F, SP, SU

Prerequisite: ASCI 220 with grade of C- or better; and ASCI 319, ASCI 320, CHEM 313, CHEM 314, CHEM 369, or CHEM 371.

Relation of nutrient metabolism to animal production, exploration of systems used in development of animal nutritional models. Course may be offered in classroom-based or online format. 4 lectures. Formerly ASCI 420.

**ASCI 425. Meat Industry Study Tour. 2 units**

Term Typically Offered: W

Prerequisite: ASCI 211.

Study tour of commercial meat businesses. Livestock harvest and carcass fabrication, further meat processing, retail and food service operations. Personnel, processing procedures, regulatory standards, industry specifications and current issues. Travel for 4 days. 2 activities.

**ASCI 438. Systemic Animal Physiology. 4 units**

Term Typically Offered: F, SP

Prerequisite: ASCI 229; and one of the following: ASCI 319, ASCI 320, CHEM 313, CHEM 314, CHEM 369, or CHEM 371.

Homeostatic relationships of organ systems. Cardiovascular, respiratory, urogenital and neuro-endocrinological functions. 3 lectures, 1 laboratory.

**ASCI 440. Immunology and Diseases of Animals. 4 units**

Term Typically Offered: SP

Prerequisite: ASCI 229. Recommended: one of the following: ASCI 319, ASCI 320, CHEM 313, CHEM 314, CHEM 369, or CHEM 371.

Introduction to immune system, including innate and acquired immunity of domesticated animals. Application of immunological analyses and examination of current disease issues in domesticated animals. 3 lectures, 1 laboratory.

**ASCI 450. Computer Applications in Animal Science: Spreadsheet Analysis. 4 units**

Term Typically Offered: TBD

Prerequisite: Junior standing.

Development of spreadsheets relating to livestock production. Integration of database and analytical techniques. Cost-benefit analyses of livestock production systems. 2 lectures, 2 activities.



**ASCI 455. Advanced Equine Reproductive Technologies. 4 units**

Term Typically Offered: TBD

Prerequisite: ASCI 333 and ASCI 351. Recommended: ASCI 405 and ASCI 406.

Assisted reproductive technologies in horses; use of gametes from normal and sub-fertile horses; manipulation of sub-fertile horses, donor and recipient mares; manipulation of endocrine system; embryo utilization; cryobiology of gametes and embryos; assessment of high-risk mare, fetus, and neonate. 3 lectures, 1 laboratory.

**ASCI 460. Rangeland Assessment and Planning. 4 units**

Term Typically Offered: TBD

Prerequisite: ASCI 239 or ASCI 329.

Examination of methods used for determining the healthy and function of rangeland ecosystems, and the application of planning processes used in the management of rangelands and associated ecosystems. Field trip required. 3 lectures, 1 laboratory.

**ASCI 465. Applied Practices for Monitoring California Rangelands. 4 units**

Term Typically Offered: TBD

Sustainability Related

Prerequisite: ASCI 239 or ASCI 329; and consent of instructor.

Theory and application of grassland and brushland assessment and monitoring practices for evaluating grazing use, wildlife habitat quality, and fuels condition, and general ecological health. Course completion may be counted towards professional certifications. The course is intentionally structured to accommodate inservice training for federal land management agency and conservation organization staff. 2 lectures, 2 activity.

**ASCI 470. Selected Advanced Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

**ASCI 471. Selected Advanced Laboratory. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 laboratories.

**ASCI 477. Senior Project - Research Experience in Animal Science. 3 units**

Term Typically Offered: F, W, SP

Prerequisite: Senior standing, ASCI 363 and consent of instructor.

Recommended: one course in statistics.

Independent research experience in a specific area of animal science conducted under faculty supervision. Satisfies senior project requirement. Minimum 90 hours required.

**ASCI 478. Senior Project - Advanced Internship Experience in Animal Science. 3 units**

Term Typically Offered: F, W, SP

Prerequisite: ASCI 363 and senior standing.

Independent internship experience conducted under faculty supervision focusing on a discipline area of animal science. Completion of a project as a component of the internship. Satisfies senior project requirement. Minimum 90 hours required.

**ASCI 479. Senior Project - Current Topics in Animal Science. 3 units**

Term Typically Offered: F, SP

Prerequisite: Senior standing and ASCI 363.

Critical evaluation and formal presentation of current issues facing animal agriculture. Evaluation of current topics, analysis of supporting evidence and logic, and synthesis and formal presentation of the resulting perspectives on different approaches to current challenges. 3 lectures.

**ASCI 484. Processed Meat Products. 4 units**

Term Typically Offered: F

Prerequisite: ASCI 211, FSN 204, or graduate standing.

Physical, chemical and functional characteristics of meat food raw materials. Science and technology of value-added processing including curing, sausage manufacture, low moisture products, and restructuring. Quality assurance and related current industry topics. 3 lectures, 1 laboratory. Formerly ASCI 384.

**ASCI 490. Advanced Animal Production and Management Enterprise. 1-5 units**

Term Typically Offered: F, W, SP

CR/NC

Prerequisite: Consent of instructor.

Advanced field experience in animal production systems. May include health, nutrition, reproduction, management, processing, budgeting, and/or marketing exercises as well as management decision-making opportunities. Total major credit for ASCI 490 limited to 6 units. Total credit for ASCI 490 limited to 10 units. Credit/No Credit grading only. 1-5 lectures.

**ASCI 500. Individual Study in Animal Science. 1-6 units**

Term Typically Offered: F, W, SP

Prerequisite: Consent of department head, graduate advisor and supervising faculty member.

Advanced independent study planned and completed under the direction of a member of the Animal Science faculty. Total credit limited to 6 units.

**ASCI 520. Comparative Animal Nutrition. 4 units**

Term Typically Offered: TBD

Prerequisite: Consent of instructor. Recommended: one of the following: ASCI 319, ASCI 320, CHEM 313, CHEM 314, CHEM 369, or CHEM 371; and one of the following: ASCI 346, ASCI 350, ASCI 355, or DSCI 301.

Advanced problem-based presentation of animal nutrition case studies. Emphasis on nutrients, clinical nutrition disorders and species not commonly considered in production animal nutrition. Analytical and problem-solving skills will be utilized to develop solutions to complex animal nutrition management issues. 3 lectures, 1 activity.

**ASCI 570. Selected Topics in Animal Science. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Graduate standing or consent of instructor.

Directed group study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 12 units. 1 to 4 seminars.

**ASCI 571. Selected Advanced Laboratory. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Graduate standing or consent of instructor.

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 laboratories.

**ASCI 581. Graduate Seminar in Animal Science. 1-4 units**

Term Typically Offered: F, W, SP

CR/NC

Prerequisite: Graduate standing and consent of instructor.

Current findings and research problems in the field and their application to the industry. Credit/No Credit grading only. Total credit limited to 12 units. 1-4 seminars.

**ASCI 583. Research Experience for Regenerative Medicine Students. 2 units**

Term Typically Offered: TBD

Prerequisite: Graduate standing in the Specialization in Regenerative Medicine for the MS in Biological Sciences; or Specialization in Regenerative Medicine for the MS in Biomedical Engineering; or the Animal Science Specialization for the MS in Agriculture.

Independent research experience in biological or biomedical research. Proposal writing and literature review; experimental design, implementation and troubleshooting; oral and poster presentations. 1 seminar and supervised work. Crosslisted as ASCI/BIO/BMED 583. Formerly ASCI/BIO/BMED 594.

**ASCI 593. Regenerative Medicine Internship. 3-5 units**

Term Typically Offered: TBD

Prerequisite: Graduate standing in the Specialization in Regenerative Medicine for the MS in Biological Sciences; or the Specialization in Regenerative Medicine for the MS in Biomedical Engineering; or the Specialization in Animal Science for the MS in Agriculture.

Supervised graduate research and/or development in stem cell science or regenerative medicine and engineering. Provides students with an off-campus industrial or university internship. Total credit limited to 10 units. Crosslisted as ASCI/BIO/BMED 593.