

ANIMAL SCIENCES (AN SCI)

AN SCI 1 – COOPERATIVE EDUCATION/CO-OP IN ANIMAL SCIENCES

1 credit.

Full-time off-campus work experience which combines classroom theory with practical knowledge of operations to provide a background upon which to base a professional career. Students receive credit only for the term in which they are actively enrolled and working. The same work experience may not count toward credit in another course.

Requisites: Consent of instructor

Repeatable for Credit: No

Last Taught: Spring 2019

AN SCI/DY SCI 101 – INTRODUCTION TO ANIMAL SCIENCES

3 credits.

An overview of animal sciences covering anatomy, physiology, nutrition, reproduction, genetics, management, animal welfare, and behavior of domesticated animals. Food animals are emphasized to discuss their contributions to humans.

Requisites: None

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No

Last Taught: Fall 2023

AN SCI/DY SCI 102 – INTRODUCTION TO ANIMAL SCIENCES LABORATORY

1 credit.

Hands-on experience and demonstrations to develop practical skills with animals and to better understand the application of science to food production animals. It covers anatomy, physiology, nutrition, reproduction, genetics, management, animal welfare, and behavior of domesticated animals.

Requisites: DY SCI/AN SCI 101 or concurrent enrollment

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No

Last Taught: Fall 2023

AN SCI 110 – ANIMAL HANDLING

1 credit.

Hands-on course that provides an understanding of livestock handling techniques, proper restraint, administering injections, and drawing blood samples. Learn about animal response to human presence and the effect of facility design on animal behavior.

Requisites: DY SCI/AN SCI 101

Repeatable for Credit: No

Last Taught: Spring 2017

AN SCI 135 – GRAND CHALLENGES AND CAREER OPPORTUNITIES IN ANIMAL AND DAIRY SCIENCES

1 credit.

Covers the current key challenges and opportunities in the broad fields of animal agriculture, animal biology, animal health, and veterinary medicine, as well as internship and career opportunities and professional development activities that will maximize the value of an undergraduate career at UW-Madison and provide preparation for post-graduation endeavors.

Requisites: None

Course Designation: Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No

Last Taught: Fall 2023

AN SCI 200 – THE BIOLOGY AND APPRECIATION OF COMPANION ANIMALS

3 credits.

A systematic coverage of many of the animals (including birds) that humans keep as their social companions. The classification, nutritional requirements, environmental considerations, reproductive habits, health, legal aspects and economics of companion animals and their supportive organizations.

Requisites: None

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No

Last Taught: Spring 2024

AN SCI 240 – ANCIENT ANIMALS AND PEOPLES

3 credits.

Provides an introduction to human and animal relationships from prehistory to the present. Examines how animals have influenced social and economic structures of past societies, with a focus on the advent of domestication. Explores the cultural and economic changes that domestication has had on human societies, as well as the behavioral, genetic, and morphological changes that this process had on once wild animals. Emphasizes the methods used to retrace human-animal interactions, drawing on cross-cultural examples from anthropology, ethnozoology, archaeology, history, and genetics.

Requisites: None

Course Designation: Breadth - Either Biological Science or Social Science

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No

Last Taught: Summer 2022

AN SCI 245 – ANIMAL WELFARE

3 credits.

Explores animal welfare topics from the animal's perspective. Analyzes contemporary welfare issues and policies based on our scientific understanding of the experiences of animals. Emphasizes farmed animals, but also draws on examples from zoo, lab, and companion animals.

Requisites: None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No**Last Taught:** Fall 2023**AN SCI 289 – HONORS INDEPENDENT STUDY**

1-2 credits.

Honors research work under direct guidance of a faculty member in an area of Animal Sciences. Students are responsible for arranging the work and credits with the supervising instructor.

Requisites: Consent of instructor**Course Designation:** Honors - Honors Only Courses (H)**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2007**AN SCI 299 – INDEPENDENT STUDY**

1-3 credits.

Individual introductory to intermediate work under direct guidance of a faculty member in an area of Animal Sciences. Students are responsible for arranging the work and credits with the supervising instructor.

Requisites: Consent of instructor**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024**AN SCI/FOOD SCI 305 – INTRODUCTION TO MEAT SCIENCE AND TECHNOLOGY**

4 credits.

Application of biological, technological, and economical principles to muscle and related tissue utilized for food.

Requisites: (ZOOLOGY/BIOLOGY/BOTANY 152 or ZOOLOGY/BIOLOGY 101 and 102) and (CHEM 103, 109, or 115) or graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2023**AN SCI/DY SCI/NUTR SCI 311 – COMPARATIVE ANIMAL NUTRITION**

3 credits.

Nutrients and their assimilation, function, and interactions that affect metabolism in mammals. Differences among species will be used to emphasize unique digestive and physiological functions and how these differences affect metabolism of nutrients. Humans will be used in some comparisons. Follows physiological progression of nutrients, starting with an overview of the digestive tract followed by water and builds on specific roles of nutrients and substrates needed to provide basic processes required for maintenance, tissue accretion, and homeostatic regulation of nutrients.

Requisites: CHEM 341, 343, (BIOCHEM 301 or concurrent enrollment), or (BIOCHEM 501 or concurrent enrollment)**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No**Last Taught:** Spring 2024**AN SCI 314 – POULTRY NUTRITION**

3 credits.

Provides a conceptual understanding of nutrient requirements for optimal growth and production of commercial poultry species. The use of computer programming for feed formulation is emphasized.

Requisites: DY SCI/AN SCI 101**Repeatable for Credit:** No**Last Taught:** Summer 2019**AN SCI 315 – POULTRY ENTERPRISE MANAGEMENT**

3 credits.

Fundamental business and economic principles and practices for successful poultry production with emphasis on problem solving in flock management.

Requisites: DY SCI/AN SCI 101**Repeatable for Credit:** No**Last Taught:** Summer 2019**AN SCI/DY SCI 320 – ANIMAL HEALTH AND DISEASE**

3 credits.

Provides an introduction to and exploration of the interconnectivity between factors that affect health and disease and the central role of the immune system using infectious disease in animals as a key focus. Explores principal causes and identification of animal diseases, common diseases of farm animals, zoonoses and public health, disease prevention and management including biosecurity measures and host immune responses. Fosters appreciation for the translatability and universality of knowledge between human and animal health and disease.

Requisites: ZOOLOGY/BIOLOGY/BOTANY 151, (ZOOLOGY/BIOLOGY 101 and 102), BIOCORE 383, or graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2024

AN SCI/FOOD SCI 321 – FOOD LAWS AND REGULATIONS

1 credit.

Food laws and regulations, regulatory and commercial grading standards used in the food industry.

Requisites: Junior standing**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI/BOTANY/MICROBIO 335 – THE MICROBIOME OF PLANTS, ANIMALS, AND HUMANS**

3 credits.

Examination of the structure and function of microbial communities that live inside and on host organisms (plants, animals, and humans). Introduction to general concepts of the microbiome and microbiota, and their relationship to host nutrition, health, and disease.

Requisites: MICROBIO 101 or 303 or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No**Last Taught:** Spring 2024**AN SCI 336 – ANIMAL GROWTH AND DEVELOPMENT**

3 credits.

Covers growth and development of an animal from a single cell to an organism and factors such as nutrition, hormone, genetics and gut microbials influencing growth and development in both cell and tissue levels. Includes the molecular and cellular basis of prenatal and postnatal growth and development. Focuses on development and growth of tissues including muscle, adipose, connective, mammary, and bone tissues that are associated with animal production. Also includes the use of growth promotants in livestock to improve growth performance and increase the quality of carcasses and animal production.

Requisites: (ZOOLOGY/BIOLOGY/BOTANY 151 and 152), (ZOOLOGY/BIOLOGY 101 and 102), or BIOCORE 383**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No**Last Taught:** Fall 2023**AN SCI/BSE 344 – DIGITAL TECHNOLOGIES FOR ANIMAL MONITORING**

3 credits.

Introduces key concepts of sensor technology used for livestock and companion animal monitoring and veterinary medicine. Describes applications of Artificial Intelligence (AI) systems for livestock animals and veterinary medicine, including animal monitoring, computer-aided diagnosis, and optimized farm management decisions.

Requisites: (MATH 112, 114, 171, or placement into MATH 221) or graduate/professional standing**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI/DY SCI 361 – INTRODUCTION TO ANIMAL AND VETERINARY GENETICS**

2 credits.

The molecular basis for inheritance of monogenic and polygenic traits related to animal disease and production. An introduction to the principles of improving animal health and performance by selection and mating systems in companion animals, horses, livestock, and poultry.

Requisites: ZOOLOGY/BIOLOGY/BOTANY 151, (ZOOLOGY/BIOLOGY 101 and 102), or (BIOCORE 382, 383, and 384) or graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI/DY SCI 362 – VETERINARY GENETICS**

2 credits.

The genetic basis for predisposition to disease or resistance to disease in livestock and companion animal species. Genetic defects, their discovery, diagnosis and treatment.

Requisites: DY SCI/AN SCI 361**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI/DY SCI 363 – PRINCIPLES OF ANIMAL BREEDING**

2 credits.

Application of the principles of quantitative genetics to the improvement of livestock and poultry; breeding value estimation and selection techniques; effects of inbreeding and hybrid vigor; crossbreeding systems.

Requisites: DY SCI/AN SCI 361**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI 366 – CONCEPTS IN GENOMICS**

3 credits.

Genomics has revolutionized many fields of science, including animal breeding, plant breeding, physiology, microbiology, and human medicine. A basic overview of the latest concepts in genomics, including 3D genome organization, the importance of genome annotation, the use of genomic testing in plant and animal breeding, the potential of genomic prediction on human medicine, and the latest advances in omics integration.

Requisites: Junior Standing and BOTANY/BIOLOGY/ZOOLOGY 152, (BIOLOGY/ZOOLOGY 101, 102, and BIOLOGY/BOTANY 130), BIOCORE 381, or graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2023

AN SCI/DY SCI 370 – LIVESTOCK PRODUCTION AND HEALTH IN AGRICULTURAL DEVELOPMENT

3 credits.

Physical, biological and social nature of animal agriculture systems and their improvement in developing countries; analysis of the state of livestock research and development in the developing countries and the world role of U.S. animal agriculture.

Requisites: DY SCI/AN SCI 101, ZOOLOGY/BIOLOGY/BOTANY 151, ZOOLOGY/BIOLOGY 101, or (BIOCORE 381 and 382), or graduate/professional standing

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2023

AN SCI/DY SCI 373 – ANIMAL PHYSIOLOGY

3 credits.

Covers physiological processes that regulate the body and the anatomy and function of different physiological systems. Includes interactions between organ systems, analysis of a single organ system from the molecular to the organismal, and comparisons and contrasts of organ systems among different domestic animal species.

Requisites: ZOOLOGY/BIOLOGY/BOTANY 152, (ZOOLOGY/BIOLOGY 101 and 102), or (BIOCORE 382, 383, and 384)

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No

Last Taught: Spring 2024

AN SCI 375 – SPECIAL TOPICS

1-4 credits.

Various topics in Animal Science of current interest to undergraduate students.

Requisites: None

Repeatable for Credit: Yes, unlimited number of completions

Last Taught: Spring 2024

AN SCI 377 – INTEGRATIVE ANIMAL PHYSIOLOGY LABORATORY

1 credit.

Provides immersive, hands-on training in large animal procedural and surgical techniques to develop knowledge and appreciation for the interconnectivity and interdependence between physiological processes of the various organ systems. Serves as an introduction to translatable skills for careers in biomedical animal research, veterinary medicine, or human medicine.

Requisites: ZOOLOGY/BIOLOGY/BOTANY 151, (ZOOLOGY/BIOLOGY 101 and 102), or BIOCORE 383

Repeatable for Credit: No

AN SCI 399 – COORDINATIVE INTERNSHIP/COOPERATIVE EDUCATION

1-8 credits.

An internship under guidance of a faculty or instructional academic staff member in Animal and Dairy Sciences and internship site supervisor. Students are responsible for arranging the work and credits with the faculty or instructional academic staff member and the internship site supervisor.

Requisites: Consent of instructor

Course Designation: Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Workplace - Workplace Experience Course

Repeatable for Credit: Yes, unlimited number of completions

Last Taught: Spring 2024

AN SCI 400 – STUDY ABROAD IN ANIMAL SCIENCES

1-6 credits.

Provides an area equivalency for courses taken on Madison Study Abroad Programs that do not equate to existing UW courses.

Requisites: None

Repeatable for Credit: Yes, unlimited number of completions

AN SCI/DY SCI 414 – RUMINANT NUTRITION & METABOLISM

3 credits.

Integrates nutritional and biochemical concepts to understand digestive and metabolic processes in dairy and beef cattle, which are then quantitatively represented to predict and manipulate production and health outcomes.

Requisites: DY SCI/AN SCI/NUTR SCI 311, (BIOCHEM 301 or 501) or graduate/professional standing

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2023

AN SCI 415 – APPLICATION OF MONOGASTRIC NUTRITION PRINCIPLES

2 credits.

Nutrient requirements for growth and production of monogastric animals. Discuss concepts of establishing nutrient requirements and feeding strategies. Laboratory exercises are designed to develop problem solving skills required for the assessment of nutritional adequacy and economical soundness of feeding programs.

Requisites: DY SCI/AN SCI/NUTR SCI 311, (BIOCHEM 301 or 501) or graduate/professional standing

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2023

AN SCI 420 – MICROBIOMES OF ANIMAL SYSTEMS

3 credits.

Provides a knowledgebase in both theoretical and applied scientific approaches associated with microbiome sciences in animal production systems. Covers the basic principles of microbiology through applied practical approaches in using cross-species comparisons in companion and agricultural species from classical microbiological techniques to novel next-generation sequence-based approaches.

Requisites: (BIOLOGY/ZOOLOGY 101 and 102, BOTANY/BIOLOGY/ZOOLOGY 151, BOTANY/BIOLOGY 130, or BIOCORE 383) and (CHEM 341, 343, or BIOCHEM 301), or graduate/professional standing

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Spring 2024

AN SCI 431 – BEEF CATTLE PRODUCTION

3 credits.

Application of genetics, systems of mating, physiology, nutrition and economics to the production of beef.

Requisites: NUTR SCI/AN SCI/DY SCI 311, DY SCI/AN SCI 361, and (DY SCI/AN SCI 434 or concurrent registration) or graduate/professional standing

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2022

AN SCI 432 – SWINE PRODUCTION

3 credits.

Application of research findings in breeding, feeding, management and marketing to modernize production. Lab may include farm visits, practical exercises in testing changes, and "tools" used by producers.

Requisites: NUTR SCI/AN SCI/DY SCI 311, DY SCI/AN SCI 361, DY SCI/AN SCI 434, or graduate/professional standing

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Spring 2024

AN SCI/DY SCI 434 – REPRODUCTIVE PHYSIOLOGY

3 credits.

Principles of reproductive physiology, improvement of fertility, and artificial insemination.

Requisites: ZOOLOGY/BIOLOGY/BOTANY 152, (ZOOLOGY/BIOLOGY 101 and 102) or (BIOCORE 382, 383, and 384) or graduate/professional standing

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2023

AN SCI 435 – ANIMAL SCIENCES PROSEMINAR

2 credits.

Methods of assessing information quality are studied. Each student develops an analytical and critical seminar on a topic of personal interest in the animal sciences.

Requisites: None

Repeatable for Credit: No

Last Taught: Fall 2023

AN SCI/DY SCI/FOOD SCI/SOIL SCI 472 – ANIMAL AGRICULTURE AND GLOBAL SUSTAINABLE DEVELOPMENT

1 credit.

Examines issues related to global agriculture and healthy sustainable development. Using a regional approach and focusing on crops and livestock case studies, students will learn the interdependence between US agriculture and agriculture in emerging economies. Some topics covered include population and food, immigration, the environment; crop and livestock agriculture; global trade; sustainability; food security, the role of women in agriculture, and the role of dairy products in a healthy diet.

Requisites: None

Repeatable for Credit: No

Last Taught: Spring 2024

AN SCI/DY SCI/FOOD SCI/SOIL SCI 473 – INTERNATIONAL FIELD STUDY IN ANIMAL AGRICULTURE AND SUSTAINABLE DEVELOPMENT

2 credits.

Examines issues related to global agriculture and healthy sustainable development. Using a regional approach and focusing on crops and livestock case studies, students will learn the interdependence between US agriculture and agriculture in emerging economies. Some topics covered include population and food, immigration, the environment; crop and livestock agriculture; global trade; sustainability; and the role of women in agriculture and the role of dairy products in a healthy diet.

Requisites: DY SCI/AN SCI/FOOD SCI/SOIL SCI 472

Repeatable for Credit: No

AN SCI 503 – AVIAN PHYSIOLOGY

3 credits.

Principles of organ and system function with emphasis on male and female reproduction, embryonic development and factors affecting hatchability.

Requisites: DY SCI/AN SCI 101

Repeatable for Credit: No

Last Taught: Summer 2019

AN SCI 508 – POULTRY PRODUCTS TECHNOLOGY

3 credits.

Procurement, processing and distribution of poultry meat, eggs and derived products; factors affecting quality, including methods of determining quality.

Requisites: CHEM 103, 109, or 115

Repeatable for Credit: No

Last Taught: Summer 2019

AN SCI 511 – BREEDER FLOCK AND HATCHERY MANAGEMENT

3 credits.

History of artificial incubation relevant to the U.S. hatching industry. Practices involved in successful incubation of hatching eggs. Embryonic development in birds. Management factors involved in breeder hen production and operating a hatchery.

Requisites: DY SCI/AN SCI 101**Repeatable for Credit:** No**Last Taught:** Summer 2019**AN SCI 512 – MANAGEMENT FOR AVIAN HEALTH**

3 credits.

The occurrence, etiology, clinical signs, control and prevention of infectious and noninfectious diseases commonly affecting domestically reared poultry. Instruction in avian necropsy, zoonosis, sanitation and regulation.

Requisites: DY SCI/AN SCI 101**Repeatable for Credit:** No**Last Taught:** Summer 2019**AN SCI/FOOD SCI 515 – COMMERCIAL MEAT PROCESSING**

2 credits.

Principles and procedures in the commercial manufacture of processed meat products; sausage manufacturing, curing, smoking, freezing and packaging.

Requisites: AN SCI/FOOD SCI 305, FOOD SCI 410, or graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI/F&W ECOL/ZOOLOGY 520 – ORNITHOLOGY**

3 credits.

Introduction to bird biology, ecology, and behavior. Topics include the evolutionary origin of birds and flight, anatomy and physiology, functional morphology, migration, communication, reproductive strategies, ecological adaptations and roles, and biogeographical patterns.

Requisites: ZOOLOGY/BIOLOGY 101 and 102, ZOOLOGY/BIOLOGY/BOTANY 152, (BIOCORE 381 and 382), or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No**Last Taught:** Spring 2024**AN SCI/F&W ECOL/ZOOLOGY 521 – BIRDS OF SOUTHERN WISCONSIN**

3 credits.

Outdoor and indoor labs/lectures emphasizing identification of southern Wisconsin birds by sight and vocalization. Two required Saturday field trips in Southern Wisconsin.

Requisites: ZOOLOGY/BIOLOGY 101 and 102, ZOOLOGY/BIOLOGY/BOTANY 152, (BIOCORE 381 and 382), or graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No**Last Taught:** Spring 2024**AN SCI 610 – QUANTITATIVE GENETICS**

3 credits.

An advanced approach with emphasis on statistical foundations. Classical theory with extensions to maternal and paternal effects. Selection theory is considered in depth.

Requisites: Graduate/professional standing**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No**Last Taught:** Fall 2023**AN SCI/AGRONOMY/GENETICS/HORT 615 – GENETIC MAPPING**

3 credits.

Computing-intensive course to prepare students for genetic mapping research; linkage analysis and QTL mapping in designed crosses; linkage disequilibrium and association analysis (GWAS). Recommended preparation is undergraduate courses in genetics and statistics and prior experience writing R scripts (such as module 1 of STAT 327).

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2023**AN SCI/NUTR SCI 626 – EXPERIMENTAL DIET DESIGN**

1 credit.

Discuss nutrient requirements, composition of ingredients used to meet requirements and the mathematical steps involved in diet formulation with emphasis on research animals and human subjects.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2023

AN SCI 681 – SENIOR HONOR THESIS

2-4 credits.

Individual study for majors completing theses for Honors degrees as arranged with a faculty member.

Requisites: Consent of instructor**Course Designation:** Honors - Honors Only Courses (H)**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI 682 – SENIOR HONORS THESIS**

2-4 credits.

Second semester of individual study for majors completing theses for Honors degrees as arranged with a faculty member.

Requisites: Consent of instructor**Course Designation:** Honors - Honors Only Courses (H)**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Fall 2023**AN SCI 691 – THESIS**

2 credits.

Individual study for majors completing theses as arranged with a faculty member.

Requisites: Consent of instructor**Repeatable for Credit:** No**Last Taught:** Fall 2022**AN SCI 692 – THESIS**

2 credits.

Second semester of individual study for majors completing theses as arranged with a faculty member.

Requisites: Consent of instructor**Repeatable for Credit:** No**Last Taught:** Spring 2023**AN SCI 699 – SPECIAL PROBLEMS**

1-3 credits.

Individual advanced work in an area of Animal Sciences under the direct guidance of a faculty member.

Requisites: Consent of instructor**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: Yes, unlimited number of completions**Last Taught:** Spring 2024**AN SCI/FOOD SCI 710 – CHEMISTRY OF THE FOOD LIPIDS**

2 credits.

Chemical constitution, structures, reactions, stereochemistry of fats, phospholipids, related compounds; methods of isolation, characterization; synthesis; relation of structure to physical properties.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2021**AN SCI/FOOD SCI 711 – FOOD BIOCHEMISTRY**

3 credits.

Explores methods for interrogating structure-function relationships, molecular profiles, and microstructure of foods. Provides hands-on experience using computational approaches to model protein-small molecule interactions, analysis of small molecules using high-resolution MS, and protein composition and morphology with fluorescence spectroscopy and microscopy. Knowledge of food chemistry or organic chemistry (such as FOOD SCI 410, CHEM 341, 343, or 345) required.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2023**AN SCI 799 – PRACTICUM IN ANIMAL SCIENCES TEACHING**

1-3 credits.

Instructional orientation to teaching at the higher education level in the agricultural and life sciences, direct teaching experience under faculty supervision, experience in testing and evaluation of students, and the analysis of teaching performance.

Requisites: Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2023**AN SCI/DY SCI 824 – RUMINANT NUTRITIONAL PHYSIOLOGY I**

4 credits.

Focuses on rumen microbiology, metabolite modeling, as well as protein and VFA nutrition and metabolism.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2022**AN SCI/DY SCI 825 – RUMINANT NUTRITIONAL PHYSIOLOGY II**

4 credits.

Focuses on calf and heifer nutrition, regulation of dry matter intake, plant and forage chemistry, vitamins, lipids, and starch.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2023

AN SCI/GENETICS/POP HLTH 849 – GENETIC EPIDEMIOLOGY

3 credits.

This course will provide an introduction to genetic epidemiology. Topics will include a general overview of genetics and Mendelian and complex inheritance, as well as various elements of study design, including participant ascertainment; phenotype definition; biologic sample selection; genotyping, sequencing, and quality control; measurement of covariates, and choice of analytic methods. We will briefly discuss some of the original study designs and then focus on current study designs for the remainder of the class. Additional emerging topics will be briefly touched upon. Students will complete short homework assignments to enforce concepts learned during lectures, discuss journal articles, and prepare a very short grant application for the mid-term project. In the final weeks of class, students will work together to analyze data from a real genetic study, prepare tables, interpret the findings, and present their project to their peers.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI 865 – DESIGN AND ANALYSIS OF BIOLOGICAL STUDIES**

4 credits.

Experimental design and proper data analysis are critical processes for scientific research. Planning and performing research studies have statistical implications that influence how results are interpreted. Learn the fundamentals of generalized linear models, experimental design, and data analysis using common examples from biological studies.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2024**AN SCI 875 – SPECIAL TOPICS**

1-4 credits.

Specialized subject matter of current interest to graduate students.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024**AN SCI/DY SCI 931 – SEMINAR IN ANIMAL NUTRITION**

1 credit.

Discussion of literature that has a bearing on animal nutrition. Students are to survey the literature and present a seminar.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024**AN SCI/DY SCI/GENETICS 951 – SEMINAR IN ANIMAL BREEDING**

0-1 credits.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2020**AN SCI/OBS&GYN/ZOOLOGY 954 – SEMINAR IN ENDOCRINOLOGY-REPRODUCTIVE PHYSIOLOGY**

0-1 credits.

Promotes scientific and professional development. Presenters develop and deliver research presentations to a scientific audience, field questions, and receive critiques about their presentation style and scientific approach. Additional presentations include professional development, career advancement opportunities, and topics of interest to the endocrinology and reproduction community at large.

Requisites: Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024**AN SCI 990 – RESEARCH**

1-12 credits.

Independent research in preparation of a graduate thesis under supervision of a faculty member.

Requisites: Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2024