

AGRICULTURE

Mission

The mission of the agriculture program is to address the educational needs of individuals interested in rangeland management, domestic livestock and/or wildlife management, soil and plant sciences, and production processes and techniques.

Student Learning Outcomes

Students in this program will develop the knowledge, skills, competencies, and attitudes so they will be able to:

- Develop and defend a management plan which describes and assesses the rangeland resources of soil, vegetation, livestock and wildlife.
- Describe and compare range ecosystems throughout North America and the principles used to manage the resources within them.
- Synthesize and communicate, both written and orally, acquired knowledge from scholarly research on rangeland, livestock and wildlife management using appropriate peer-reviewed literature.
- Bachelor of Science with a Comprehensive Major in Rangeland Management (<http://catalog.csc.edu/undergraduate/programs/agriculture/bs-comprehensive-major-rangeland-management/>)
 - Rangeland Ecology Option
 - Rangeland Fire Management Option
 - Rangeland Livestock Management Option
 - Rangeland Wildlife Management Option
 - Rangeland Equine Management Option
- Bachelor of Science in Natural Resources with a major in Grassland Ecology and Management (<http://catalog.csc.edu/undergraduate/programs/agriculture/bs-natural-resources-major-grassland-ecology-management/>)
- Bachelor of Science in Agriculture Sciences with a major in Agricultural Education (<http://catalog.csc.edu/undergraduate/programs/agriculture/bs-agriculture-sciences-major-agricultural-education/>)
- Bachelor of Arts with a Comprehensive Major in Business Administration with Agribusiness Option (<http://catalog.csc.edu/undergraduate/programs/business/ba-comprehensive-major-business-administration/>)
- Agricultural Plant Science (<http://catalog.csc.edu/undergraduate/programs/agriculture/agricultural-plant-science-minor/>)
- Animal Science (<http://catalog.csc.edu/undergraduate/programs/agriculture/animal-science-minor/>)
- Equine Management (<http://catalog.csc.edu/undergraduate/programs/agriculture/equine-management-minor/>)
- Rangeland Management (<http://catalog.csc.edu/undergraduate/programs/agriculture/rangeland-management-minor/>)
- Veterinary Science (<http://catalog.csc.edu/undergraduate/programs/agriculture/veterinary-science-minor/>)
- Wildlife Management (<http://catalog.csc.edu/undergraduate/programs/agriculture/wildlife-management-minor/>)

- Unmanned Aircraft Systems for Remote Sensing (<http://catalog.csc.edu/undergraduate/programs/agriculture/unmanned-aircraft/>)

AGRI 110 AGRICULTURE SEMINAR I1 Credit

This course is designed to provide students with an introduction to the study of agriculture. Students will be exposed to study methods, technical writing, scientific literature, and written and oral communication skills that will be vital to successfully completing their study of agriculture and related fields. This course will clarify and improve student expectations of an undergraduate education.

AGRI 132 INTRODUCTION TO ANIMAL SCIENCE3 Credits

Species adaptability, product standards and requirements, areas and types of production, processing and distribution of products, including meat animals, dairy, and horses.

AGRI 141 INTRO TO PLANT SCIENCE3 Credits

Fundamental structures and processes of plants. Principles to be applied cover plant structures, physiology, genetics, and environmental relationship to growth, adaptation, biotechnology, and management of plants.

AGRI 160 SPECIAL TOPICS: AGRICULTURE1-3 Credits

Special topics appropriate for lower division credit.

Notes: May be repeated with different emphases for up to six hours of credit.

AGRI 211 INTRODUCTION TO UNMANNED AERIAL SYSTEMS3 Credits

Introduction to Unmanned Aircraft Systems (UAS), will be an introduction to the history of the practical application of UAS. The course will also be an introduction to a broad range of unmanned aerial systems used for remote sensing. These systems will include surveillance satellites, fixed wing aircraft and rotary wing aircraft, including helicopter and multi-copters, as well as hybrid systems. In addition, the course will be an introduction to the technology of a specific UAS including the airframe, motors, batteries, the Electronic Speed Controller (ESC), the flight controller, and Radio Control (RC) transmitters. In the process, the student will become familiar with the nomenclature associated with the UAS.

AGRI 212 THE FAA SMALL, UNMANNED AIRCRAFT (SUAS) LICENSE TEST3 Credits

The FAA Small, Unmanned Aircraft (sUAS) License Test, is an introduction the Federal Aviation Administration (FAA) restrictions covering operation of sUAS (Code of Federal Regulations (CFR) Part 107), and Nebraska laws governing sUAS operation. In addition, the course is preparation for the student to take and pass the FAA sUAS License Test

Prerequisites: AGRI 211

AGRI 221 FARM AND RANCH MANAGEMENT3 Credits

The skills, techniques, innovations, and current procedures for management of farms and ranches.

AGRI 234 PRINCIPLES OF ANIMAL NUTRITION3 Credits

Principles of ruminant and non-ruminant nutrition as they relate to the biochemical and physiological functions of nutrients in life processes, and as they relate to feeding practices.

AGRI 235 INTRODUCTION TO WILDLIFE MANAGEMENT3 Credits

Introduction to the basic principles of wildlife biology and the art and science of wildlife management. Emphasis will be placed on terrestrial wildlife. Field trips may be required.

AGRI 242 PRINCIPLES OF RANGELAND AND FORAGE MANAGEMENT3 Credits

Emphasizes rangeland history, ecology, physiology of rangeland productivity and utilization, grazing management, rangeland improvements, and domestic livestock and wildlife management. Also includes forage production, harvesting, storage, rotations and pasture management.

AGRI 244 TALK DIRTY TO ME3 Credits

Without soil: ecosystems fail to function, food supplies are stressed, production of clean air and water slow. Yet soil is often misunderstood and abused by the people who depend on it. Students will learn about the importance of soil to society as a whole and what they can do to preserve and improve soil resources. Students will develop, plan, and implement a final project in which they apply their newly acquired knowledge about soils to a local or regional scale civic engagement project.

Essential Studies: SLO #9

AGRI 245 PRINCIPLES OF SOIL SCIENCE3 Credits

Origin, development, classification and management of soils that affect plant growth.

Co-requisites: AGRI 245L

AGRI 245L PRIN OF SOIL SCIENCE LABORATORY1 Credit

Lab experience.

Co-requisites: AGRI 245

AGRI 270 SPECIAL TOPICS1-3 Credits

Special topics appropriate for lower division credit.

Notes: May be repeated with different emphases for up to six hours of credit.

AGRI 311 AGRICULTURE AND RANGE MANAGEMENT UAS APPLICATIONS3 Credits

Agriculture and Range Management UAS Applications, is the identification of the fifteen common missions associated with agriculture and range management. Covered in this course will be the purpose for performance of each discrete mission, the mission desired outcome and the types of sensors required for each missions.

Prerequisites: AGRI 211

AGRI 324 WILDLIFE AND LIVESTOCK DISEASE MANAGEMENT3 Credits

Outlines parasitic, infections, and environmental diseases influencing wild and domestic animal populations. Identifies the cause of disease, routes of transmission, and affects on the individual and population. Explores management alternatives to control disease and reduce impacts on wildlife populations.

Prerequisites: AGRI 132 or AGRI 235 and Sophomore or above status

AGRI 325 RANGELAND WILDLIFE MANAGEMENT3 Credits

Issues and management of wildlife and their habitats on rangelands. Emphasis will be on wildlife habitat management and manipulation and the issues of co-habitation of wildlife and domestic livestock. Field trips may be required.

Prerequisites: Sophomore or above status

AGRI 326 SUAS TRAINING LABORATORY3 Credits

SUAS Training Laboratory, is a hands-on training laboratory in which the student will learn how to safely operate a quad-copter drone that the student has purchased.

Prerequisites: AGRI 211 and AGRI 212

AGRI 329 AGRICULTURAL MARKETING3 Credits

Market structure, conduct and performance factors within the domestic and global marketing areas with specific emphasis on production components, agricultural resources, outputs and marketing through supply chains and channels. Specific attention involves governments' roles in marketing, market basket, price spreads, price analysis, futures and options markets, and contract marketing.

Prerequisites: ECON 231, ECON 232, MATH 138 or MATH 142 and Sophomore or above status

AGRI 330 AGRICULTURAL ECONOMICS AND AGRIBUSINESS3 Credits

Basic economic principles and theories focusing on product markets, resource markets, production costs and market structures, conduct and performance of the agricultural sector from retail level, consumers' demands, and resource sectors, production, domestically and globally within agriculture. Governments' roles, functions and policies which impact domestic and global markets for agriculture.

Cross-Listed: AGRI330/ECON334

AGRI 333 RUMINANT PRODUCTION3 Credits

Principles and practices of commercial and purebred domestic and wildlife production including breeds, breeding, reproduction, diseases, marketing, management and general husbandry.

Prerequisites: Sophomore or above status

Co-requisites: AGRI 333L

AGRI 333L RUMINANT PRODUCTION LABORATORY1 Credit

Lab experience.

Prerequisites: Sophomore or above status

Co-requisites: AGRI 333

AGRI 334 VEGETATION MANIPULATION PRACTICES3 Credits

Methods of manipulating rangeland vegetation for multiple-use purposes by grazing management, undesirable animal and plant control, seeding, soil and water enhancement and other appropriate management practices.

Prerequisites: AGRI 242 and Sophomore or above status

AGRI 335 HORSE PRODUCTION3 Credits

Principles and practices related to modern horse industry including conformation, performance, horse handling, diseases, housing, foot and leg care, equipment, and history.

Prerequisites: Sophomore or above status

AGRI 336 NON-RUMINANT PRODUCTION3 Credits

Principles and practices of non-ruminant production including breeds, breeding and reproduction, diseases, marketing, management and general husbandry.

Prerequisites: Sophomore or above status

AGRI 337 APPLIED ANIMAL NUTRITION3 Credits

Characteristics of basic feedstuffs and recommended feeding practices utilizing ration development, feeding trials and feed analysis.

Prerequisites: Sophomore or above status

AGRI 338 LIVESTOCK EVALUATION3 Credits

Evaluation of the relationship of form to function of domestic animals for superior production. Various types, classes, grades, and breeds of livestock will be studied.

Prerequisites: AGRI 132 and Junior or above status

AGRI 339 RANGE PLANT IDENTIFICATION1 Credit

Identification of the principle rangeland grasses, forbs, and shrubs of North American rangelands by ecosystem, with both common and scientific names. Habitat, management, and historic use characteristics of the species is also presented.

Prerequisites: Sophomore or above status

Co-requisites: AGRI 339L

AGRI 339L RANGE PLANT IDENTIFICATION LABORATORY2 Credits

Lab experience.

Prerequisites: Sophomore or above or status

Co-requisites: AGRI 339

AGRI 346 EQUINE COMMUNICATIONS I2 Credits

This course is designed as an introduction to natural horsemanship. Through the principle of making the right thing easy and the wrong thing difficult, students will learn the fundamental nature of round penning young horses. Students will build a strong foundation with aspects of controlling the forehead, haunches, shoulders and ribs.

Prerequisites: Sophomore or above status

Co-requisites: AGRI 346L

AGRI 346L EQUINE COMMUNICATIONS I LABORATORY1 Credit

Lab experience.

Prerequisites: Sophomore or above status

Co-requisites: AGRI 346

AGRI 347 EQUINE COMMUNICATIONS II2 Credits

This course is a continuation of Equine Communications I. Through the principle of making the right thing easy and the wrong thing difficult, students will learn the fundamental nature of centered riding, soft supple maneuvers, and riding with confidence. Students will learn to train horses through soft hands and communication through their seat position. Maneuvers being taught are: side pass, turn-around, correct stop, lead changes, roll-backs, circling, hip, shoulder, rib, and forehead control.

Prerequisites: Sophomore or above status

Co-requisites: AGRI 347L

AGRI 347L EQUINE COMMUNICATIONS II LABORATORY1 Credit

Lab experience.

Prerequisites: Sophomore or above status

Co-requisites: AGRI 347

AGRI 348 RANGELAND HYDROLOGY3 Credits

Studies the hydrological cycle of rangeland watersheds. Primary focus will be on the role of vegetation in hydrologic processes and how utilization of rangeland watershed and manipulation of vegetation can alter or modify the processes.

Essential Studies: SLO #6

Prerequisites: Sophomore or above status

AGRI 350 RANGELAND UNGULATE PRODUCTION3 Credits

Production of ungulate on rangelands. Includes plant and animal responses to grazing, grazing animal behavior, grazing management, supplementing rangeland forage, and economic considerations.

Prerequisites: AGRI 242 and Sophomore or above status

AGRI 357 GRAZING ECOLOGY3 Credits

Ecology and management of rangeland systems with emphasis on the relationships between wild and domestic herbivores and their environment. Includes considerations of soils, air, hydrology, microbes, plants, and animals across multiple spatial and temporal scales.

Prerequisites: Junior or above status

AGRI 390 INTERNSHIP IN AGRICULTURE/RANGE MANAGEMENT1-12 Credits

Provides practical experience in resource management relative to agriculture, rangeland management, natural resources, and wildlife management.

Add Consent: Department Consent

Notes: Interested students should contact the Internship and Career Services office to secure application materials; application should be made prior to the semester the internship will be started; the amount of credit will be based on the availability of a suitable work position, the qualifications of the applicant, and the work hours.

AGRI 399 RANGELAND ECOSYSTEM FIELD STUDY3 Credits

This course offers students opportunities to develop observation and interpretation skills while being introduced to rangeland ecosystems not normally accessible during the normal 16 week terms. Students will research, plan, and participate in a guided field study of rangeland ecosystems of interest to students. The course will be divided into three phases; research, planning, and field tour with the field tour scheduled during the summer session.

Prerequisites: Sophomore or above status

AGRI 400 INDEPENDENT STUDY OR RESEARCH1-3 Credits

For students seeking an individual problem in agriculture.

Prerequisites: Junior or above status

Add Consent: Department Consent

Requirements: Approval of a supervising faculty member, academic Dean, and Academic Vice President is required before registering.

AGRI 410 AGRICULTURE SEMINAR III1 Credit

Designed to enhance oral and written communication skills as encountered in agriculture.

Prerequisites: AGRI 110 and Junior or above status

AGRI 411 CONSERVATION BIOLOGY3 Credits

This course will provide a broad overview of the field of conservation biology including fundamental biological and ecological principles, patterns and threats to biodiversity, causes of population declines and extinction, techniques used in conservation biology, and conservation economics and policy.

Prerequisites: Junior or above status

Dual-listed: AGRI 511

AGRI 420 RANGELAND SHORT COURSE2 Credits

Intensive summer workshop covering all contemporary areas of rangeland management.

Prerequisites: Junior or above status

Requirements: Additional fees will be assessed.

AGRI 423 AGRICULTURAL POLICY3 Credits

An examination of USDA agricultural, fiber, conservational, and rural economic policies studies from domestic and international perspectives. Examination of public policy in the economic framework used to assess and improve competitive structure, operation, and performance of U.S. and international food and agriculture. Farm, international trade, rural economic development, resource/environmental, technology, food marketing and consumer policies are analyzed.

Cross-Listed: AGRI423/ECON423

Essential Studies: SLO #10

Prerequisites: Junior or above status

Notes: No prerequisites although major economics courses will be beneficial.

AGRI 426 WILDLIFE RESEARCH AND MANAGEMENT TECHNIQUES3 Credits

Field and laboratory techniques for studying, evaluating, and managing wildlife and their habitats are described and demonstrated. Field trips required.

Prerequisites: AGRI 235 and Junior or above status

AGRI 427 ANIMAL ANATOMY & PHYSIOLOGY3 Credits

Principles of physiology as related to gross anatomy, disease, and management practices of mammals.

Prerequisites: AGRI 132, BIOL 131 or BIOL 225, and Junior or above status

Co-requisites: AGRI 427L

Notes: Recommended for pre-veterinary students.

AGRI 427L ANIMAL ANATOMY & PHYSIOLOGY LABORATORY1 Credit

Lab experience.

Prerequisites: Junior or above status

Co-requisites: AGRI 427L

AGRI 428 HABITAT INVENTORY AND ANALYSIS1 Credit

Rangeland and monitoring inventory techniques and vegetation sampling methods related to rangeland vegetation condition and degree of use.

Prerequisites: AGRI 242, AGRI 339, and Junior or above status

Co-requisites: AGRI 428L

AGRI 428L HABITAT INVENTORY AND ANALYSIS LABORATORY2 Credits

Field lab experience.

Prerequisites: Junior or above status

Co-requisites: AGRI 428

AGRI 429 EQUINE INDUSTRY APPLIED FIELD STUDIES3 Credits

Provides an overview of the marketing and economic trends in the equine industry, as well as global equestrian hot-spots. A required field experience will provide firsthand experience with equine industry components including training, breeding, ranching, marketing, business, and showing venues throughout the United States, and expose students to opportunities available in the equine industry.

Prerequisites: Junior or above status

AGRI 430 LAND RESOURCE MANAGEMENT PLANNING3 Credits

Inventory of soils, vegetation, water, wildlife, timber, mineral, recreation, and cropland resources of a selected farm/ranch operation or conservation area and development of a detailed management plan. Techniques of management of private and public lands.

Prerequisites: AGRI 141, AGRI 242, AGRI 245, AGRI 334, AGRI 339, and Junior or above status

AGRI 435 WILDLIFE MANAGEMENT PRACTICUM3 Credits

Seminar style course that will bring together wildlife professionals, natural resource managers, livestock producers, environmentalists, and others interested in wildlife management. Participants will describe, discuss and debate existing programs and issues on private and public lands. Field trips required.

Prerequisites: AGRI 235, AGRI 426, and Junior or above status

AGRI 436 RANGELAND AND FIRE ECOLOGY3 Credits

Principles of rangeland ecology using an approach treating plants, animals and humans as a whole. Includes composition, structure, processes, adaptations to environmental factors, biotic relationships, and problems of environmental quality and resource use. The role of fire in rangeland ecosystems, the characteristics of fire, and use of fire in maintaining native ecosystems will be explored. May require field trips.

Prerequisites: AGRI 242 and Junior or above status

AGRI 440 RANGE LIVESTOCK REPRODUCTION3 Credits

Reproductive processes of range livestock including anatomy, physiology, endocrinology of reproduction, reproductive techniques including artificial insemination, embryo transfer, in vitro fertilization and cloning and various management techniques to enhance reproductive efficiency on the ranch.

Prerequisites: AGRI 132 and Junior or above status

AGRI 444 GRASS SYSTEMATICS3 Credits

The main focus of the course is on identification of members of the Poaceae, or grass, family. Students will work through grasses provided to identify them down to species. Upon completion of the class the students will be able to recognize common tribal and genera characteristics, and be able to key out unknown grasses.

Prerequisites: Junior or above status

AGRI 445 MAMMALOGY2 Credits

Systematics, life history, physiology, and behavior of mammals.

Cross-Listed: AGRI445/BIOL435

Prerequisites: BIOL 101, 101L, 102, 102L, 244, 244L or 9 credits of AGRI courses

Co-requisites: BIOL 435L

Requirements: Field trips required.

AGRI 445L MAMMALOGY LABORATORY1 Credit

Laboratory experience.

Cross-Listed: AGRI445L/BIOL435L

Prerequisites: Junior or above status

Co-requisites: AGRI 445

AGRI 447 ANIMAL BREEDING AND GENETICS3 Credits

Reproduction processes of domestic animals, including anatomy, physiology and endocrinology of reproduction, breeding systems, and artificial insemination principles.

Prerequisites: AGRI 132 and Junior or above status

AGRI 451 HUMAN DIMENSIONS OF WILDLIFE MANAGEMENT3 Credits

Overviews the historic and current public viewpoints of wildlife and wildlife/human conflicts. Examines the policies which affect wildlife research and management and the impacts public opinion has on policy formation. Identifies the various stakeholders involved in natural resource management and policy and incorporates the idea that wildlife management is people management.

Prerequisites: AGRI 235 and Junior or above status

AGRI 460 TOPICS IN AGRICULTURE1-3 Credits

Meets the needs of changing conditions in Agriculture.

Prerequisites: Junior or above status

Notes: Topics may change from semester to semester; this course may be repeated for up to a total of 6 hours of credit.

AGRI 461 SPECIAL PROBLEMS1-4 Credits

Designed for the highly motivated advanced student.

Prerequisites: Junior or above status

Notes: This course may be repeated for up to a total of 6 hours of credit.

Requirements: The student must submit a plan of study to the instructor and have the instructor's approval the semester prior to enrollment.

AGRI 467 AGRICULTURAL BUSINESS PLANNING AND MANAGEMENT3 Credits

Analysis of the economic decisions made by farm/ranch owners, from sales to marketing to financial management to market analysis, feasibility studies and interfacing with governmental and other organizations. At the end of the course, you will have the core elements of a business plan to guide your farming/ranching operations.