# NATURAL RESOURCES (NRES)

**NRES 40 Readiness for Care of Captive Wild Animals**
**Notes:** First of two sequential 0-credit courses that are also linked to digital badges through CASNR. Course uses video modules provided through partnership with San Diego Zoo's Global Academy for some content.
**Description:** Professional development experiences for careers in animal rehabilitation centers, zoos, or aquariums that involve captive animals. Topics covered include introductory animal care and use, animal learning, regulations, inspection readiness, working safely with animals, and bioethics.
**Credit Hours**: 0
**Max credits per semester:**
**Max credits per degree:**
**Grading Option:** Pass No Pass
**Offered:** FALL/SPR
**Prerequisite for:** NRES 41

**NRES 41 Care of Captive Wild Animals**
**Prerequisites:** NRES 40 (or concurrent)
**Notes:** Second of two sequential 0-credit courses that are also linked to digital badges through CASNR. Course uses video modules provided through partnership with San Diego Zoo's Global Academy for some content.
**Description:** Professional development experiences for careers in animal rehabilitation centers, zoos, or aquariums that involve captive animals. Topics covered include nutrition, safe handling and restraint, zoological record keeping, environmental systems, and trust-based animal training.
**Credit Hours**: 0
**Max credits per semester:**
**Max credits per degree:**
**Grading Option:** Pass No Pass
**Offered:** FALL/SPR

**NRES 42 Natural Resources Professional Development Experience**
**Prerequisites:** Permission
**Description:** Experiences in an established professional development program in Natural Resources.
**Credit Hours**: 0
**Max credits per semester:**
**Max credits per degree:**
**Grading Option:** Pass No Pass

**NRES 92 Plant Biology Portfolio and Assessment**
**Crosslisted with:** PLAS 92
**Prerequisites:** Junior standing in Plant Biology degree program
**Notes:** Required for graduation. Offered every Fall during the first 5 weeks. Pass/No Pass only.
**Description:** Development of an experiential portfolio and completion of an online survey as part of assessment activities.
**Credit Hours**: 0
**Max credits per semester:**
**Max credits per degree:**
**Grading Option:** Pass No Pass

**NRES 101 Natural Resources Orientation**
**Description:** Introduction to natural resource disciplines. Fisheries, wildlife, forestry, grasslands, climate, and water science. Participate in field exercises in terrestrial and aquatic ecosystems.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded
**Offered:** FALL
**Prerequisite for:** ASCI 202
**Course and Laboratory Fee:** $50

**NRES 103 Introduction to Agricultural and Natural Resource Systems**
**Crosslisted with:** AGRI 103
**Description:** Agricultural and natural resource systems. The interrelationship and the impact of increased human involvement on these systems.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL/SPR

**NRES 104 Climate in Crisis**
**Description:** Past, present and future climate change. Climate science basics in the context of global changes (such as global warming, droughts, deforestation) that impact Earth and its inhabitants. Future climate change scenarios and possible impacts.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**ACE:** ACE 9 Global/Diversity

**NRES 107 Invasive Plant Species: Impacts on Ecosystems**
**Crosslisted with:** PLAS 107
**Notes:** Online only
**Description:** The flora of the earth is constantly being re-distributed by natural and human forces. As plant species change locations, they affect ecosystems, but how? In this course, students will learn how invasive plants establish and spread in ecosystems and develop an understanding of their impacts on ecosystems from local to global scales.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**Offered:** FALL/SPR
**ACE:** ACE 9 Global/Diversity

**NRES 109 Water in Society**
**Crosslisted with:** SCIL 109, AECN 109, ENVR 109, GEOG 109
**Description:** Introduction to the scientific, social, and economic dimensions of historical and contemporary water systems. Students will develop an understanding of hydrologic systems and analyze and engage in decision-making about complex challenges associated with water resource use.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL
**ACE:** ACE 4 Science ACE 8 Civic/Ethics/Stewardship

**NRES 111 Wildlife and Natural Resource Conservation**
**Description:** Explore and distinguish the basic concepts, values, and stewardship of wildlife and natural resource conservation in agricultural and natural ecosystems. Examine the philosophies of ecosystem services and stewardship within a dynamic human-dominated world. Students will explore and analyze current issues related to conservation of wildlife and other natural resources.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 115 Introduction to Environmental Science**
**Notes:** High school earth sciences, chemistry and mathematics courses recommended.
**Description:** Emphasizes understanding the natural world and improving science literacy by learning the scientific method. Contemporary environmental problems are presented along with relevant questions. The scientific method along with fundamental concepts of chemistry, physics and biology are used to present possible solutions to environmental issues.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded
**Offered:** FALL
**ACE:** ACE 4 Science
**Course and Laboratory Fee:** $70

**NRES 125 Introduction to Zoo and Aquarium Science**
**Description:** Become familiar with the concepts and challenges associated with biological, ethical, welfare, and administrative aspects of zoo science and captive animal care. Conduct an ethology study using the scientific method.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**ACE:** ACE 4 Science
**Course and Laboratory Fee:** $70

**NRES 130 People of Great Plains**
**Description:** The Great Plains region offers considerable ecological and cultural diversity, encompassing more than 600 million acres which have been occupied by humans for over 12,000 years. Introduction to the different populations who have called the Great Plains home, and how they have made a living on this landscape. Investigate Native American life ways in the Great Plains from the time of initial colonization up to European contact and the dramatic changes experienced during the historic era. Select topics centered on contemporary socio-ecological systems on the Plains and how understanding of past Plains experiences can be used to inform on these contemporary issues.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**ACE:** ACE 5 Humanities
**Experiential Learning:** Case/Project-Based Learning

**NRES 163 Oh My Cod: Exploring Aquatic Ecology Careers**
**Prerequisites:** Limited to Freshman or Sophomore classification only
**Description:** Introduction to fisheries and aquatic ecology. Familiarize with current research and critical review of literature. Guidance on careers in aquatic ecology. Initial field sampling experience.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded with Option

**NRES 170 Introduction to Great Plains Studies**
**Crosslisted with:** ANTH 170, GEOG 170, GPSP 170, SOCI 170
**Description:** Interdisciplinary study of the natural environment, social environment, human heritage, arts and humanities of the Great Plains.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 201 Dendrology: Study and Identification of Trees and Shrubs**
**Crosslisted with:** PLAS 201, LARC 201
**Description:** An introduction to the naming, identification, and natural history of woody trees and shrubs in North American with emphasis on trees common to Nebraska. Covers morphology, natural site conditions, wildlife and human uses of woody trees and shrubs.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL
**Course and Laboratory Fee:** $10

**NRES 208 Climate Literacy in Natural Resources**
**Description:** Develop an understanding of the science of the climate system and the climate's influence on our environment. Learn about climate interactions, impacts of changing climate conditions, and actions to reduce these impacts, particularly on natural resources. Develop competency in assessing scientific information about the global climate and learn that such information is essential in making informed decisions about natural resource management.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL

**NRES 210 Applied Ornithology**
**Description:** To explore interactions between birds and people from economic and scientific perspectives, understand societal conflicts between feral cats and birds, hazards birds present to aircraft, the economics of bird feeding, how commercial bird hunting clubs work, how populations are affected by collisions with vehicles, windows and towers, the taxidermy industry and museum science, and hunting organizations such as Pheasants Forever and Ducks Unlimited.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded
**Offered:** SPRING
**Course and Laboratory Fee:** $65

**NRES 211 Introduction to Conservation Biology**
**Prerequisites:** Sophomore standing.
**Description:** Introduction to problems faced in fulfilling the ever increasing human needs while maintaining ecosystem and biodiversity. The integration of biological fields such as wildlife biology, ecology, evolution, and genetics with non-biological fields such as economics, philosophy, and politics to the dilemma this presents.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 212 Woody Plants for Landscapes: Identification, Management, and Use**
**Crosslisted with:** PLAS 212, LARC 212
**Description:** Identification, basic management and design uses of trees and shrubs for sustainable landscapes, with an emphasis on native plants and plants adapted to the Plains states. Emphasis is on live specimens in outdoor environments, supported by online resources.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL

**NRES 213 Cultivars and Varieties of Woody Plants for Landscapes**
**Crosslisted with:** PLAS 213, LARC 213
**Description:** Characteristics of commercially available trees and shrubs used in urban landscapes. Compares differences among cultivars, design uses, and management issues using a combination of live specimens in outdoor environments and online resources.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 214 Herbaceous Landscape Plants**
**Crosslisted with:** PLAS 214
**Description:** Identification of herbaceous plants with ornamental value in the landscape including native and introduced annuals, perennials, grasses and cultivars. Typical ecological associations, environmental tolerances and/or intolerance, cultural requirements, and design characteristics.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 218 Introduction to Geospatial Technologies**
**Notes:** Recommended to have basic computer skills
**Description:** Theory and applications of geospatial information technology (GIT) with emphasis on real-world applications to natural resources. Overview of GIT, focusing on introduction of remote sensing, the global positioning system (GPS), and geographic information systems (GIS). Introduction to data collection, spatial data representation, georeferencing, spatial data analysis, and remote sensing image analysis.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL/SPR
**Course and Laboratory Fee:** $50

**NRES 220 Principles of Ecology**
**Prerequisites:** LIFE 121 or BIOS 101 or PLAS 131; 3 hours MATH.
**Notes:** Not open to students who have completed BIOS 207. Will not count toward a major in BIOS. MATH 100A is not sufficient preparation.
**Description:** Ecology as a quantitative discipline that integrates the life and earth sciences to understand the dynamics of natural and managed ecosystems.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Prerequisite for:** LARC 487, NRES 487; NRES 222; NRES 311; NRES 374; NRES 862, NRES 462

**NRES 222 Ecology Laboratory**
**Prerequisites:** NRES 220 or parallel.
**Notes:** May also be offered at Cedar Point Biological Station. Field trips to local ecosystems are required.
**Description:** Field and laboratory experiments in terrestrial and aquatic ecology.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded with Option
**Prerequisite for:** NRES 862, NRES 462
**Course and Laboratory Fee:** $25

**NRES 233 Wildlife Field Techniques**
**Prerequisites:** Sophomore status
**Notes:** Offered off-campus during academic breaks at Cedar Point Biological Station. Course fee applies.
**Description:** Field and laboratory skills needed for wildlife management emphasizing wildlife and vegetation surveys, mark-recapture of wildlife, radio-telemetry, aging and forensic methods, and habitat assessment.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded
**Course and Laboratory Fee:** $220
**Experiential Learning:** Fieldwork

**NRES 235 Independent Fisheries and Wildlife Field Techniques**
**Prerequisites:** Permission
**Notes:** Credit hours calculated (similar to NRES 233 and NRES 463L) as a laboratory with 2-3 contact hours per credit hours because of field work and independent study.
**Description:** Introduction to field and laboratory skills used for fisheries and wildlife management emphasizing animal and habitat surveys, capture methods, radio-telemetry, sexing and aging methods, and habitat assessment using independent experiential learning.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded
**Offered:** FALL

**NRES 245 Introduction to Grassland Ecology and Management**
**Crosslisted with:** PLAS 245
**Prerequisites:** PLAS 153
**Description:** Grassland ecology and management is relevant to students with education and career goals in managing natural resources in Nebraska and the Great Plains. About 50% of the land area in Nebraska is classified as grassland (or rangeland) and is the land type with the most opportunity for enhancing biodiversity and wildlife habitat. Applying ecological principles and social values to managing rangeland resources, students will develop a knowledge and appreciation for the various grassland management uses and techniques available to resource managers.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Prerequisite for:** PLAS 340, RNGE 340, GRAS 340

**NRES 249 Individual and Cultural Perspectives on the Environment**
**Crosslisted with:** ENVR 249
**Description:** The influence of culture on individual perspectives related to the concepts of sustainability and the relationship that humans have with the environment. The role of ethics, religion, and historical setting on the individual and cultural perspectives related to environmental challenges at the local to global scales.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**ACE:** ACE 9 Global/Diversity

**NRES 255 Soil Health and Environment**
**Crosslisted with:** PLAS 255, SOIL 255
**Prerequisites:** SOIL 153
**Description:** Develop a life-long interest in observing and studying soil health and ecosystems. Provide the necessary academic skills to incorporate soil health principles into real-world applications, including natural resource conservation, evaluation of regenerative practices, and promotion of environmental sustainability. Prepare professionals and advocates of soil ecosystems.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**Offered:** FALL
**Course and Laboratory Fee:** $50

**NRES 260 Introduction to Conservation Photography**
**Description:** An introduction to photography in natural resources and conservation. Provides a solid photography foundation for applications in research projects, science communication efforts, and the field of conservation.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**Offered:** FALL/SPR
**Course and Laboratory Fee:** $60
**Experiential Learning:** Case/Project-Based Learning

**NRES 270 Biological Invaders**
**Crosslisted with:** PLAS 270, PLPT 270
**Prerequisites:** 3 hrs biological sciences.
**Description:** Impact of exotic species and invasive organisms: agricultural and medical emerging disease; predicting biological invasions; biological control; regulatory, monitoring, and control efforts; ecological impact.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 279 Soil Evaluation**
**Crosslisted with:** PLAS 279, SOIL 279
**Notes:** PLAS/SOIL 153 recommended, but not required. This course includes an inter-collegiate Soil Judging contest that takes place in the North Central region of the United States during the course of the class, or a course-based undergraduate research experience.
**Description:** Apply fundamental knowledge to the description of soils in the field. Application of techniques employed in writing descriptions of soil morphology and in classifying and interpreting soils.
**Credit Hours**: 2
**Max credits per semester:** 2
**Max credits per degree:** 2
**Grading Option:** Graded with Option
**Offered:** FALL
**Prerequisite for:** NRES 379, PLAS 379, SOIL 379
**Course and Laboratory Fee:** $100
**Experiential Learning:** Fieldwork

**NRES 281 Introduction to Water Science**
**Crosslisted with:** GEOG 281
**Prerequisites:** High school chemistry or one semester college chemistry; one course in geology or physical geography or soil.
**Description:** Survey of the water science from the perspective of both natural and social sciences. Water budget, precipitation, evapotranspiration, runoff and stream flow, groundwater, water quality parameters, economics of water, water policy, water law and water politics.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Prerequisite for:** NRES 319; PLAS 361, GEOL 361, NRES 361, SOIL 361

**NRES 289 People and the Land: Human Environmental Interactions on the Great Plains**
**Crosslisted with:** GEOG 289
**Description:** Explore human environmental interaction on the Great Plains. Samples a variety of Great Plains cultures and time periods to explore past use of the Great Plains environment. Evaluation of attributes and related data critical to the operation of past social-ecological systems with reference to changing climatic/ecological dynamics, human environmental impacts, and the sustainability of various indigenous and western modes of land use on the Great Plains. Investigate knowledge of these processes and how they can be of relevance to contemporary issues of Great Plains land management and resource utilization.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**ACE:** ACE 5 Humanities ACE 6 Social Science

**NRES 299 Special Topics**
**Prerequisites:** Permission.
**Description:** Special topics in natural resources.
**Credit Hours**: 1-4
**Min credits per semester:** 1
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option

**NRES 300 Toxins in the Environment**
**Crosslisted with:** BIOS 300, ENTO 300
**Prerequisites:** One semester BIOS and one semester CHEM
**Description:** Introduction to the principles of toxicology as they apply to environmental contaminants, agri-chemicals, and industrial and naturally occurring chemicals.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 301 Environmental Communication Skills**
**Prerequisites:** ACE 1 course. Sophomore or higher.
**Description:** Written and oral communication skills for natural resource management including writing for the media, grant writing, conflict resolution and advocacy.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**Offered:** FALL

**NRES 302 Tree Biology**
**Crosslisted with:** PLAS 302
**Prerequisites:** BIOS 101 or LIFE 120 or PLAS 131
**Description:** The study of the structure and function of woody plants, with a focus on trees growing in temperate climates. Covers the basics of wood physiology in terms of the biological, physical, and chemical processes utilized by tree to function. The anatomy and morphology of trees with a focus on the impacts of tree maintenance to the structure and function of landscape trees.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL

**NRES 308 Biogeography**
**Crosslisted with:** GEOG 308, GEOL 308
**Prerequisites:** GEOG 155 or BIOS 101 and 101L or GEOL 101.
**Notes:** Biogeography is a highly interdisciplinary science, relying heavily on ecology, geological science, and climatology. It is global in scope and offers the latest knowledge in understanding organism distributions, and the factors that determine those distributions.
**Description:** Introduction to the basic concepts of biogeography, the study of distributions of plants and animals, both past and present.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 310 Introduction to Forest Management**
**Prerequisites:** BIOS 101, PLAS 131 or LIFE 120
**Description:** Discussion of the history, biology, and management of the world's forest resources with emphasis on the Great Plains region. Topics include: forest types and their relationship to site conditions, ecological principles of forest management, basic forest management practices, economic and policy decisions in forest management. The field-oriented lab emphasizes tree identification, forest ecology, forest management and wood products.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Offered:** FALL
**Course and Laboratory Fee:** $45

**NRES 311 Wildlife Ecology and Management**
**Prerequisites:** NRES 220 or BIOS 207, or concurrent.
**Description:** Applied ecology, conservation biology, population biology, and enhancement of vertebrate, non-domestic animal populations through management. Emphasis on policy, decision-making, and management options involving people, habitat, and wildlife.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING
**Prerequisite for:** ASCI 321

**NRES 315 Human Dimensions of Fish and Wildlife Management**
**Description:** Introduction to the basic concepts and ideas relevant in the human dimension of fisheries and wildlife management. Covers social, cultural and economic values, attitudes and behavior of individuals and groups of various stakeholders in fisheries and wildlife management.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 319 Fundamentals of Environmental Sampling**
**Prerequisites:** SOIL 153, WATS 281, CHEM 105A and 105L or CHEM 109A and 109L.
**Notes:** Recommend taking STAT 218.
**Description:** Development of sampling plans and quality assurance project plans (QAPP). Stepwise procedures for correct sampling of soil-air-water environments. Data quality assessment.
**Credit Hours**: 2
**Max credits per semester:** 2
**Max credits per degree:** 2
**Grading Option:** Graded with Option
**Prerequisite for:** NRES 320

**NRES 320 Fundamentals of Environmental Sampling Laboratory**
**Prerequisites:** NRES 319 or concurrent enrollment
**Notes:** Outdoor and analytical laboratory field trips required.
**Description:** Demonstrations and hands on participation in sampling of soil-air-water environments.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $30

**NRES 321 Arboriculture: Maintenance & Selection of Landscape Trees**
**Crosslisted with:** PLAS 321
**Prerequisites:** Junior standing
**Description:** Covers practical application of the science of tree growth, development, and management in human dominated landscapes. Tree selection for varying landscapes and objectives, proper planting and pruning, identification and correction of tree defects, and working with tree pest issues.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Offered:** SPRING
**Groups:** Laboratory and Field Training
**Course and Laboratory Fee:** $65

**NRES 322 Environmental Education Curricula**
**Description:** National curricula are available to formal and non-formal environmental and STEM (science, technology, engineering, and math) educators. Become certified in a series of national environmental education curricula such as Project WILD, Project WET, Project Aquatic WILD and Project Learning Tree. Apply skills and curricula by teaching others through experiential service learning.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**Offered:** FALL/SPR
**Course and Laboratory Fee:** $55
**Experiential Learning:** Community Engagement

**NRES 323 Natural Resources Policy**
**Prerequisites:** Junior standing.
**Description:** Conflicts and common ground perpetuated by increasing demands on our natural resources. Policy development and issue analysis stressed. Historical policy actions reviewed and evaluated.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 330 Environmental Health**
**Crosslisted with:** NUTR 330
**Prerequisites:** Class standing of sophomore or above with at least one semester of chemistry and biology.
**Description:** Provides a comprehensive understanding of how environmental exposures to physical, chemical and biological hazards influence human health. Offers basic knowledge in the core concepts of toxicology, exposure and risk, vulnerable populations and the interrelationship between human, animal and environmental health.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL/SPR
**ACE:** ACE 8 Civic/Ethics/Stewardship

**NRES 348 Wildlife Damage Management**
**Description:** Fundamentals of prevention and control of damage caused by vertebrate pests, principally birds and mammals. Philosophical, ecological, and behavioral basis for controlling population levels or individuals of pest species.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 361 Soils, Environment and Water Quality**
**Crosslisted with:** PLAS 361, GEOL 361, SOIL 361
**Prerequisites:** PLAS/SOIL 153; MATH 102 or 103; two semesters chemistry (CHEM 105A and 105L, CHEM 106A and 106L, CHEM 109A and 109L, CHEM 110A and 110L) and WATS/GEOG/NRES 281
**Description:** Chemical and physical processes that influence the fate and transport of contaminants (inorganic, organic, microbial) in soil-water environments. Extent, fate, mitigation and impact of various sources of pollution. Remedial technologies used for environmental restoration of contaminated environments.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Prerequisite for:** PLAS 458, AGRO 858, NRES 458, NRES 858, SOIL 458

**NRES 370 Applied Climatology**
**Crosslisted with:** METR 370
**Prerequisites:** Junior or Senior Standing
**Description:** Processes that give rise to spatial and temporal differences in climate. Various interrelationships between humans and climate. Influence of climate on building styles, the economy, water resources, human health, and society. Humans' inadvertent and purposeful modification of the atmosphere.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL

**NRES 374 Field Herpetology**
**Prerequisites:** BIOS 207 OR NRES 220
**Description:** Become proficient in valuable skills regarding methods, techniques and standards for obtaining field data regarding Herpetofauna for various applications. Gain knowledge of the principles for conservation and management of Herpetofauna such as occupancy, population demographics, regional status, threat analysis, infectious disease occurrences and more. Ability to utilize critical thinking to propose solutions in regard to herpetological conservation and management situations/scenarios. Recognize and identify Nebraska Herpetofauna.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded
**Offered:** SUMMER
**Course and Laboratory Fee:** $50
**Experiential Learning:** Fieldwork

**NRES 379 Advanced Soil Evaluation**
**Crosslisted with:** PLAS 379, SOIL 379
**Prerequisites:** PLAS/NRES/SOIL 279
**Notes:** This course includes a national- or regional-level inter-collegiate Soil Judging contest that takes place during the course of the class.
**Description:** Apply fundamental knowledge and improve field techniques to the description and interpretation of soils in the field. Application of techniques employed in writing descriptions of soil morphology and in classifying and interpreting soils.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 7
**Grading Option:** Graded with Option
**Offered:** FALL/SPR
**Course and Laboratory Fee:** $150
**Experiential Learning:** Fieldwork

**NRES 380 Geography of Africa**
**Crosslisted with:** GEOG 380, ETHN 380
**Description:** Overview of the major physical and human landscapes in Africa. Prominent past and current events will be placed into a spatial context in an attempt to develop insight into the interrelationships that exist among people, cultures, countries, economies, and the environment, not only within Africa, but between Africa and the rest of the world.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**ACE:** ACE 9 Global/Diversity

**NRES 386 Vertebrate Zoology**
**Crosslisted with:** BIOS 386
**Prerequisites:** LIFE 121 & LIFE 121L
**Description:** Evolutionary origin and relationships, natural history, and ecological adaptations of vertebrates. Comparative form and function, particularly of bone and muscle systems among and the diversity within vertebrate groups.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded
**Offered:** SPRING
**Course and Laboratory Fee:** $35

**NRES 388 Employment Seminar**
**Crosslisted with:** AGRI 388
**Prerequisites:** Sophomore standing.
**Description:** Efficient job-hunting. Resumes, cover letters, mock interviews, and dining etiquette.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Pass No Pass
**Course and Laboratory Fee:** $25

**NRES 393 Digital Imaging and Storytelling in Agriculture and Natural Resources**
**Crosslisted with:** ALEC 393
**Prerequisites:** Consent of instructor(s). One college level course in photography or equivalent, and knowledge of the basics of shooting still photographs or video using digital cameras. Open only to College of Agricultural Sciences and Natural Resources students.
**Notes:** Can be repeated for a maximum of 9 credit hours by consent of instructor.
**Description:** Concepts and techniques related to use of remote and automated digital camera technology to capture images in agriculture and natural resources contexts to communicate a narrative/story. Completion of individual project using a variety of technologies including camera traps, time-lapse camera systems, remote triggered cameras, as well as traditional audio and video and conventional photography.
**Credit Hours**: 1-9
**Min credits per semester:** 1
**Max credits per semester:** 9
**Max credits per degree:** 9
**Grading Option:** Graded
**Course and Laboratory Fee:** $50
**Experiential Learning:** Case/Project-Based Learning

**NRES 398R Research Experiences in Grasslands**
**Crosslisted with:** GRAS 398R, PLAS 398R
**Description:** Scientific and research training and necessary soft skills for researchers, using grasslands as a study system. Provides individualized opportunities for engagement with scientific methods, which include experiential learning, acquisition and refinement of skills that enhance higher-learning opportunities, and increased marketability for future employment or postgraduate degrees.
**Credit Hours**: 1-3
**Min credits per semester:** 1
**Max credits per semester:** 3
**Max credits per degree:** 5
**Grading Option:** Graded
**Offered:** FALL
**Experiential Learning:** Research

**NRES 399 Independent Research**
**Prerequisites:** Permission of instructor
**Notes:** To be supervised and evaluated by a NRES faculty member.
**Description:** Research, literature review, or extension of course work.
**Credit Hours**: 0-6
**Min credits per semester:**
**Max credits per semester:** 6
**Max credits per degree:** 6
**Grading Option:** Graded with Option
**Experiential Learning:** Research

**NRES 399A Global Independent Research**
**Prerequisites:** Permission of instructor
**Notes:** International travel required. Choice of subject matter and coordination of off-campus study is at the discretion of the instructor.
**Description:** Independent, mentored research experience illustrating the diversity of approaches to research in natural resources found around the world.
**Credit Hours**: 0-6
**Min credits per semester:**
**Max credits per semester:** 6
**Max credits per degree:** 6
**Grading Option:** Graded with Option
**Offered:** SUMMER
**Experiential Learning:** Research

**NRES 402 Aquatic Insects**
**Crosslisted with:** BIOS 485, BIOS 885, ENTO 402, ENTO 802, NRES 802
**Prerequisites:** 12 hrs biological sciences.
**Description:** Biology and ecology of aquatic insects.
**Credit Hours**: 2
**Max credits per semester:** 2
**Max credits per degree:** 2
**Grading Option:** Graded with Option
**Prerequisite for:** BIOS 485L, BIOS 885L, ENTO 402L, ENTO 802L, NRES 402L, NRES 802L

**NRES 402L Identification of Aquatic Insects**
**Crosslisted with:** BIOS 485L, BIOS 885L, ENTO 402L, ENTO 802L, NRES 802L
**Prerequisites:** Parallel ENTO 802, NRES 402/802, BIOS 485/885.
**Description:** Identification of aquatic insects to the family level.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $25

**NRES 404 Forestry, Fisheries and Wildlife Seminar**
**Prerequisites:** Junior standing or above in natural resources.
**Description:** Seminar involving technical aspects of forestry, fisheries, and wildlife management.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 2
**Grading Option:** Graded with Option

**NRES 406 Plant Ecophysiology: Theory and Practice**
**Crosslisted with:** AGRO 806, HORT 806, NRES 806, PLAS 406
**Prerequisites:** Junior standing; 4 hrs ecology; and 4 hrs botany or plant physiology.
**Description:** Principles of plant physiology which underlie the relationship between plants and their physical, chemical and biotic environments. An introduction to the ecological niche, limiting factors and adaptation. An overview of the seed germination and ecology, plant and soil water relations, nutrients, plant energy budgets, photosynthesis, carbon balance and plant-animal interactions. An introduction to various field equipment used in ecophysiological studies.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option

**NRES 408 Microclimate: The Biological Environment**
**Crosslisted with:** PLAS 408, GEOG 408, METR 408, AGRO 808, GEOG 808, HORT 808, METR 808, NRES 808
**Prerequisites:** Junior standing, MATH 106 or equivalent, 5 hrs physics, major in any of the physical or biological sciences or engineering.
**Description:** Physical factors that create the biological environment. Radiation and energy balances of earth's surfaces, terrestrial and marine. Temperature, humidity, and wind regimes near the surface. Control of the physical environment through irrigation, windbreaks, frost protection, manipulation of light, and radiation. Applications to air pollution research. Instruments for measuring environmental conditions and remote sensing of the environment.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Prerequisite for:** BSEN 954, NRES 954

**NRES 409 Human Dimensions of Natural Resources**
**Prerequisites:** Junior standing; 12 credit hours in natural resources, environmental studies, or closely related fields
**Description:** Overview of the human dimensions of natural resources issues. Exploration of the socioeconomic, cultural, and political aspects of human behavior and how these interact with, might influence, or are influenced by the environment.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 413 Environmental Leadership**
**Crosslisted with:** ALEC 410, ALEC 810, NRES 813
**Prerequisites:** Junior standing.
**Notes:** Offered on the World Wide Web (WWW) fall semester of odd-numbered years and in the classroom fall semester of even numbered-years.
**Description:** Major leaders in conservation and ecology that emphasizes agricultural and cultural issues and relationships with the environment.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 415 GIS for Agriculture and Natural Resources**
**Crosslisted with:** NRES 815
**Description:** Principles of digitizing earth observations. Manipulate spatial data, create maps, and conduct spatial analyses. Use GIS to analyze and solve real-world questions in agriculture and natural resources.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded
**Offered:** FALL
**Course and Laboratory Fee:** $50

**NRES 417 Agroforestry Systems in Sustainable Agriculture**
**Crosslisted with:** PLAS 418, HORT 818, NRES 817
**Prerequisites:** 12 hours biological or agricultural sciences.
**Description:** The roles of woody plants in sustainable agricultural systems of temperate regions. Emphasis on the ecological and economic benefits of trees and shrubs in the agricultural landscape. Topics include: habitat diversity and biological control; shelterbelts structure, function, benefits and design; intercropping systems; silvopastoral systems; riparian systems; and production of timber and specialty crops. Comparison of temperate agroforestry systems to those of tropical areas.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 418 Introduction to Remote Sensing**
**Crosslisted with:** GEOG 418, GEOG 818, NRES 818
**Prerequisites:** Junior Standing
**Description:** Remote sensing of the earth from aerial and satellite platforms. Aerial photography, multispectral scanning, thermal imaging, microwave remote sensing techniques. Data acquisition and image analysis. Physical foundations of remote sensing using electromagnetic energy and energy-matter interactions. Applications in geographic, agricultural, environmental and natural resources analyses.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Offered:** FALL
**Prerequisite for:** GEOG 421, GEOG 821, NRES 421, NRES 821
**Course and Laboratory Fee:** $115

**NRES 419 Chemistry of Natural Waters**
**Crosslisted with:** GEOL 418, GEOL 818, NRES 819
**Prerequisites:** CHEM 109A/L and CHEM 110A/L, CHEM 113A/L and CHEM 114.
**Description:** Principles of water chemistry and their use in precipitation, surface water, and groundwater studies. Groundwater applications used to determine the time and source of groundwater recharge, estimate groundwater residence time, identify aquifer mineralogy, examine the degree of mixing between waters of various sources and evaluate what types of biological and chemical processes have occurred during the water's journey through the aquifer system.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $25

**NRES 420 Applications of Remote Sensing in Agriculture and Natural Resources**
**Crosslisted with:** PLAS 419, GEOG 419, GEOL 419, AGRO 819, GEOG 819, GEOL 819, NRES 820
**Prerequisites:** Junior standing
**Description:** Introduction to the basic methods and practical applications of remote sensing to map, monitor and assess agricultural and natural resources and other environmental changes
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $35

**NRES 421 Field Techniques in Remote Sensing**
**Crosslisted with:** GEOG 421, GEOG 821, NRES 821
**Prerequisites:** NRES 418/818
**Description:** Field techniques as they relate to remote-sensing campaigns. Research methods, systematic approaches to data collection, field spectroscopy, collecting ancillary information linked with spectroscopic data sets as well as aircraft or satellite missions and subsequent analyses of acquired data.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $65

**NRES 422 Laboratory Earth: Earth's Changing Systems**
**Crosslisted with:** NRES 822
**Description:** Fundamental concepts related to understanding Earth's changing natural systems in the past, present, and the future. The cycling of matter and energy; the relationship between human activity and environmental change; and the consequence of these relationships.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 424 Forest Ecology**
**Crosslisted with:** NRES 824
**Prerequisites:** NRES 220 or BIOS 207
**Description:** The structure and function of forest ecosystems including their response to global change; emphasis on forest succession and disturbance regimes in order to understand the dynamics of forested landscapes.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 425 Wildlife Health**
**Crosslisted with:** VBMS 425
**Prerequisites:** LIFE 120 and LIFE 121; Junior standing and above
**Description:** Introduction to ecological, social, and institutional issues. Engage in discussions of important zoonotic diseases, diseases of conservation concern, non-infectious threats, and strategies for assessing and managing wildlife health.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**Offered:** SPRING

**NRES 426 Invasive Plants**
**Crosslisted with:** PLAS 426, AGRO 826, HORT 826, NRES 826
**Prerequisites:** PLAS/SOIL 153; PLAS 131
**Description:** Identification, biology and ecology of weedy and invasive plants. Principles of invasive plant management by preventative, cultural, biological, mechanical and chemical means using an adaptive management framework. Herbicide terminology and classification, plant-herbicide and soil-herbicide interactions, equipment calibration and dosage calculations.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 427 Introduction to the Global Positioning System (GPS)**
**Crosslisted with:** GEOG 427, GEOG 827, NRES 827
**Prerequisites:** Junior standing.
**Notes:** Familiarity with mapping and GIS recommended.
**Description:** Integrated lectures, lab exercises and field experience provide an understanding of GPS technology and applications. Students will learn to collect, correct and use GPS data in a geographic information system (GIS) environment.
**Credit Hours**: 2
**Max credits per semester:** 2
**Max credits per degree:** 2
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $65

**NRES 428 Leadership in Public Organizations**
**Crosslisted with:** ALEC 428, ALEC 828, NRES 828
**Prerequisites:** Junior standing
**Description:** Leadership in theories, research, and practices in public organizations and natural resource agencies.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Experiential Learning:** Case/Project-Based Learning

**NRES 429A Food Security: A Global Perspective**
**Crosslisted with:** PLAS 429A, AGRO 829A, HORT 829A, NRES 829A, NUTR 429A, NUTR 829A
**Prerequisites:** Junior standing
**Description:** Overview of the technical and sociocultural dimensions of global food insecurity.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 431 Waterfowl Ecology and Management**
**Crosslisted with:** NRES 831
**Prerequisites:** NRES 311
**Description:** Ecology and identification of North American waterfowl, management of habitats and populations, and current management issues.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 432 Programming, Scripting, and Automation for GIS**
**Crosslisted with:** GEOG 432, GEOG 832
**Prerequisites:** GEOG 217
**Notes:** Practical experience or other formal preparation in GIS may be substituted for prerequisite by permission.
**Description:** GIS-focused programming, scripting, and spatial analysis using the Python and R programming languages. Topics include: the ArcPy library, algorithm development, open source geospatial libraries, and the manipulation and analysis of geospatial data.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING
**Course and Laboratory Fee:** $50

**NRES 433 Wildlife Management Techniques**
**Crosslisted with:** NRES 833
**Prerequisites:** NRES 311
**Description:** Survey of methods used to obtain data and make decisions for wildlife management. Scientific methods for wildlife science; monitoring and surveys; construction of management plans; habitat use, classification, and management; harvest management.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**ACE:** ACE 10 Integrated Product
**Course and Laboratory Fee:** $10

**NRES 434 Environmental Education and Interpretation**
**Crosslisted with:** NRES 834, ENVR 434
**Notes:** Requires 20 hours of service.
**Description:** Examination of formal and informal environmental education and interpretation. Knowledge, application and practice relevant to science teachers and park, extension, museums, and zoo educators.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $40
**Experiential Learning:** Community Engagement

**NRES 435 Agroecology**
**Crosslisted with:** PLAS 435, AGRO 835, NRES 835
**Prerequisites:** For PLAS/NRES 435: Senior standing. For AGRO/NRES 835: 12 hrs biological or agricultural sciences.
**Description:** Integration of principles of ecology, plant and animal sciences, crop protection, and rural landscape planning and management for sustainable agriculture. Includes natural and cultivated ecosystems, population and community ecology, nutrient cycling, pest management, hydrologic cycles, cropping and grazing systems, landscape ecology, biodiversity, and socioeconomic evaluation of systems.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**ACE:** ACE 10 Integrated Product

**NRES 436 Cenozoic Mammal Evolution**
**Crosslisted with:** GEOL 436, GEOL 836, NRES 836
**Prerequisites:** Junior or Senior Standing
**Description:** Survey of mammalian evolution with emphasis on the origin, radiation, and phylogenetic relationships of Cenozoic fossil mammals. Overview of climatic and ecological changes affecting mammalian adaptations and hands on experience with fossil specimens.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 438 Grassland Conservation: Planning and Management**
**Crosslisted with:** NRES 838
**Prerequisites:** UG: Junior Standing; Grad: None
**Notes:** Recommended: introductory ecology and introductory soils courses
**Description:** Apply fundamental grassland ecology principles to grassland conservation and identify grassland establishment and management practices appropriate for different environmental and cultural situations. Based on field study, critically analyze management options and outcomes for several grasslands and develop a management plan for a grassland resource.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL
**ACE:** ACE 10 Integrated Product
**Course and Laboratory Fee:** $30

**NRES 439 Environmental Laboratory Instrumentation and Methods**
**Crosslisted with:** NRES 839
**Prerequisites:** CHEM 106A & CHEM 106L or CHEM 110A and CHEM 110L
**Description:** Exposure to technologies such as spectroscopy, discrete automated colorimetry, chromatography and mass spectrometry used for environmental testing. Hands-on training in calibration, operation and sample analysis, proper use of analytical balance, volumetric glassware and micropipettes, creating and maintaining a laboratory notebook, and development and understanding standard operational procedures. Advanced in-lab training in analytical laboratory techniques and operation of advanced instrumentation used in commercial and research environmental laboratories.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded
**Offered:** FALL/SPR

**NRES 440 Great Plains Ecosystem**
**Crosslisted with:** PLAS 440, AGRO 840, NRES 840, RNGE 440, GRAS 440
**Prerequisites:** Junior standing.
**Description:** Characteristics of Great Plains ecosystems, interrelationships of ecological factors and processes, and their application in the management of grasslands. Interactions of fire, vegetation, grazing animals and wildlife.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 441 Zoo Keeping and Management**
**Description:** Examine and build on the knowledge, skills and abilities needed to work in a zoo in various capactities including animal keeping, guest services and curation. Acquire knowledge in all aspects needed to manage zoos including individual species care, collections, guest services, species conservation, and AZA accreditation. Become familiar with the concepts and challenges associated with the biological, educational, ethical, and administrative aspects of zoo science through partnerships and interactions with local zoos.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**Offered:** FALL/SPR
**ACE:** ACE 10 Integrated Product
**Course and Laboratory Fee:** $100

**NRES 442 Wildland Plants**
**Crosslisted with:** PLAS 442, AGRO 842, NRES 842, RNGE 442, GRAS 442
**Prerequisites:** Junior standing.
**Notes:** PLAS 131 or LIFE 121 and 121L or equivalent recommended
**Description:** Wildland plants that are important to grassland and shrubland ecosystem management and production. Distribution, utilization, classification, identification (including identification by vegetative parts), uses by Native Americans, and recognition of grasses, forbs, shrubs, exotic and wetland plants.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL

**NRES 443 Global Change & Ecosystems**
**Crosslisted with:** NRES 843
**Prerequisites:** Junior standing and above
**Notes:** Background in ecology and NRES 418 recommended.
**Description:** Examines global change from a biological perspective, focusing on global change impacts on terrestrial and aquatic ecosystems. Considers the scientific literature on biological aspects of global change, and explores the methods used for studying global change, and involves presentation of brief, comprehensible oral and written summaries of this literature. Social, and economic aspects will also be considered.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded

**NRES 444 Ecosystem Monitoring and Assessment**
**Crosslisted with:** PLAS 444, AGRO 844, NRES 844, RNGE 444, GRAS 444
**Prerequisites:** Junior standing.
**Notes:** NRES 220 or equivalent, recommended.
**Description:** Measurement and monitoring of the important vegetation and environmental factors used to develop management guidelines in grasslands, savannas, woodlands, and wetlands. Emphasis on using ecosystem monitoring protocols for assessment of wildlife habitat, fuels management for wild-land fire, livestock production, and watershed function. Requires field sampling and travel to local field sites.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL

**NRES 446 Pollen Analysis for Behavioral, Biological and Forensic Science**
**Crosslisted with:** FORS 446, FORS 846, NRES 846
**Prerequisites:** FORS 120
**Description:** Collection, processing, identification of common North American pollen types. Pollination ecology relating to scene reconstruction. Fundamental statistics and presentation requirements for a legal and scientific audience.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Offered:** FALL

**NRES 450 Biology of Wildlife Populations**
**Crosslisted with:** BIOS 450, BIOS 850, NRES 850
**Prerequisites:** NRES 311; MATH 104 or above; STAT 218 or equivalent
**Description:** Principles of population dynamics. Management strategies (for consumptive and nonconsumptive fish and wildlife species) presented utilizing principles developed.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 451 Soils, Water, and Environmental Chemistry**
**Crosslisted with:** ENVE 851, NRES 851
**Prerequisites:** NRES/WATS/SOIL/PLAS/GEOL 361 or graduate standing
**Description:** Environmental chemistry related to the fate and transport of organic contaminants in soil-water environments. Application of computer simulation models (i.e., MODFLOW) for predicting contaminant fate in aquifers. Basic chemical and biological principles of remediating contaminated soil and water.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Offered:** SPRING
**ACE:** ACE 10 Integrated Product

**NRES 452 Climate and Society**
**Crosslisted with:** PLAS 450, GEOG 450, METR 450, AGRO 850, GEOG 850, METR 850, NRES 852
**Prerequisites:** Junior standing or above.
**Notes:** Offered spring semester of even-numbered calendar years.
**Description:** Impact of climate and extreme climatic events on society and societal responses to those events. Global in scope and interdisciplinary.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 453 Hydrology**
**Crosslisted with:** NRES 853
**Prerequisites:** MATH 102 or above
**Notes:** Not available for credit for engineering students and not a substitute for CIVE 456.
**Description:** Introduction to the principles of hydrology, with emphasis on the components of the hydrologic cycle: precipitation, evaporation, groundwater flow, surface runoff, infiltration, precipitation runoff relationships.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING
**Prerequisite for:** AGEN 957, BSEN 957, CIVE 957, GEOL 957

**NRES 454 Ecological Interactions**
**Crosslisted with:** BIOS 454, BIOS 854, NRES 854
**Prerequisites:** LIFE 121; LIFE 121L; BIOS 207 or NRES 220; Senior Standing
**Description:** Nature and characteristics of populations and communities. Interactions within and between populations in community structure and dynamics. Direct and indirect interactions and ecological processes, competition, predation, parasitism, herbivory, and pollination. Structure, functioning and persistence of natural communities, foodweb dynamics, succession, and biodiversity.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**ACE:** ACE 10 Integrated Product

**NRES 455 Soil Chemistry and Mineralogy**
**Crosslisted with:** PLAS 455, AGRO 855, NRES 855, SOIL 455
**Prerequisites:** PLAS/SOIL 153 or GEOL 101; CHEM 109A/L and CHEM 110A/L; CHEM 221 or CHEM 221A & CHEM 221L or 251..
**Description:** Chemical and mineralogical properties of soil components. Inorganic colloidal fraction. Structures of soil minerals as a means of understanding properties, such as ion exchange and equilibria; release and supply of nutrient and toxic materials; and soil acidity and alkalinity. Forms and functions of organic matter in soil.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 456 Mathematical Models in Biology**
**Crosslisted with:** BIOS 456, BIOS 856, NRES 856
**Prerequisites:** LIFE 120; LIFE 120L; LIFE 121; LIFE 121L; MATH 107
**Description:** Biological systems, from molecules to ecosystems, are analyzed using mathematical techniques. Strengths and weaknesses of mathematical approaches to biological questions. Brief review of college level math; introduction to modeling; oscillating systems in biology; randomness in biology; review of historically important and currently popular models in biology.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 457 Green Space and Urban Forestry Management**
**Crosslisted with:** NRES 857, PLAS 457
**Prerequisites:** Junior or senior standing, Graduate student or permission
**Description:** A focus on the management of trees, parks, and green infrastructure in rural and urban communities. Perspectives from community planning, landscape architecture, urban forestry, natural resources, horticulture, and environmental policy. Development and implementation of green space and forest management plans encompassing societal needs and biological limitations in rural and urban communities.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING
**ACE:** ACE 10 Integrated Product

**NRES 458 Soil Physical Determinations**
**Crosslisted with:** PLAS 458, AGRO 858, NRES 858, SOIL 458
**Prerequisites:** SOIL/PLAS/GEOL/WATS 361; PHYS 141 or equivalent; MATH 102 or 103.
**Description:** Survey of measurement techniques and principles used in characterizing the physical properties of soils. Includes analysis of experimental design and sources of experimental error. Techniques include: particle size analysis, soil water content, pore size analysis, field sampling techniques, soil strength, and saturated hydraulic conductivity.
**Credit Hours**: 2
**Max credits per semester:** 2
**Max credits per degree:** 2
**Grading Option:** Graded with Option

**NRES 459 Limnology**
**Crosslisted with:** BIOS 459, BIOS 859, NRES 859
**Prerequisites:** BIOS 207 or NRES 220; CHEM 106A & CHEM 106L or CHEM 110A & CHEM 110L
**Description:** Physical, chemical, and biological processes that occur in fresh water. Organisms occurring in fresh water and their ecology; biological productivity of water and its causative factors; eutroplication and its effects.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Offered:** SPRING
**ACE:** ACE 10 Integrated Product
**Course and Laboratory Fee:** $85

**NRES 460 Soil Microbial Ecology**
**Crosslisted with:** PLAS 460, BIOS 460, SOIL 460, AGRO 860, BIOS 860, NRES 860
**Prerequisites:** Senior standing.
**Notes:** Recommend having a strong science background, including courses from the agronomic, environmental, microbiology, engineering or medicine disciplines.
**Description:** Soil from a microbe's perspective-growth, activity and survival strategies; principles governing methods to study microorganisms and biochemical processes in soil; mechanisms controlling organic matter cycling and stabilization with reference to C, N, S, and P; microbial interactions with plants and animals; and agronomic and environmental applications of soil microorganisms.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING

**NRES 461 Soil Physics**
**Crosslisted with:** PLAS 461, SOIL 461, AGRO 861, NRES 861
**Prerequisites:** PLAS/SOIL 153; PHYS 141 or equivalent, one semester of calculus.
**Description:** Principles of soil physics. Movement of water, air, heat, and solutes in soils. Water retention and movement, including infiltration and field water regime. Movement of chemicals in soils.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 462 Conservation Biology**
**Crosslisted with:** NRES 862
**Prerequisites:** 12 hours of biological sciences, including NRES 220 and NRES 222 or equivalent.
**Description:** Current issues in conservation biology. Theoretical principles from the areas of ecology and genetics to effectively preserve and manage biological diversity and small populations.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 463 Fisheries Science**
**Crosslisted with:** NRES 863
**Notes:** May be offered at Cedar Point Biological Station.
**Description:** Fisheries biology emphasizing the determination and evaluation of vital statistics for the management of fish populations. Basis of specific management techniques.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**ACE:** ACE 10 Integrated Product

**NRES 463L Fisheries Science Lab**
**Crosslisted with:** NRES 863L
**Notes:** May be offered at Cedar Point Biological Station.
**Description:** Field and laboratory skills needed for fisheries biology emphasizing the determination and evaluation of vital statistics for the management of fish populations. Applied data collection and fish sampling techniques will be used.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded with Option
**Offered:** FALL
**Course and Laboratory Fee:** $150
**Experiential Learning:** Fieldwork

**NRES 467 Global Climate Change**
**Crosslisted with:** METR 483, METR 883, NRES 867
**Prerequisites:** Junior standing; and METR 475/875.
**Notes:** Offered fall semester of even-numbered calendar years.
**Description:** Elements of climate systems, El Nino/LaNina cycle and monsoons, natural variability of climate on interannual and interdecadal scales. Paleoclimate, and future climate, developed climate change scenarios and climate change impacts on natural resources and the environment.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 468 Wetlands**
**Crosslisted with:** BIOS 458, NRES 868, BSEN 468, BSEN 868
**Prerequisites:** CHEM 109A and 109L and CHEM 110A and 110L, or CHEM 105A and 105L and CHEM 106A and 106L; Junior or Senior Standing.
**Notes:** Offered even-numbered calendar years.
**Description:** Physical, chemical and biological processes that occur in wetlands; the hydrology and soils of wetland systems; organisms occurring in wetlands and their ecology wetland creation, delineation, management and ecotoxicology.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $40

**NRES 469 Bio-Atmospheric Instrumentation**
**Crosslisted with:** GEOG 469, PLAS 407, METR 469, AGST 469, AGRO 869, GEOG 869, HORT 807, METR 869, AGST 869, NRES 869
**Prerequisites:** Junior standing; MATH 106; 4 hrs physics; physical or biological science major.
**Description:** Discussion and practical application of principles and practices of measuring meteorological and related variables near the earth's surface including temperature, humidity, precipitation, pressure, radiation and wind. Performance characteristics of sensors and modern data collection methods are discussed and evaluated.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 470 Lake and Reservoir Restoration**
**Prerequisites:** 12 hrs NRES or related fields.
**Description:** Theory, processes, and mechanisms underlying lake and reservoir water quality degradation and/or pollution and remediation of eutrophications and its effects. Current techniques used to restore and protect degraded lakes.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 471 Avian Biology**
**Crosslisted with:** BIOS 475, BIOS 875, NRES 871
**Prerequisites:** LIFE 121 & LIFE 121L
**Notes:** May also be offered at Cedar Point Biological Station.
**Description:** Biology of birds emphasizing the behavior and ecology of this group. Topics include avian diversity, systematics & evolutionary history, flight, foraging, migration, communication, reproductive biology, population ecology and conservation biology.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Experiential Learning:** Fieldwork

**NRES 472 Applied Soil Physics**
**Crosslisted with:** PLAS 472, AGRO 872, NRES 872, SOIL 472
**Prerequisites:** PLAS/SOIL 153; MATH 102 or MATH 104 or MATH 106.
**Description:** Emphasis on applied soil physics. Discussion of theoretical principles followed by field and laboratory exercises and applications. Fluxes of water, solutes, air, and heat through the soil. Emphasis on water infiltration, water retention, other soil hydraulic properties. Components of soil water balance. Management of soil water.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** FALL

**NRES 474 Herpetology**
**Crosslisted with:** BIOS 474, BIOS 874, NRES 874
**Prerequisites:** NRES/BIOS 386
**Description:** Fossil and living amphibians and reptiles. Anatomy, classification, ecology and evolution.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Offered:** FALL
**Course and Laboratory Fee:** $50

**NRES 475 Water Quality Strategy**
**Crosslisted with:** NRES 875, SOIL 475, PLAS 475, AGRO 875, CIVE 475, CIVE 875, CRPL 475, CRPL 875, GEOL 475, GEOL 875, AGST 475, AGST 875
**Prerequisites:** Senior undergraduate or graduate student status.
**Notes:** Capstone course.
**Description:** Introduces methods to identify, analyze, strategize, justify and develop planning approaches to protect water quality from nonpoint source contamination. Focuses on identifying present water quality issues and situations, investigating adverse impacts on whole systems and subsystems over time, developing effective planning strategies, and assessing strategy effectiveness.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Offered:** SPRING
**ACE:** ACE 10 Integrated Product

**NRES 476 Mammalogy**
**Crosslisted with:** BIOS 476, BIOS 876, NRES 876
**Prerequisites:** 8 hrs BIOS; BIOS/NRES 386 or NRES 311.
**Notes:** May also be offered at Cedar Point Biological Station. Field trips are required and may occur outside of scheduled class time. Lab and field time emphasize diversity of mammalian families and species identification of Nebraska mammals.
**Description:** Evolution, natural history, ecology, and functional morphology of planetary mammals and mammals of the Northern Great Plains.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $25

**NRES 477 Great Plains Field Pedology**
**Crosslisted with:** PLAS 477, GEOG 467, SOIL 477, GEOG 867, NRES 877
**Prerequisites:** PLAS/SOIL 153.
**Description:** Spatial relationship of soil properties on various parts of landscape typical of the Plains, causal factors, and predictions of such relationships on other landscapes. Grouping these properties into classes, naming the classes, and the taxonomy that results from this grouping. Application of a taxonomy to a real situation through making a field soil survey in a region representative of the Plains border, predicting land use response of various mapped units as it affects the ecosystem, and evaluating the effectiveness of the taxonomic system used in the region surveyed.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $80

**NRES 478 Regional Climatology**
**Crosslisted with:** METR 478, METR 878, NRES 878
**Prerequisites:** NRES/METR 370.
**Description:** Regional differentiation of the climates of the earth on both a descriptive and dynamic basis. The chief systems of climatic classification.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 479 Hydroclimatology**
**Crosslisted with:** METR 479, BSEN 479, NRES 879, METR 879, BSEN 879
**Prerequisites:** NRES 208 or METR 100 or METR/NRES 370.
**Notes:** Offered spring semester of even-numbered calendar years.
**Description:** Interaction between earth's climate and the hydrologic cycle. Energy and water fluxes at the land-atmosphere interface. Atmospheric moisture transport, precipitation, evaporation, snowmelt, and runoff. Impacts of climate variability and change on the hydrologic cycle.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option

**NRES 481K Stream and River Ecology**
**Crosslisted with:** WATS 881K, BIOS 481, NRES 881K
**Prerequisites:** NRES 222 or equivalent
**Description:** Fundamental physical drivers operating in stream and river ecosystems and how those vary in space and time. Major classes of organisms associated with stream ecosystems and their functional roles. Fundamental controls on biotic diversity in stream and river ecosystems and its variance. Major aspects of stream ecosystem function including energy flow and nutrient cycling. Ecosystem services provided by stream and river ecosystems and causes and consequences of human impacts on streams and rivers. Underlying principles of bioassessment and current methods of stream restoration.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded
**Course and Laboratory Fee:** $20
**Experiential Learning:** Fieldwork

**NRES 482 Ecophysiology of Wildlife**
**Crosslisted with:** NRES 882
**Prerequisites:** NRES 220 or BIOS 207; PLAS 215/BIOS 201; BIOS 386
**Description:** Evaluation of the conserved physiological principles that are broadly used across animal groups, as well as the many unique adaptations used by specific taxa. Focuses on all major vertebrate groups, including fish, birds, mammals, reptiles and amphibians, and links the physiological mechanisms that allow them to survive to the environments in which they live. Highlights methods scientists use to gather physiological information, and the ways in this information can be used by scientists in a variety of different fields.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded
**Offered:** FALL

**NRES 484 Water Resources Seminar**
**Crosslisted with:** PLAS 484, GEOG 484, GEOL 484, NRES 884, AGRO 884, GEOG 884, GEOL 884
**Prerequisites:** Junior or above standing
**Description:** Seminar on current water resources research and issues in Nebraska and the region.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded with Option

**NRES 485 Natural Resources Seminar**
**Crosslisted with:** NRES 885
**Description:** Active listening and critical thinking activities related to seminars on current natural resources research and issues in Nebraska, the Great Plains, and throughout the world.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded
**Offered:** FALL

**NRES 486A Professional Certifications: Certified Interpretive Guide**
**Crosslisted with:** NRES 886A
**Description:** Professional certification from the National Association of Interpretation. Practical skills for developing quality interpretive programs for museum, nature center, zoo and park visitors. Theoretical foundations of interpretation.
**Credit Hours**: 2
**Max credits per semester:** 2
**Max credits per degree:** 2
**Grading Option:** Graded

**NRES 486B Professional Certifications: Certified Interpretive Host**
**Crosslisted with:** NRES 886B
**Description:** Receive professional certification from the National Association of Interpretation. Practical skills for staff and volunteers of museums, nature centers, zoos and parks to provide quality customer service.
**Credit Hours**: 1
**Max credits per semester:** 1
**Max credits per degree:** 1
**Grading Option:** Graded

**NRES 487 Introduction to Landscape Ecology**
**Crosslisted with:** LARC 487
**Prerequisites:** PLAS/SOIL 153 and NRES 220.
**Notes:** PLAS/LARC/GEOG 200, CIVE 353/853/NRES 853, and CRPL 470 recommended.
**Description:** The history, principles, and concepts of landscape ecology. Use and application of landscape structure, function in the planning, the design, and management of human and natural landscapes.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded

**NRES 488 Groundwater Geology**
**Crosslisted with:** GEOL 488, GEOL 888, NRES 888
**Prerequisites:** GEOL 100-level course; MATH 106 or equivalent.
**Description:** Occurence, movement, and development of water in the geologic environment.
**Credit Hours**: 3
**Max credits per semester:** 3
**Max credits per degree:** 3
**Grading Option:** Graded with Option
**Prerequisite for:** GEOL 986; NRES 918
**Course and Laboratory Fee:** $10

**NRES 489 Ichthyology**
**Crosslisted with:** BIOS 489, BIOS 889, NRES 889
**Prerequisites:** LIFE 120 and LIFE 121
**Notes:** May also be offered at Cedar Point Biological Station.
**Description:** Fishes, their taxonomy, physiology, behavior, and ecology. Dynamics of fish stocks and factors regulating their production.
**Credit Hours**: 4
**Max credits per semester:** 4
**Max credits per degree:** 4
**Grading Option:** Graded with Option
**Course and Laboratory Fee:** $20
**Experiential Learning:** Research

**NRES 491 Special Topics in Geography**
**Crosslisted with:** GEOG 491, GEOG 891
**Description:** Topics vary.
**Credit Hours**: 1-6
**Min credits per semester:** 1
**Max credits per semester:** 6
**Max credits per degree:** 6
**Grading Option:** Graded with Option

**NRES 492 International Study Tours in Natural Resource Management**
**Crosslisted with:** NRES 892
**Prerequisites:** Permission.
**Notes:** Off-campus travel may be required. Choice of subject matter and coordination of on- and off-campus study is at the discretion of the instructor.
**Description:** Group educational tours to sites that illustrate the diversity of approaches to natural resources management found around the world.
**Credit Hours**: 1-3
**Min credits per semester:** 1
**Max credits per semester:** 3
**Max credits per degree:** 6
**Grading Option:** Graded with Option
**ACE:** ACE 9 Global/Diversity
**Experiential Learning:** Education Abroad

**NRES 493 Experiences in Natural Resources**
**Crosslisted with:** NRES 893
**Prerequisites:** Permission of instructor
**Description:** Immersive learning experiences in natural resources.
**Credit Hours**: 0-3
**Min credits per semester:**
**Max credits per semester:** 3
**Max credits per degree:** 12
**Grading Option:** Graded with Option
**Experiential Learning:** Fieldwork

**NRES 495 Grasslands Seminar**
**Crosslisted with:** PLAS 495, ENTO 495, GRAS 495, RNGE 495, SOIL 495
**Prerequisites:** Junior standing.
**Description:** Topic varies and deals with different aspects of forage and/or range and/or livestock, turf and/or landscape grasses, natural habitats, and wetlands.
**Credit Hours**: 1-2
**Min credits per semester:** 1
**Max credits per semester:** 2
**Max credits per degree:** 4
**Grading Option:** Graded with Option

**NRES 496 Independent Study**
**Prerequisites:** Permission of instructor
**Description:** Individual or group projects in research or management.
**Credit Hours**: 1-6
**Min credits per semester:** 1
**Max credits per semester:** 6
**Max credits per degree:** 12
**Grading Option:** Graded with Option
**Experiential Learning:** Case/Project-Based Learning

**NRES 497 Career Experiences in Natural Resource Sciences**
**Prerequisites:** Sophomore standing; School of Natural Resources (SNR) majors; permission and advanced approval of a plan of work.
**Description:** Off-campus work experiences sponsored by natural resource agencies, companies, and organizations. Students collaborate in the development of a plan of work that will identify student responsibilities, including a final written report.
**Credit Hours**: 1-6
**Min credits per semester:** 1
**Max credits per semester:** 6
**Max credits per degree:** 6
**Grading Option:** Graded with Option
**Experiential Learning:** Internship/Co-op

**NRES 498 Special Topics in Natural Resources**
**Crosslisted with:** NRES 898
**Prerequisites:** 6 hrs NRES or equivalent.
**Description:** Current issues in natural resource sciences.
**Credit Hours**: 1-6
**Min credits per semester:** 1
**Max credits per semester:** 6
**Max credits per degree:** 12
**Grading Option:** Graded with Option

**NRES 499 Thesis Research**
**Prerequisites:** Permission of thesis adviser.
**Notes:** Requires conducting a scholarly research project and writing an undergraduate thesis.
**Description:** Independent engagement in the research process in natural resources to conduct a scholarly research project and write an undergraduate thesis.
**Credit Hours**: 0-6
**Min credits per semester:**
**Max credits per semester:** 6
**Max credits per degree:** 6
**Grading Option:** Graded with Option
**Experiential Learning:** Research

**NRES 499H Honors Thesis**
**Prerequisites:** Admission to the University Honors Program and permission. Credit toward the degree cannot be earned in both NRES 499 and NRES 499H.
**Description:** Independent engagement in the research process in natural resources to conduct a scholarly research project and write an undergraduate thesis as a participant in the University Honors Program.
**Credit Hours**: 0-6
**Min credits per semester:**
**Max credits per semester:** 6
**Max credits per degree:** 6
**Grading Option:** Graded
**Experiential Learning:** Research