

SOIL SCIENCE MINOR

Description

The soil science minor is designed allow students to formally declare their focus in Soil Science. Federal positions with the Natural Resources Conservation Service, Forest Service, and other agencies hire Soil Scientist positions requiring a minimum of 15 credits in soil science.

College Requirements

College Admission

Requirements for admission into the College of Agricultural Sciences and Natural Resources (CASNR) are consistent with general University admission requirements (one unit equals one high school year): 4 units of English, 4 units of mathematics, 3 units of natural sciences, 3 units of social sciences, and 2 units of world language. Students must also meet performance requirements: a 3.0 cumulative high school grade point average OR an ACT composite of 20 or higher, writing portion not required OR a score of 1040 or higher on the SAT Critical Reading and Math sections OR rank in the top one-half of graduating class; transfer students must have a 2.0 (on a 4.0 scale) cumulative grade point average and 2.0 on the most recent term of attendance.

Admission Deficiencies/Removal of Deficiencies

Students who are admitted to CASNR with core course deficiencies must remove these deficiencies within the first 30 credit hours at the University of Nebraska–Lincoln, or within the first calendar year at Nebraska, whichever takes longer. College-level coursework taken to remove deficiencies may be used to meet degree requirements in CASNR.

Deficiencies in the required entrance subjects can be removed by the completion of specified courses in the University or by correspondence.

The Office of Admissions, Alexander Building (south entrance), City Campus, provides information to new students on how deficiencies can be removed.

College Degree Requirements

Curriculum Requirements

The curriculum requirements of the College consist of three areas: ACE (Achievement-Centered Education), College of Agricultural Sciences and Natural Resources Core, and Degree Program requirements and electives. All three areas of the College Curriculum Requirements are incorporated within the description of the Major/Degree Program sections of the catalog. The individual major/degree program listings of classes ensure that a student will meet the minimum curriculum requirements of the College.

World Languages/Language Requirement

Two units of a world language are required. This requirement is usually met with two years of high school language.

Experiential Learning

All undergraduates in the College of Agricultural Sciences and Natural Resources must take an Experiential Learning (EL) designated course. This may include 0-credit courses designed to document co-curricular activities recognized as Experiential Learning.

Minimum Hours Required for Graduation

The College grants the bachelors degree in programs associated with agricultural sciences, natural resources, and related programs. Students working toward a degree must earn at least 120 semester hours of credit. A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation. Some degree programs have a higher cumulative grade point average required for graduation. Please check the degree program on its graduation cumulative grade point average.

Grade Rules

Removal of C-, D, and F Grades

Only the most recent letter grade received in a given course will be used in computing a student's cumulative grade point average if the student has completed the course more than once and previously received a grade or grades below C in that course.

The previous grade (or grades) will not be used in the computation of the cumulative grade point average, but it will remain a part of the academic record and will appear on any transcript.

A student can remove from their cumulative average a course grade of C-, D+, D, D-, or F if the student repeats the same course at the University of Nebraska and receives a grade other than P (pass), I (incomplete), N (no pass), W (withdrew), or NR (no report). If a course is no longer being offered, it is not eligible for the revised grade point average computation process.

For complete procedures and regulations, see the Office of the University Registrar website at <http://www.unl.edu/regrec/course-repeats> (<http://www.unl.edu/regrec/course-repeats/>).

Pass/No Pass

Students in CASNR may take any course offered on a Pass/No Pass basis within the 24-hour limitation established by the Faculty Senate. However, a department may specify that the Pass/No Pass status of its courses be limited to non-majors or may choose to offer some courses for letter grades only.

GPA Requirements

A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation. Some degree programs have a higher cumulative grade point average required for graduation. Please check the degree program on its graduation cumulative grade point average.

Transfer Credit Rules

To be considered for admission a transfer student, Nebraska resident or nonresident, must have an accumulated average of C (2.0 on a 4.0 scale) and a minimum C average in the last semester of attendance at another college. Transfer students who have completed less than 12 credit hours of college study must submit either ACT or SAT scores.

Ordinarily, credits earned at an accredited college are accepted by the University. The College, however, will evaluate all hours submitted on an application for transfer and reserves the right to accept or reject any of them. Sixty (60) is the maximum number of hours the University will accept on transfer from a two-year college. Ninety (90) is the maximum number of hours the University will accept from a four-year college. Transfer credit in the degree program must be approved by the degree program advisor on a Request for Substitution Form to meet specific course requirements, group requirements, or course level requirements in the major. At least 9 hours in the major field, including

the capstone course, must be completed at the University of Nebraska–Lincoln regardless of the number of hours transferred.

The College will accept no more than 10 semester hours of C-, D+, D, and D- grades from other schools. The C-, D+, D, and D- grades can only be applied to free electives. This policy does not apply to the transfer of grades from UNO or UNK to the University of Nebraska–Lincoln.

Joint Academic Transfer Programs

The College of Agricultural Sciences and Natural Resources has agreements with many institutions to support joint academic programs. The transfer programs include dual degree programs and cooperative degree programs. Dual degree programs offer students the opportunity to receive a degree from a participating institution and also to complete the requirements for a bachelor of science degree in CASNR. Cooperative programs result in a single degree from either the University of Nebraska–Lincoln or the cooperating institution.

Dual Degree Programs

A to B Programs

The A to B Program, a joint academic program offered by the CASNR and participating community colleges, allows students to complete the first two years of a degree program at the participating community college and continue their education and study in a degree program leading toward a bachelor of science degree.

The A to B Program provides a basic knowledge plus specialized coursework. Students transfer into CASNR with junior standing.

Depending on the community college, students enrolled in the A to B Program may complete the requirements for an associate of science at the community college, transfer to the University of Nebraska–Lincoln, and work toward a bachelor of science degree.

Participating community colleges include:

- Central Community College
- Metropolitan Community College
- Mid-Plains Community College
- Nebraska College of Technical Agriculture
- Nebraska Indian Community College
- Northeast Community College
- Southeast Community College
- Western Nebraska Community College

3+2 Programs

Two specialized degree programs in **animal science** and **veterinary science** are offered jointly with an accredited college or school of veterinary medicine. These two programs permit CASNR animal science or veterinary science students to receive a bachelor of science degree from the University of Nebraska–Lincoln with a degree in animal science or veterinary science after successfully completing two years of the professional curriculum in veterinary medicine at an accredited veterinary school. Students who successfully complete the 3+2 Program, must provide transcripts and complete the Application for Degree form via MyRED. Students without MyRED access may apply for graduation in person at Husker Hub in the Canfield Administration Building, or by mail. Students should discuss these degree programs with their academic advisor.

Cooperative Degree Programs

Academic credit from the University and a cooperating institution are applied towards a four-year degree from either the University

of Nebraska–Lincoln (University degree-granting program) or the cooperating institution (non-University degree-granting program). All have approved programs of study.

UNL Degree-Granting Programs

A University of Nebraska–Lincoln degree-granting program is designed to provide students the opportunity to complete a two-year program of study at one of the four-year institutions listed below, transfer to CASNR, and complete the requirements for a bachelor of science degree.

Chadron State College. Chadron State College offers a 2+2 program leading to a grassland ecology and management degree program and a transfer program leading to a bachelor of science in agricultural education in the teaching option.

Wayne State College. Wayne State College offers a 3+1 program leading to a bachelor of science in plant biology in the ecology and management option and a 3+1 program leading to a bachelor of science in Applied Science.

University of Nebraska at Kearney. Transfer programs are available for students pursuing degree programs leading to a bachelor of science degree.

University of Nebraska at Omaha. Transfer programs are available for students pursuing degree programs leading to a bachelor of science degree.

Non University of Nebraska–Lincoln Degree-Granting Programs

CASNR cooperates with other institutions to provide coursework that is applied towards a degree at the cooperating institution. Pre-professional programs offered by CASNR allow students to complete the first two or three years of a degree program at the University prior to transferring and completing a degree at the cooperating institution.

Chadron State College–Range Science. The 3+1 Program in range science allows Chadron State College students to pursue a range science degree through Chadron State College. Students complete three years of coursework at Chadron State College and one year of specialized range science coursework (32 credit hours) at CASNR.

Residency

Students must complete at least 30 of the total hours for their degree using University of Nebraska–Lincoln credits. At least 18 of the 30 credit hours must be in courses offered through CASNR¹ (>299) including the appropriate ACE 10 degree requirement or an approved ACE 10 substitution offered through another Nebraska college and excluding independent study regardless of the number of hours transferred. Credit earned during education abroad may be used toward the residency requirement if students register through the University of Nebraska–Lincoln and participate in prior-approved education abroad programs. The University of Nebraska–Lincoln open enrollment and summer independent study courses count toward residence.

¹ Includes courses taught by CASNR faculty through interdisciplinary prefixes (e.g., LIFE, MBIO, ENVR, SCIL, EAEP, ENSC) and CASNR crosslisted courses taught by non-CASNR faculty.

Online and Distance Education

There are many opportunities to earn college credit online through the University of Nebraska–Lincoln. Some of these credits may be applicable not only as elective credits but also toward the fulfillment of the College's education requirements. Credits earned online may count

toward residency. However, certain offerings may not be counted toward scholarship requirements or academic recognition criteria.

For further information, contact:

Office of Online and Distance Education
 University of Nebraska–Lincoln
 305 Brace Labs
 Lincoln, NE 68588-0109
 402-472-4681
<http://online.unl.edu/>

Independent Study Rules

Students wishing to take part in independent studies must obtain permission; complete and sign a contract form; and furnish copies of the contract to the instructor, advisor, departmental office, and the Dean's Office. The contract should be completed before registration. Forms are available in 103 Agricultural Hall or online at the CASNR website.

Independent study projects include research, literature review or extension of coursework under the supervision and evaluation of a departmental faculty member.

Students may only count 12 hours of independent study toward their degrees and no more than 6 hours can be counted during their last 36 hours earned, excluding senior thesis, internships, and courses taught under an independent study number.

Other College Degree Requirements

Capstone Course Requirement

A capstone course is required for each CASNR degree program. A capstone course is defined as a course in which students are required to integrate diverse bodies of knowledge to solve a problem or formulate a policy of societal importance.

ACE Requirements

All students must fulfill the Achievement Centered Education (ACE) requirements. Information about the ACE program may be viewed at ace.unl.edu (<https://ace.unl.edu/>).

The minimum requirements of CASNR reflect the common core of courses that apply to students pursuing degrees in the college. Students should work with an advisor to satisfy ACE outcomes 1, 2, 3, 4, 6, and 10 with the college requirements.

Catalog Rule

Students must fulfill the requirements stated in the catalog for the academic year in which they are first admitted to the University of Nebraska–Lincoln or when they were first admitted to a Joint Academic Transfer Program. Students transferring from a community college, but without admission to a Joint Academic Transfer Program, may be eligible to fulfill the requirements as stated in the catalog for an academic year in which they were enrolled at the community college prior to attending the University of Nebraska-Lincoln. This decision should be made in consultation with academic advisors, provided the student a) was enrolled in a community college during the catalog year they are utilizing, b) maintained continuous enrollment at the previous institution for 1 academic year or more, and c) continued enrollment at the University of Nebraska-Lincoln within 1 calendar year from their last term at the previous institution. In consultation with advisors, a student may choose to follow a subsequent catalog for any academic year in which they are admitted to and enrolled as a degree-seeking student at the University of Nebraska–Lincoln in the College of Agricultural

Sciences and Natural Resources. Students must complete all degree requirements from a single catalog year. The catalog which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

Requirements for Minor Offered by Department

A minor in soil science will require a minimum of 18 credit hours.

Required Courses

SOIL 153	Soil Resources	4
Credit Hours Subtotal:		4

Soil Management Elective

Select one from the following:		3
SOIL 255	Soil Health and Environment	
SOIL 269	Principles of Soil Management	
SOIL 354	Soil Conservation and Watershed Management	
Credit Hours Subtotal:		3

Soil Science Electives

Select 11 credits from the following:		11
SOIL 101	Soil and Society	
SOIL 279	Soil Evaluation	
SOIL 361	Soils, Environment and Water Quality	
SOIL 366	Soil Nutrient Relationships	
SOIL 379	Advanced Soil Evaluation	
SOIL 453	Urban Soil Properties and Management	
SOIL 460	Soil Microbial Ecology	
SOIL 455	Soil Chemistry and Mineralogy	
SOIL 472	Applied Soil Physics	
SOIL 477	Great Plains Field Pedology	
SOIL 496	Independent Study	
SOIL 498	Senior Project	
Credit Hours Subtotal:		11
Total Credit Hours		18

Note: No more than 3 credits combined of SOIL 379, SOIL 496, and SOIL 498. At least 6 credits must be at the 300 level or above.

SOIL 101 Soil and Society

Description: Basic knowledge of soils. Historical perspectives of the role of soils in human societies. The role of soils in the humanities including art, philosophy and literature. How to address problems of human-accelerated erosion, soil degradation, and water quality.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: SPRING

ACE: ACE 5 Humanities

SOIL 153 Soil Resources**Crosslisted with:** PLAS 153**Description:** Investigation into the physical, chemical and biological properties of soils, in relation to their appropriate uses, protection, and vital roles or functions in broader plant-soil systems. Apply exercises such as discussion, evidence-based writing, assessment, planning, problem-solving, and presentations in relation to principles and practices involving all aspects of soils.**Credit Hours:** 4**Max credits per semester:** 4**Max credits per degree:** 4**Grading Option:** Graded with Option**Offered:** FALL/SPR**Prerequisite for:** AGEN 431, PLAS 431, AGST 431; AGST 354, SOIL 354; LARC 487, NRES 487; NRES 245, PLAS 245; NRES 255, PLAS 255, SOIL 255; NRES 319; PLAS 204; PLAS 269, SOIL 269; PLAS 327; PLAS 361, GEOL 361, NRES 361, SOIL 361; PLAS 366, SOIL 366; PLAS 453, LARC 453, SOIL 453; PLAS 455, AGRO 855, NRES 455, NRES 855, SOIL 455; PLAS 472, AGRO 872, NRES 472, NRES 872, SOIL 472**Course and Laboratory Fee:** \$15**SOIL 255 Soil Health and Environment****Crosslisted with:** NRES 255, PLAS 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**SOIL 269 Principles of Soil Management****Crosslisted with:** PLAS 269**Prerequisites:** PLAS 153**Description:** Current state-of-knowledge of soil and water management; impacts of water and wind erosion on soil productivity, and nutrient dynamics; soil management in response to the increased climate variability; improved management practices such as conservation tillage (i.e., no-till), cropping systems, cover crops, crop residue management, perennial systems, water management and irrigation; nutrient cycling; and soil quality and health.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL**Prerequisite for:** PLAS 405**SOIL 279 Soil Evaluation****Crosslisted with:** PLAS 279, NRES 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**SOIL 295 Internship****Crosslisted with:** PLAS 295, RNGE 295**Prerequisites:** Sophomore standing and completion of an internship contract. The internship contract is subject to approval by the department. Internships completed without a signed contract may not qualify for credit.**Notes:** Pass/No Pass only; requires advanced permission before registering for the course.**Description:** Professional experience in a plant, landscape or soil interest area. Experience may be with a business, government agency, organization, or a university research, extension, or teaching program.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 6**Grading Option:** Pass No Pass**Offered:** FALL/SPR**Experiential Learning:** Internship/Co-op**SOIL 354 Soil Conservation and Watershed Management****Crosslisted with:** AGST 354**Prerequisites:** PLAS/SOIL 153; and AGST 109 or PHYS 141 or PHYS 151 or PHYS 211**Description:** Watershed hydrology, soil erosion, erosion control, water management, and land surveying and mapping. Includes rainfall-runoff relationships; determination of watershed characteristics; terraces, waterways, vegetative filters, and residue management; ponds, wetlands, non-point source pollution control, and water conservation; profile and topographic surveying.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL

SOIL 361 Soils, Environment and Water Quality**Crosslisted with:** PLAS 361, GEOL 361, NRES 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**SOIL 366 Soil Nutrient Relationships****Crosslisted with:** PLAS 366**Prerequisites:** PLAS 153**Description:** Explores nutrient behaviors in soil and factors affecting nutrient management. Students work on developing fertilizer plans for complex plant production systems that follow the right place, right amount, right source, right time philosophy and ensure production of healthy and nutritious plants, improve profits and enterprise sustainability, fulfill legal requirements, and protect soil and water quality.**Credit Hours:** 4**Max credits per semester:** 4**Max credits per degree:** 4**Grading Option:** Graded with Option**Offered:** SPRING**Prerequisite for:** PLAS 405**SOIL 379 Advanced Soil Evaluation****Crosslisted with:** NRES 379, PLAS 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**SOIL 453 Urban Soil Properties and Management****Crosslisted with:** PLAS 453, LARC 453**Prerequisites:** PLAS/SOIL 153**Description:** Characteristics of soils in urban settings. Evaluation of soils intended for intensive human uses and strategies for their use. Identification of specific issues related to urban soils. Manipulation or remediation of soils subject to construction and other stresses.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** SPRING**SOIL 455 Soil Chemistry and Mineralogy****Crosslisted with:** PLAS 455, AGRO 855, NRES 455, NRES 855**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**SOIL 458 Soil Physical Determinations****Crosslisted with:** PLAS 458, AGRO 858, NRES 458, NRES 858**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**SOIL 460 Soil Microbial Ecology****Crosslisted with:** PLAS 460, BIOS 460, NRES 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**SOIL 461 Soil Physics****Crosslisted with:** PLAS 461, NRES 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

SOIL 472 Applied Soil Physics**Crosslisted with:** PLAS 472, AGRO 872, NRES 472, NRES 872**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**SOIL 475 Water Quality Strategy****Crosslisted with:** NRES 475, NRES 875, 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**SOIL 477 Great Plains Field Pedology****Crosslisted with:** PLAS 477, GEOG 467, NRES 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**SOIL 495 Grasslands Seminar****Crosslisted with:** PLAS 495, ENTO 495, GRAS 495, NRES 495, RNGE 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**SOIL 496 Independent Study****Crosslisted with:** PLAS 496, AGRO 896, RNGE 496**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 12**Grading Option:** Graded with Option**Course and Laboratory Fee:** \$50**SOIL 498 Senior Project****Crosslisted with:** PLAS 498**Prerequisites:** Senior standing.**Notes:** A two-semester sequence. Students should select one credit hour the first semester and three credits the second semester. The first semester will be used for planning, topic selection, and identifying a project adviser. The second semester will be used to carry out the research project, prepare a written report, and possibly an oral presentation.**Description:** Carry out and report on a research project.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**SOIL 499H Honors Thesis****Crosslisted with:** PLAS 499H, RNGE 499H**Prerequisites:** Admission to the University Honors Program and permission.**Notes:** AGRI 299H recommended.**Description:** Conduct a scholarly research project and write a University Honors Program or undergraduate thesis.**Credit Hours:** 3-6**Min credits per semester:** 3**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded