GRASSLAND ECOLOGY & MANAGEMENT

Description
Website: http://snr.unl.edu/undergrad/majors/grassland

Grassland Ecology and Management
• An integration of disciplines involved in the study, conservation, and utilization of grasslands.
• Provides a strong background in the plant and physical sciences in preparation for studying the ecology and management of grasslands in upper level course work.
• Foundation of the degree program is multiple use, emphasizing integrated grassland management for water, wildlife, forage, recreation, and aesthetics.
• Students learn through course work, seminars, capstone experiences, and optional internships with state and federal agencies, research organizations, and private industry.
• Careers include managers of grassland resources on private and public lands with specialization in habitat management, grassland restoration/monitoring, or grassland management, positions with environmental consulting firms, natural resources districts, public land management agencies, land use planning agencies, and federal and state wildlife divisions.
• Curriculum meets the civil service requirements of the federal government for rangeland management specialist positions in such agencies as the Natural Resources Conservation Service, Bureau of Land Management, and Forest Service.
• Breadth of the curriculum prepares students for postgraduate education in most disciplines related to natural resource sciences.

Other
Scholarships and Financial Aid
In addition to other scholarships a student might receive, the grassland ecology and management program awards scholarships annually to qualifying new and current GECM students, based primarily on academic performance. For more information on these scholarships, contact Dr. Walter Schacht, 402-472-0205, wschacht1@unl.edu.

Academic Advising
Students are assigned a faculty advisor after admission into their program. The advisor serves as a resource regarding the degree, academic plans and progress, and career options. Students are encouraged to regularly consult with their advisor, especially before registering for classes.

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 studies, and 2 units of foreign language. Students must also meet performance requirements (ACT composite of 20 or higher OR combined SAT score of 950 or higher 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. For students entering the PGA Golf Management degree program, a certified golf handicap of 12 or better (e.g., USGA handicap card) or written ability (MS Word file) equivalent to a 12 or better handicap by a PGA professional or high school golf coach is required. For more information, please visit: http://pgm.unl.edu/requirements.

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 UNL, or within the first calendar year at UNL, whichever takes longer, excluding foreign languages. Students have up to 60 credit hours to remove foreign language deficiencies. College-level course work taken to remove deficiencies may be used to meet degree requirements in CASNR.

Deficiencies in the required entrance subjects can be removed by 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 insures that a student will meet the minimum curriculum requirements of the College.

Foreign Languages/Language Requirement
Two units of a foreign language are required. This requirement is usually met with two years of high school language.

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.

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 his/her 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 (withdrawn), 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.

**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.

**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 is the maximum number of hours UNL will accept on transfer from a two-year college. Ninety is the maximum number of hours UNL 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 UNL 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 UNL.

**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 requirements for a bachelor of science degree in CASNR. Cooperative programs result in a single degree from either UNL 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 course work. 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 UNL, 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
- 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 UNL 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 complete the “Application for Degree” form and provide transcripts to the Credentials Clerk, Office of the University Registrar, 107 Canfield Administration Building, UNL. Students should discuss these degree programs with their academic advisor.

**Cooperative Degree Programs**
Academic credit from UNL and a cooperating institution is applied towards a four-year degree from either UNL (UNL degree-granting program) or the cooperating institution (non UNL degree-granting program). All have approved programs of study.

**UNL Degree-Granting Programs**
A UNL 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.

**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.** The University of Nebraska at Omaha (UNO) cooperates with CASNR in providing four-semester pre-agricultural sciences, pre-natural resources, pre-food science and technology, pre-horticulture and pre-turfgrass and landscape management transfer programs.

A student enrolled in these programs may transfer all satisfactorily completed academic credits identified in the suggested program of study, and enter CASNR to study toward a degree program leading to a bachelor of science degree. The total program would require a minimum of four years or eight semesters (16 credit hours/semester or 120 credit hours).
UNL CASNR faculty teach horticulture and food science and technology courses at UNO to assist an urban population in better understanding the food processing, horticulture, and landscape horticulture industries.

For more information, contact the CASNR Dean’s Office, 800-472-8800, ext. 2541.

Non UNL Degree-Granting Programs
The CASNR cooperates with other institutions to provide course work 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 UNL 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 course work at Chadron State College and one year of specialized range science course work (32 credit hours) at CASNR.

Dordt College (Iowa) – Agricultural Education: Teaching Option. This program allows students to pursue an Agricultural Education Teaching Option degree leading toward a bachelor of science in agricultural education. Students at Dordt College will complete 90 credit hours in the Agricultural Education: Teaching Option Transfer Program.

Residency
Students must complete at least 30 of the total hours for their degree using UNL 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 UNL 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 UNL and participate in prior-approved education abroad programs. UNL 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, HRTM, 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 course work under 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 www.ace.unl.

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 UNL or when they were first admitted to a Joint Academic Transfer Program. 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 UNL 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.

Learning Outcomes
Majors in grassland ecology and management will be able to:

1. Assess rangeland health, use ecological site descriptions, determine carrying capacity, use GPS and GIS, conduct rangeland surveys, analyze quantitative field data, and interpret results of data analysis.
2. Use the principles of rangeland ecology to analyze and interpret the interactions of the plant, animal, environmental, and economic aspects of rangeland ecosystems.
3. Integrate conservation strategies that ensure sustained productivity and resilience of rangelands with livestock production and other rangeland-based enterprises.
4. Develop a comprehensive management plan for a unit of private or public rangeland, including economic analysis. Use decision support tools and technologies to develop and analyze management systems/strategies.
5. Critically analyze management systems, integrate a wide range of interrelated inputs and disciplines into a single process or system, and make decisions based on properly-collected information and sound reasoning and communicate them effectively to peers and stakeholders.
### Major Requirements

#### Core Requirements

**College Integrative Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIL 101</td>
<td>Science and Decision-Making for a Complex World</td>
<td>3</td>
</tr>
<tr>
<td>NRES 438</td>
<td>Grassland Conservation: Planning and Management (Capstone ACE 10)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Mathematics and Statistics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 218</td>
<td>Introduction to Statistics (ACE 3)</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one course beyond college algebra of the following: 2-5

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 102</td>
<td>Trigonometry</td>
<td></td>
</tr>
<tr>
<td>MATH 103</td>
<td>College Algebra and Trigonometry</td>
<td></td>
</tr>
<tr>
<td>MATH 104</td>
<td>Applied Calculus (ACE 3)</td>
<td></td>
</tr>
<tr>
<td>MATH 106</td>
<td>Calculus I (ACE 3)</td>
<td></td>
</tr>
</tbody>
</table>

#### Communication

Select one written communication (ACE 1) course of the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 150</td>
<td>Writing and Inquiry</td>
<td></td>
</tr>
<tr>
<td>ENGL 151</td>
<td>Writing and Argument</td>
<td></td>
</tr>
<tr>
<td>ENGL 254</td>
<td>Writing and Communities</td>
<td></td>
</tr>
<tr>
<td>JGEN 120</td>
<td>Basic Business Communication</td>
<td></td>
</tr>
<tr>
<td>JGEN 200</td>
<td>Technical Communication I</td>
<td></td>
</tr>
<tr>
<td>JGEN 300</td>
<td>Technical Communication II</td>
<td></td>
</tr>
</tbody>
</table>

Select one oral communication (ACE 2) course of the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALEC 102</td>
<td>Interpersonal Skills for Leadership</td>
<td></td>
</tr>
<tr>
<td>COMM 101</td>
<td>Communication in the 21st Century</td>
<td></td>
</tr>
<tr>
<td>COMM 209</td>
<td>Public Speaking</td>
<td></td>
</tr>
<tr>
<td>COMM 210</td>
<td>Communicating in Small Groups</td>
<td></td>
</tr>
<tr>
<td>COMM 215</td>
<td>Visual Communication</td>
<td></td>
</tr>
<tr>
<td>COMM 283</td>
<td>Interpersonal Communication</td>
<td></td>
</tr>
<tr>
<td>COMM 286</td>
<td>Business and Professional Communication</td>
<td></td>
</tr>
<tr>
<td>MRKT 257</td>
<td>Sales Communication</td>
<td></td>
</tr>
<tr>
<td>NRES 301</td>
<td>Environmental Communication Skills</td>
<td></td>
</tr>
<tr>
<td>TMFD 121</td>
<td>Visual Communication and Presentation</td>
<td></td>
</tr>
</tbody>
</table>

Select one communication and interpersonal skills elective of the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 150</td>
<td>Writing and Inquiry</td>
<td></td>
</tr>
<tr>
<td>ENGL 151</td>
<td>Writing and Argument</td>
<td></td>
</tr>
<tr>
<td>ENGL 252</td>
<td>Introduction to Fiction Writing</td>
<td></td>
</tr>
<tr>
<td>ENGL 253</td>
<td>Introduction to Poetry Writing</td>
<td></td>
</tr>
<tr>
<td>ENGL 254</td>
<td>Writing and Communities</td>
<td></td>
</tr>
<tr>
<td>ALEC 102</td>
<td>Interpersonal Skills for Leadership</td>
<td></td>
</tr>
<tr>
<td>JGEN 120</td>
<td>Basic Business Communication</td>
<td></td>
</tr>
<tr>
<td>JGEN 200</td>
<td>Technical Communication I</td>
<td></td>
</tr>
<tr>
<td>JGEN 300</td>
<td>Technical Communication II</td>
<td></td>
</tr>
<tr>
<td>COMM 101</td>
<td>Communication in the 21st Century</td>
<td></td>
</tr>
<tr>
<td>COMM 209</td>
<td>Public Speaking</td>
<td></td>
</tr>
<tr>
<td>COMM 210</td>
<td>Communicating in Small Groups</td>
<td></td>
</tr>
<tr>
<td>COMM 212</td>
<td>Debate</td>
<td></td>
</tr>
<tr>
<td>COMM 215</td>
<td>Visual Communication</td>
<td></td>
</tr>
<tr>
<td>COMM 286</td>
<td>Business and Professional Communication</td>
<td></td>
</tr>
</tbody>
</table>

#### Natural Resources

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRES 220 / BIOS 220</td>
<td>Principles of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>SOIL 153 / AGRO 153 / HORT 153</td>
<td>Soil Resources</td>
<td>4</td>
</tr>
<tr>
<td>AECN 265 / NREE 265</td>
<td>Resource and Environmental Economics I</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following: 3-4

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 412 / NRES 412</td>
<td>Introduction to Geographic Information Systems</td>
<td></td>
</tr>
<tr>
<td>NRES 312 / GEOG 312</td>
<td>Introduction to Geospatial Information Sciences</td>
<td></td>
</tr>
</tbody>
</table>

#### Natural and Physical Sciences

**CASNR Approved Life Sciences**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIFE 120 &amp; LIFE 120L</td>
<td>Fundamentals of Biology I and Fundamentals of Biology I laboratory</td>
<td>4</td>
</tr>
<tr>
<td>LIFE 121 &amp; LIFE 121L</td>
<td>Fundamentals of Biology II and Fundamentals of Biology II Laboratory</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one sequence of the following: 8

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 105 &amp; CHEM 106</td>
<td>Chemistry in Context I and Chemistry in Context II</td>
<td></td>
</tr>
<tr>
<td>CHEM 109 &amp; CHEM 110</td>
<td>General Chemistry I and General Chemistry II (ACE 4)</td>
<td></td>
</tr>
<tr>
<td>MSYM 109</td>
<td>Physical Principles in Agriculture and Life Sciences (ACE 4)</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Economics, Humanities and Social Sciences

Select one of the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AECN 141</td>
<td>Introduction to the Economics of Agriculture</td>
<td></td>
</tr>
<tr>
<td>ECON 200</td>
<td>Economic Essentials and Issues</td>
<td></td>
</tr>
<tr>
<td>ECON 211</td>
<td>Principles of Macroeconomics</td>
<td></td>
</tr>
<tr>
<td>ECON 212</td>
<td>Principles of Microeconomics (ACE 6)</td>
<td></td>
</tr>
</tbody>
</table>

Select one course each from ACE outcomes 5, 7, 8, and 9: 12

Credit Hours Subtotal: 69

#### Specific Major Requirements

**Grassland Resources**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRES 245 / AGRO 245</td>
<td>Introduction to Grassland Ecology and Management</td>
<td>3</td>
</tr>
<tr>
<td>NRES 440 / AGRO 440 / RNGE 440</td>
<td>Great Plains Ecosystem</td>
<td>3</td>
</tr>
<tr>
<td>NRES 442 / AGRO 442 / RNGE 442</td>
<td>Wildland Plants</td>
<td>3</td>
</tr>
<tr>
<td>RNGE 340 / AGRO 340</td>
<td>Range Management and Improvement</td>
<td>3</td>
</tr>
</tbody>
</table>

**Natural Resources and Sciences**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRES 211</td>
<td>Introduction to Conservation Biology</td>
<td>3</td>
</tr>
<tr>
<td>or NRES 311</td>
<td>Wildlife Ecology and Management</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credit Hours</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>NRES 281 /</td>
<td>Introduction to Water Science</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 281 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WATS 281</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGRO 215 /</td>
<td>Genetics</td>
<td>4</td>
</tr>
<tr>
<td>HORT 215 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TLMT 215</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGRO 325</td>
<td>Introductory Plant Physiology</td>
<td>4</td>
</tr>
<tr>
<td>SOIL 477 /</td>
<td>Great Plains Field Pedology</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 477 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG 467 /</td>
<td></td>
<td></td>
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<tr>
<td>NRES 477</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory and Policy</td>
<td></td>
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<tr>
<td>AECN 388 /</td>
<td>Ethics in Agriculture and Natural Resources</td>
<td>3</td>
</tr>
<tr>
<td>ALEC 388</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or PHIL 225</td>
<td>Environmental Ethics</td>
<td></td>
</tr>
<tr>
<td>NRES 323</td>
<td>Natural Resources Policy</td>
<td>3</td>
</tr>
<tr>
<td>or AECN 357</td>
<td>Natural Resource and Environmental Law</td>
<td></td>
</tr>
<tr>
<td>NREE 357</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNGE 444 /</td>
<td>Ecosystem Monitoring and Assessment</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 444 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NRES 444</td>
<td></td>
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<tr>
<td>Credit Hours Subtotal:</td>
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<td>39</td>
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</tbody>
</table>

**Free Electives**

Select 9-13 credits

Credit Hours Subtotal: 12

Total Credit Hours 120

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1. Only 2 hrs of MATH 103 College Algebra and Trigonometry will count toward this requirement.

### Requirements for Minor Offered by Department

#### Grassland Ecology & Management Minor

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRES 245 /</td>
<td>Introduction to Grassland Ecology and Management</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 245</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNGE 340 /</td>
<td>Range Management and Improvement</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 340</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NRES 440 /</td>
<td>Great Plains Ecosystem</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 440 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNGE 440</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOIL 153 /</td>
<td>Soil Resources</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 153 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HORT 153</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select two of the following (5 cr minimum):</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>AGRO 242 /</td>
<td>North American Wildland Plants</td>
<td></td>
</tr>
<tr>
<td>HORT 242 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNGE 242</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NRES 442 /</td>
<td>Wildland Plants</td>
<td></td>
</tr>
<tr>
<td>AGRO 442 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNGE 442</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NRES 444 /</td>
<td>Ecosystem Monitoring and Assessment</td>
<td></td>
</tr>
<tr>
<td>AGRO 444 /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNGE 444</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NRES 438</td>
<td>Grassland Conservation: Planning and Management</td>
<td></td>
</tr>
</tbody>
</table>

**Independent Study**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRES 496</td>
<td>Independent Study</td>
<td>18</td>
</tr>
</tbody>
</table>

**RNGE 240 Forage Crop and Pasture Management**

**Crosslisted with:** AGRO 240

**Prerequisites:** AGRO 131 or BIOS 109 or equivalent

**Description:** Principles basic to the establishment, management, and utilization of forage crops and pastures. Plant identification and selection, seeding, fertilization, irrigation, forage quality and utilization, hay and silage preservation, and grazing management. The role of forages and ranges in developing a sustainable agriculture.

**Credit Hours:** 3

Max credits per semester: 3

Max credits per degree: 3

**Format:** LEC

**RNGE 242 North American Wildland Plants**

**Crosslisted with:** AGRO 242, HORT 242

**Prerequisites:** Permission, AGRO/RNGE 240 recommended.

**Description:** Identification and description of two-hundred important wildland plants of North America. Characteristics of these plants evaluated in terms of management implications.

**Credit Hours:** 1

Max credits per semester: 1

Max credits per degree: 4

**Format:** LEC

**RNGE 295 Internship in Agronomy**

**Crosslisted with:** AGRO 295, SOIL 295

**Prerequisites:** Sophomore standing and completion of internship approval form. The internship proposal is subject to approval by the department.

**Description:** Participation in agronomic applications and in agronomy-related areas of agribusiness; agronomic research in lab, greenhouse, or field; participation in farming practices other than those in which the student has had previous experience; or preparation of teaching materials.

**Credit Hours:** 1-3

Min credits per semester: 1

Max credits per semester: 3

Max credits per degree: 5

**Format:** LEC

**RNGE 340 Range Management and Improvement**

**Crosslisted with:** AGRO 340

**Prerequisites:** AGRO 240.

**Description:** The principles of range management within the ecosystem framework. Range improvement practices and grazing systems; plant control using biological, chemical and mechanical factors; prescribed burning; range seeding; range fertilization; and the integration of range with other forage resources.

**Credit Hours:** 3

Max credits per semester: 3

Max credits per degree: 3

**Format:** LEC

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Grassland Ecology & Management

5
Grassland Ecology & Management

RNGE 440 Great Plains Ecosystem
Crosslisted with: AGRO 440, AGRO 840, NRES 840, NRES 440
Prerequisites: Junior standing. BIOS 101 and 101L, or equivalent, recommended.
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
Format: LEC

RNGE 441 Perennial Plant Function, Growth, and Development
Crosslisted with: AGRO 441, AGRO 841, HORT 441, HORT 841
Prerequisites: AGRO 325 or equivalent.
Description: Principles of crop physiology and developmental morphology in relation to function, growth, development, and survival of perennial forage, range, and turf plants. The relationship of physiology and morphological development on plant use and management.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

RNGE 442 Wildland Plants
Crosslisted with: AGRO 442, AGRO 842, NRES 842, NRES 442
Prerequisites: Junior standing. BIOS 101 and 101L, 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, fords, shrubs, exotic and wetland plants.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

RNGE 444 Ecosystem Monitoring and Assessment
Crosslisted with: AGRO 444, AGRO 844, NRES 844, NRES 444
Prerequisites: Junior standing. 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
Format: LEC

RNGE 445 Livestock Management on Range and Pasture
Crosslisted with: AGRO 445, AGRO 845, ASCI 451, ASCI 851
Prerequisites: ASCI 250 and AGRO 240 or 340; AECN 201 recommended.
Description: Analyzing the plant and animal resources and economic aspects of pasturage. Management of pasture and range for continued high production emphasized.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
ACE: ACE 10 Integrated Product

RNGE 495 Grasslands Seminar
Crosslisted with: AGRO 495, ENTO 495, GRAS 495, HORT 495, NRES 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
Format: LEC

RNGE 496 Independent Study
Crosslisted with: AGRO 496, AGRO 896, SOIL 496
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 12
Format: IND

RNGE 499H Honors Thesis
Crosslisted with: AGRO 499H, SOIL 499H
Prerequisites: Admission to the University Honors Program and permission, 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
Format: IND

PLEASE NOTE
This document represents a sample 4-year plan for degree completion with this major. Actual course selection and sequence may vary and should be discussed individually with your college or department academic advisor. Advisors also can help you plan other experiences to enrich your undergraduate education such as internships, education abroad, undergraduate research, learning communities, and service learning and community-based learning.

Icon Legend: Critical

14 HR TERM 1

College Course
complete SCIL 101

SCIL 101 becomes critical to your success in the major if not completed by the second term of enrollment.

College Algebra Reqt
complete MATH 102

MATH 102 becomes critical to your success in the major if not completed by the third term of enrollment.
ACE 1 Written Comm

complete 1 from ENGL 150, ENGL 151, ENGL 254, JGEN 120, JGEN 200, JGEN 300

ACE 5 Humanities

complete 1 from ACE5

Complete an ACE 5, 7, 8, or 9 requirement this term.

Natural Resources

complete SOIL 153

14 HR TERM 2

ACE 2 Oral Comm

complete 1 from ALEC 102, COMM 101, COMM 109, COMM 209, COMM 215, COMM 283, COMM 286, MRKT 257, TMFD 121, NRES 301

ACE 4 Physics

complete MSYM 109

ACE 6 Economics

complete AECN 141

ACE 4 Life Science

complete LIFE 120, LIFE 120L

LIFE 120 & 120L become critical to your success in the major if not completed by the second term of enrollment.

14 HR TERM 3

ACE 4 Chemistry

complete either CHEM 105 or CHEM 109

ACE 4 Chemistry

complete either RNGE 340 or NRES 245

13 HR TERM 5

Inventory/Policy

complete NRES 323

Natural Resources

Complete an ACE 5, 7, 8, or 9 requirement this term.

ACE 4 Life Science

complete LIFE 121, LIFE 121L

Ecology

complete NRES 220

NRES 220 becomes critical to your success in the major if not completed by the fourth term of enrollment.

16 HR TERM 4

ACE 4 Chemistry

complete either CHEM 106 or CHEM 110

ACE 7 Arts

complete 1 from ACE7

Complete an ACE 5, 7, 8, or 9 requirement this term.

ACE 3 Statistics

complete STAT 218

Comm/Interpersonal Skills

complete 1 from ALEC 102, COMM 101, COMM 109, COMM 209, COMM 212, COMM 215, COMM 286, ENGL 150, ENGL 151, ENGL 252, ENGL 253, ENGL 254, JGEN 120, JGEN 200, JGEN 300, MRKT 257, TMFD 121

Grassland Resources

complete either RNGE 340 or NRES 245

16 HR TERM 5

Inventory/Policy

complete NRES 323

Natural Resources
complete either AECN 265 or NRES 312

Complete AECN 265 and choose either NRES 312 or 314.

**Natural Resources/Science**
complete AGRO 215

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**13 HR TERM 6**

**Grassland Resources**
complete RNGE 340

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**Natural Resources/Science**
complete AGRO 215

**Electives**
complete Any Course

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**14 HR TERM 8**

**Natural Resources/Science**
complete SOIL 477

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**Grassland Resources**
complete RNGE 440

**Electives**
complete Any Course

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**Graduation Requirements**
1. Performance Measure: 2.00 GPA required for graduation.
2. ***Total Credits Applying Toward 120 Total Hours***

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**Career Information**
The following represents a sample of the internships, jobs and graduate school programs that current students and recent graduates have reported.

**Jobs of Recent Graduates**
- Environmental Restoration Technician II, AirLift Environmental LLC - Lincoln NE
- Range Management Specialist, USDA-NRCS - Burwell NE
- Advertising Account Executive, Nebraska Life Magazine - Norfolk NE
- Labourer, Johnson Land Management - Wausa NE