APPLIED SCIENCE

Description
Website: http://appliedscience.unl.edu

The applied science degree program is designed for the student seeking a broad education in the agricultural, life, and natural resource sciences combined with essential studies in the natural sciences, leadership, communication skills, humanities and social sciences.

This degree program prepares students for occupations that involve the application of science in society. It teaches an integrated understanding of how basic and applied science benefit and impact us in daily life.

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 bulletin. The individual major/degree program listings of classes insured 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 (withdraw), 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 CASNR (≥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, ENVIR, 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 through the University of Nebraska–Lincoln Office of Online and Distance Education. 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 through the UNL Online and Distance Education program 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
1520 N 20th Circle, PO Box 888307
Lincoln, NE 68588-8307
402-472-2175
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.

Bulletin Rule
Students must fulfill the requirements stated in the bulletin 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 bulletin 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 bulletin year. The bulletin which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

Learning Outcomes
Majors in applied science will be able to:
1. Demonstrate knowledge of agricultural commodity production.
2. Manage a farm or ranch enterprise or a career in agribusiness.
3. Locate and evaluate information to aid in decision-making.
4. Understand global challenges and issues related to food systems and agriculture.
5. Demonstrate effective written and oral communications skills.
6. Demonstrate critical thinking and decision making skills.
7. Have sufficient core thinking for effective lifetime learning.

Major Requirements

Degree Requirements
Select 48 credits

Free Electives
Select 19-20 credits

Total Credit Hours
120

Core Requirements

College Integrative Courses
SCIL 101 Science and Decision-Making for a Complex World 3
AGRI 485 Investigations in Applied Science (capstone, ACE 10) 3

Mathematics and Statistics (beyond college algebra)
Select 5-6 credits of the following: 2

MATH 102 Trigonometry
MATH 103 College Algebra and Trigonometry
MATH 104 Applied Calculus
MATH 106 Calculus I
STAT 218 Introduction to Statistics
ECON 215 Statistics 1

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

ENGL 150 Writing and Inquiry 1
ENGL 151 Writing and Argument 1
ENGL 254 Writing and Communities 1
JGEN 120 Basic Business Communication
JGEN 200 Technical Communication 1

Select one communication and interpersonal skills elective (ACE 2) of the following: 3

ALEC 102 Interpersonal Skills for Leadership 1
COMM 101 Communication in the 21st Century
COMM 209 Public Speaking
Applied Science

COMM 286  Business and Professional Communication 1
JGEN 300  Technical Communication II 1

Natural Sciences
Select one biological sciences (ACE 4) sequence of the following: 4
BIOS 101  General Biology
& BIOS 101L  and General Biology Laboratory
LIFE 120  Fundamentals of Biology I
& LIFE 120L  and Fundamentals of Biology I laboratory
AGRO 131  Plant Science
& AGRO 132  and Agronomic Plant Science Laboratory 1
AGRO 215 / HORT 215 / TLMT 215
CHEM 105  Chemistry in Context I (ACE 4)
or CHEM 109  General Chemistry I
CHEM 106  Chemistry in Context II
or CHEM 110  General Chemistry II

Select one of the following: 4
PHYS 141  Elementary General Physics I
PHYS 151  Elements of Physics
MSYM 109  Physical Principles in Agriculture and Life Sciences (ACE 4) 1

Economics (ACE 6)
Select one of the following: 3
ECON 200  Economic Essentials and Issues 1
ECON 211  Principles of Macroeconomics 1
ECON 212  Principles of Microeconomics 1
AECN 141  Introduction to the Economics of Agriculture

Select 12 credits 3

Credit Hours Subtotal: 40-41

Degree Requirements
AGRI 115  Biotechnology: Food, Health and Environment 1 3
ENTO 115 / BIOS 115
FDST 131 / CHEM 131 / NUTR 131
NRES 108  Earth's Natural Resource Systems Laboratory 1 3
NRES 422  Laboratory Earth: Earth's Changing Systems 1 3
AGRI 282  Introduction to Global Agricultural and Natural Resources Issues 1 3
or AECN 265 / NREE 265

Food, Animal, and Plant Science Electives
Select 9 hours of the following: 9
AGRO 131 / HORT 131
AGRO 132  Agronomic Plant Science Laboratory 4
AGRO 204  Resource-Efficient Crop Management
AGRO 240 / RNGE 240
AGRO 269 / SOIL 269

AGRO 325  Introductory Plant Physiology
AGRO 340 / RNGE 340
AGRO 405  Crop Management Strategies
AGRO 406 / HORT 406 / NRES 406
AGRO 437  Animal, Food and Industrial Uses of Grain 1
AGRO 438  Producing Grain for Animal, Food and Industrial Uses 1
AGRO 445 / ASCI 451 / RNGE 445

ASCI 100  Fundamentals of Animal Biology and Industry
ASCI 310  Fresh Meats 1
ASCI 320  Animal Nutrition and Feeding
ASCI 410  Processed Meats 1
ENTO 308  Management of Field Crop Insects
ENTO 401  Insect Physiology 1
ENTO 403  Management of Horticultural Crop Insects 1
HORT 325  Greenhouse Practices and Management
HORT 462  Nursery Management and Crop Production
MSYM 354 / SOIL 354 / WATS 354

MSYM 452 / AGRO 452 / WATS 452
NUTR 253  Cultural Aspects of Food and Nutrition 1
PLPT 369 / Introductory Plant Pathology
B IOS 369
VBM S 303  Principles and Prevention of Livestock Diseases

Ecology Electives
Select 9 hours of the following: 9
AECN 357 / NREE 357  Natural Resource and Environmental Law 1
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AGRO 153 / HORT 153 / SOIL 153</td>
<td>Soil Resources</td>
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<tr>
<td>AGRO 361 / GEOL 361 / NRES 361 / SOIL 361 / WATS 361</td>
<td>Soils, Environment and Water Quality</td>
</tr>
<tr>
<td>AGRO 426 / HORT 426 / NRES 426</td>
<td>Invasive Plants</td>
</tr>
<tr>
<td>AGRO 435 / HORT 435 / NRES 435</td>
<td>Agroecology</td>
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<tr>
<td>AGRO 436 / HORT 436</td>
<td>Agroecosystems Analysis</td>
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<tr>
<td>AGRO 440 / NRES 440 / RNGE 440</td>
<td>Great Plains Ecosystem</td>
</tr>
<tr>
<td>BIOS 454 / NRES 454</td>
<td>Ecological Interactions</td>
</tr>
<tr>
<td>BIOS 457 / GEOL 457</td>
<td>Ecosystem Ecology</td>
</tr>
<tr>
<td>ENTO 300 / BIOS 300 / NRES 300</td>
<td>Toxins in the Environment</td>
</tr>
<tr>
<td>ENTO 402 / BIOS 485 / NRES 402</td>
<td>Aquatic Insects</td>
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<tr>
<td>ENTO 406 / BIOS 406</td>
<td>Insect Ecology</td>
</tr>
<tr>
<td>GEO 106</td>
<td>Environmental Geology</td>
</tr>
<tr>
<td>METR 100</td>
<td>Weather and Climate</td>
</tr>
<tr>
<td>AGRO 107 / NRES 107</td>
<td>Invasive Plant Species: Impacts on Ecosystems</td>
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<tr>
<td>NRES 208</td>
<td>Applied Climate Sciences</td>
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<tr>
<td>NRES 211</td>
<td>Introduction to Conservation Biology</td>
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<tr>
<td>NRES 220 / BIOS 220</td>
<td>Principles of Ecology</td>
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<tr>
<td>NRES 281 / GEOG 281 / WATS 281</td>
<td>Introduction to Water Science</td>
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<tr>
<td>NRES 452 / AGRO 450 / GEOG 450 / METR 450</td>
<td>Climate and Society</td>
</tr>
<tr>
<td>PLPT 270 / AGRO 270 / HORT 470 / NRES 270</td>
<td>Biological Invaders</td>
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**Entrepreneurship, Economics, and Policy Electives**

Select 6 hours of the following:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AECN 256</td>
<td>Legal Aspects in Agriculture</td>
</tr>
<tr>
<td>AECN 325 / MRKT 325</td>
<td>Marketing of Agricultural Commodities</td>
</tr>
<tr>
<td>AECN 345</td>
<td>Policy Issues in Agriculture and Natural Resources</td>
</tr>
<tr>
<td>AECN 346</td>
<td>World Food Economics</td>
</tr>
<tr>
<td>AECN 357 / NREE 357</td>
<td>Natural Resource and Environmental Law</td>
</tr>
<tr>
<td>AECN 420</td>
<td>International Food and Agricultural Trade</td>
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<td>ALEC 202</td>
<td>Foundations of Leadership Theory and Practice</td>
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<td>ALEC 302</td>
<td>Dynamics of Effective Leadership in Organizations</td>
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<tr>
<td>ALEC 407</td>
<td>Supervisory Leadership</td>
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<tr>
<td>ALEC 410 / NRES 413</td>
<td>Environmental Leadership</td>
</tr>
<tr>
<td>ALEC 414</td>
<td>Classic Figures in Leadership</td>
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<tr>
<td>ALEC 477</td>
<td>Leadership and Motivation</td>
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<tr>
<td>ENSC 220</td>
<td>Introduction to Energy Systems</td>
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<tr>
<td>ENSC 230</td>
<td>Energy and the Environment: Economics and Policy</td>
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<tr>
<td>ENTR 121 / MNGT 121</td>
<td>Introduction to Entrepreneurial Management</td>
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<td>ENTR 321 / MNGT 321</td>
<td>Entrepreneurship and Innovation in Organizations</td>
</tr>
<tr>
<td>ENTR 421 / MNGT 421</td>
<td>Identifying and Exploring Entrepreneurial Opportunities</td>
</tr>
<tr>
<td>MNGT 422 / ENTR 422</td>
<td>Managing Rapid Growth and Change in Organizations</td>
</tr>
<tr>
<td>HORT 388 / ABUS 388 / AGRO 388 / EAEP 388 / ENTR 388</td>
<td>Agribusiness Entrepreneurship</td>
</tr>
<tr>
<td>NRES 323</td>
<td>Natural Resources Policy</td>
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Credit Hours Subtotal: 48

**Free Electives**

Select 19-20 credits

Credit Hours Subtotal: 19-20

**Career Experience (optional)**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>AGRI 395</td>
<td>Applied Science Internship</td>
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</tbody>
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Credit Hours Subtotal: 1-3

Total Credit Hours: 108-112

1. Courses may be taken online.
2. Proficiency at the college algebra level must be demonstrated either by a placement exam or through course work. If MATH 103 College Algebra and Trigonometry is taken, only 2 cr hrs can be counted toward this requirement.
3. Students should work with an advisor to satisfy ACE areas 5, 7, 8 and 9 as Humanities and Social Science electives.
4. If not taken for Natural Science requirement.

**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.
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

- Field Agronomist, Crop Tech Solutions - Gothenburg NE
- Farm Partner, Cornwell Family Farms - Belgrade NE
- Sales Representative, Syngenta - Greensboro NC
- Extension Assistant, University of Nebraska-Lincoln - Omaha NE
- Ag Sales (Merchandising) Trainee, Cargill - Heartwell NE
- More...
  - Managerial Trainee, CHS Agra Service Center - Holderege NE
  - Precision Farming Specialist, Mitchell Equipment - Atkinson NE
  - Feedlot Manager, Muller Farms - Scribner NE
  - Testing Operations Manager, Monsanto - Tea SD
  - Loan Officer, Bank of Dixon County - Ponca NE

Internships

- Grain Marketing Intern, Anderson Grain - Kearney NE
- Community and Regional Development Economic Development Intern, Nebraska Dept. of Economic Development - Lincoln NE
- Crop-Inputs Farm Marketer Intern, Cargill - Pipestone MN
- Intern, Monsanto - Gothenberg NE
- Intern, USDA - NE Farm Service Agency -
- More...
  - Merchandising Intern, ADM Soy Processing -
  - Operations Internship, Bartlett Grain -
  - Trait Efficacy Intern, Pioneer Hi-Bred - York NE
  - UNL Extension Intern, University of Nebraska-Lincoln - Lincoln NE
  - Wholesale Sales Intern, Helena Chemical Company - West Des Moines IA

Grad Schools

- M.S. in Leadership Education, University of Nebraska-Lincoln - Lincoln NE
- M.S. Agricultural Education 4_H Communication, University of Nebraska-Lincoln - Lincoln NE
- M.S. in Agronomy, University of Nebraska-Lincoln - Lincoln NE
- M.S. in Agronomy, South Dakota State University - Brookings SD
- M.S. Entomology, University of Nebraska-Lincoln - Lincoln NE
- More...
  - M.S. in Regulation Science, The Johns Hopkins University - Baltimore MD