

# APPLIED SCIENCE

## Description

**Website:** <http://appliedscience.unl.edu>

The applied science degree program will prepare students for professions that involve the application of science in society, rather than the practice of science and scientific research. The goal is to provide an integrated understanding of how basic and applied science benefit and impact us, from the individual to the biosphere.

## 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 the University of Nebraska–Lincoln, or within the first calendar year at Nebraska, whichever takes longer, excluding foreign languages. Students have up to 60 credit hours to remove foreign language deficiencies. 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 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. 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 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 (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>.

### 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 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
- 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 complete the Application for Degree form and provide transcripts to the Credentials Clerk, Office of the University Registrar, 107 Canfield Administration Building. Students should discuss these degree programs with their academic advisor.

### Cooperative Degree Programs

Academic credit from the University and a cooperating institution is 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.

**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).

Nebraska 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 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.

**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 University of Nebraska–Lincoln credits. At least 18 of the 30 credit hours must be in courses offered through CASNR<sup>1</sup> (>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 UNL and participate in prior-approved education abroad programs. University of Nebraska–Lincoln open enrollment and summer independent study courses count toward residence.

<sup>1</sup> 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 coursework 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 [ace.unl.edu](https://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. 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 Nebraska 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

Graduates of applied science will be able to:

1. Understand, apply, analyze and evaluate concepts, processes, procedures and principles in areas at the interface of food, animal and plant systems and the interrelatedness of science and society.
2. Compare and contrast how natural and managed systems function and demonstrate a systems-level understanding of the extent to which humans impact the environment.
3. Analyze and solve complex problems using critical and creative thinking, science reasoning, and informed decision-making regarding current and emerging issues mediating the impact of society.
4. Effectively communicate scientific data and information to both technical and non-technical audiences as appropriate.

## Major Requirements

#### Core Requirements

Select 51-54 credits	51-54
<i>Degree Requirements</i>	
Select 64-66 credits	64-66
<i>Free Electives</i>	
Select 0-5 credits	0-5
Total Credit Hours	120

### Core Requirements

A minimum of 30 hours of CASNR designated coursework must be completed at the 200 level or above and a minimum of 15 hours must be completed at the 300 level or above (200- and 300-level courses can come from elective credits as long as all the degree requirements have been met). To meet degree requirements, students must have a course in at least four CASNR departments or program areas.

#### Core Requirements

<i>College Integrative Courses</i>		
SCIL 101	Science and Decision-Making for a Complex World	3
Any CASNR ACE 10 (Selected in consultation with academic advisor.)		3
<i>Mathematics and Statistics (beyond college algebra)</i>		
Select 5-6 credits of the following: <sup>1</sup>		5-6
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 <sup>2</sup>	
<b>Communication</b>		
Select one written communication (ACE 1) course of the following:		3
ENGL 150	Writing and Inquiry <sup>2</sup>	
ENGL 151	Writing and Argument <sup>2</sup>	
ENGL 254	Writing and Communities <sup>2</sup>	
JGEN 120	Basic Business Communication	
JGEN 200	Technical Communication I <sup>2</sup>	
Select one communication and interpersonal skills elective (ACE 2) of the following:		3
ALEC 102	Interpersonal Skills for Leadership <sup>2</sup>	
COMM 101	Communication in the 21st Century	
COMM 209	Public Speaking	
COMM 286	Business and Professional Communication <sup>2</sup>	
JGEN 300	Technical Communication II <sup>2</sup>	
<b>Natural Sciences (ACE 4)</b>		
AGRO 215 / HORT 215 / TLMT 215	Genetics	4
or BIOS 206	General Genetics	
Life Sciences – Select one of the following:		4
BIOS 101 & BIOS 101L	General Biology and General Biology Laboratory	
LIFE 120 & LIFE 120L	Fundamentals of Biology I and Fundamentals of Biology I laboratory	
AGRO 131 & AGRO 132	Plant Science and Agronomic Plant Science Laboratory <sup>2</sup>	
Chemistry – Select two of the following:		7-8
CHEM 105	Chemistry in Context I or CHEM 109 General Chemistry I	
CHEM 106	Chemistry in Context II or CHEM 111 General Chemistry II	
FDST 301	Chemistry of Food <sup>2</sup>	
Physics – Select one of the following:		4-5
PHYS 141	Elementary General Physics I	
PHYS 151	Elements of Physics	
MSYM 109	Physical Principles in Agriculture and Life Sciences (ACE 4) <sup>2</sup>	
<b>Economics (ACE 6)</b>		
Select one of the following:		3
ECON 200	Economic Essentials and Issues <sup>2</sup>	
ECON 211	Principles of Macroeconomics <sup>2</sup>	
ECON 212	Principles of Microeconomics <sup>2</sup>	
AECN 141	Introduction to the Economics of Agriculture	
<b>Humanities and Social Sciences</b>		
Select 12 credits. Students should work with an advisor to satisfy ACE areas 5, 7, 8 and 9 as Humanities and Social Science electives.		12
Credit Hours Subtotal:		52

**Degree Requirements**

Selected in consultation with academic advisor. Independent Study credit is not allowed.

**Food, Animal, and Plant Science Systems**

Select 15 hours from the following course prefixes: AGRI, AGRO, ASCI, BIOS, FDST, MSYM, NRES. 15

**Current and Emerging Technologies**

AGRI 115 Biotechnology: Food, Health and Environment 3

Select 6 hours from the following course prefixes: AGRO, ASCI, BIOS, FDST, LIFE, MSYM, NRES, PLPT. 6

**Ecosystems Science and Management**

Select 9 hours from the following course prefixes: AGRO, BIOS, ENVR, ENSC, NRES. 9

**Leadership, Entrepreneurship, and Economics**

Select 12 hours from the following course prefixes: ACCT, AECN, ALEC, EAEP, ECON, ENTR, FINA, MNGT, MRKT. 12

**Minor<sup>3</sup>**

Select in consultation with Academic Advisor 18

**Internship**

AGRI 395 Applied Science Internship 1-3

**Professional Electives**

Select 0-5 credits 0-5

Credit Hours Subtotal: 68

Total Credit Hours 120

<sup>1</sup> Proficiency at the college algebra level must be demonstrated either by a placement exam or through coursework. If MATH 103 College Algebra and Trigonometry is taken, only 2 cr hrs can be counted toward this requirement.

<sup>2</sup> Courses may be taken online.

<sup>3</sup> The following minors are offered online: Communication & Leadership, Leadership & Entrepreneurship, Engler Agribusiness Entrepreneurship, Insect Science, and Business.

**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
- 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 -
- 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

## **Graduate & Professional 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
- M.S. in Regulation Science, The Johns Hopkins University - Baltimore MD