

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 benefits and impacts 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 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, ENVIR, 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.

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 |
|----------------------|-------|

Degree Requirements

| | |
|----------------------|-------|
| Select 64-66 credits | 64-66 |
|----------------------|-------|

Free Electives

| | |
|--------------------|-----|
| Select 0-5 credits | 0-5 |
|--------------------|-----|

| | |
|---------------------------|------------|
| Total Credit Hours | 120 |
|---------------------------|------------|

Core Requirements

A minimum of thirty (30) hours of CASNR-designated coursework must be completed at the 200 level or above and a minimum of fifteen (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

College Integrative Courses (ACE 8)

| | | |
|----------|---|---|
| SCIL 101 | Science and Decision-Making for a Complex World | 3 |
|----------|---|---|

| | |
|--|---|
| Any CASNR ACE 10 (Selected in consultation with academic advisor.) | 3 |
|--|---|

Mathematics and Statistics (beyond college algebra)

| | |
|--|-----|
| Select 5-6 credits from the following: | 5-6 |
|--|-----|

| | |
|----------|---|
| MATH 102 | Trigonometry |
| MATH 103 | College Algebra and Trigonometry ² |
| MATH 104 | Applied Calculus |
| MATH 106 | Calculus I |
| STAT 218 | Introduction to Statistics |

Communication

| | |
|---|---|
| Select one written communication (ACE 1) course from the following: | 3 |
|---|---|

| | |
|----------|----------------------------------|
| ENGL 150 | Writing and Inquiry ¹ |
|----------|----------------------------------|

| | | |
|---|---|-----|
| ENGL 151 | Writing for Change ¹ | |
| ENGL 254 | Writing and Communities ¹ | |
| JGEN 120 | Basic Business Communication | |
| JGEN 200 | Technical Communication I ¹ | |
| JGEN 300 | Technical Communication II | |
| Select one communication and interpersonal skills elective (ACE 2) from the following: | | 3 |
| ALEC 102 | Interpersonal Skills for Leadership ¹ | |
| COMM 101 | Communication in the 21st Century | |
| COMM 209 | Public Speaking | |
| COMM 286 | Business and Professional Communication ¹ | |
| JGEN 300 | Technical Communication II ¹ | |
| Natural Sciences | | |
| PLAS 215 | Genetics | |
| or BIOS 201 | General Genetics | |
| Life Sciences (ACE 4) – Select one of the following: | | 4 |
| PLAS 131 | Plant Science | |
| & PLAS 132 | and Agronomic Plant Science Laboratory ¹ | |
| PLAS 131 | Plant Science | |
| & PLAS 134 | and Plant Sciences Laboratory | |
| BIOS 101 | General Biology | |
| & 101L | and General Biology Laboratory | |
| LIFE 120 | Fundamentals of Biology I | |
| & 120L | and Fundamentals of Biology I laboratory | |
| Chemistry – Select two of the following: | | 7-8 |
| CHEM 105A | Chemistry in Context I | |
| & CHEM 105L | and Chemistry in Context I Laboratory | |
| or | | |
| CHEM 109A | General Chemistry I | |
| & CHEM 109L | and General Chemistry I Laboratory | |
| Physics – Select one of the following: | | 4-5 |
| AGST 109 | Physical Principles in Agriculture and Life Sciences (ACE 4) ¹ | |
| PHYS 141 | Physics for Life Sciences I (ACE 4) | |
| PHYS 151 | Elements of Physics | |
| PHYS 211 | General Physics I | |
| Economics (ACE 6) | | |
| Select one of the following: | | 3 |
| AECN 141 | Introduction to the Economics of Agriculture | |
| ECON 200 | Economic Essentials and Issues ¹ | |
| ECON 211 | Principles of Macroeconomics ¹ | |
| ECON 212 | Principles of Microeconomics ¹ | |
| Humanities and Social Sciences | | |
| 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: | | 48 |
| Degree Requirements | | |
| Selected in consultation with academic advisor. Independent Study credit is not allowed. | | |
| <i>Food, Animal, and Plant Science Systems</i> | | |

| | | |
|---|---|------------|
| Select 15 hours from the following course prefixes: AGRI, AGST, ASCI, BIOS, FDST, NRES, PLAS | | 15 |
| Current and Emerging Technologies | | |
| AGRI 115 | Biotechnology: Food, Health and Environment | 3 |
| Select 6 hours from the following course prefixes: AGRO, AGST, ASCI, BIOS, FDST, FORS, LIFE, MBIO, NRES, PLAS, PLPT | | 6 |
| Ecosystems Science and Management | | |
| Select 9 hours from the following course prefixes: ENSU, ENSC, ENTO, NRES, PLAS | | 9 |
| Leadership, Entrepreneurship, and Economics | | |
| Select 12 hours from the following course prefixes: ACCT, AECN, ALEC, EAEP, ECON, ENTR, FINA, MNGT, MRKT | | 12 |
| Minor or Certificate ³ | | |
| 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 | | 116 |

¹ Courses may be taken online.

² If MATH 103 is taken, only 2 hours can be counted toward this requirement.

³ The minor can be any approved University of Nebraska Lincoln minor. The following minors are offered online: Communication & Leadership, Leadership & Entrepreneurship, Engler Agribusiness Entrepreneurship, Insect Science, and Business.

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 - Lincoln, 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 - Gothenburg, NE
- Intern, USDA - NE Farm Service Agency - Lincoln, NE
- Merchandising Intern, ADM Soy Processing - Lincoln, NE



- Operations Internship, Bartlett Grain - Jacksonville, IL
- Trait Efficacy Intern, Pioneer Hi-Bred - York, NE
- Extension Intern, University of Nebraska-Lincoln - Lincoln, NE
- Wholesale Sales Intern, Helena Chemical Company - West Des Moines, IA

Graduate & Professional Schools

- Master's in Leadership Education, University of Nebraska-Lincoln - Lincoln, NE
- Master's in Agricultural Education & 4H Communication, University of Nebraska-Lincoln - Lincoln, NE
- Master's in Agronomy, University of Nebraska-Lincoln - Lincoln, NE
- Master's in Agronomy, South Dakota State University - Brookings, SD
- Master's in Entomology, University of Nebraska-Lincoln - Lincoln, NE
- Master's in Regulation Science, The Johns Hopkins University - Baltimore, MD