



# ENGINEERING LEADERSHIP MINOR

## Description

### Overview and Purpose

Open to College of Engineering students only.

The engineering leadership minor provides College of Engineering students an opportunity to focus on building leadership, management, teamwork and interpersonal skills needed to solve many of our societal challenges. Courses provide developmental skills with experiential learning to enhance personal growth, improve practice, and provide frameworks for continued application of concepts in these areas.

Courses explore strategies and skills for effective leadership in the engineering profession, and the working world, and for building relationships.

The minor includes leadership courses led by faculty in the College of Engineering and faculty in the Department of Agricultural Leadership, Education and Communication.

The minor contributes to the National Academy of Engineers call to expose engineering students to formal studies of leadership development (NAE, 2004) and the College of Engineering's mission to graduate "Complete Engineers." The leadership minor provides the framework around the technical skills and coursework to achieve the ABET Outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. an ability to communicate effectively with a range of audiences.
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Admission

Open to students in the College of Engineering only.

## College Requirements

### College Admission

#### College Entrance Requirements

Students must meet both the University and College of Engineering entrance requirements. The following includes both the University and College of Engineering entrance requirements.

Students must have high school credit for (one unit is equal to one high school year):

1. Mathematics – 4 units: 2 of algebra, 1 of geometry, and 1 of precalculus and trigonometry
2. English – 4 units
3. Natural sciences – 3 units that must include 1 unit of physics and 1 unit of chemistry (chemistry requirement waived for students in construction management or computer science)
4. Foreign language – 2 units of a single foreign language
5. Social studies – 3 units
6. Students having a composite ACT score of 28 or greater (or equivalent SAT score) will be admitted to the College of Engineering even if they lack any one of the following: trigonometry, chemistry, or physics. Students without test scores who are missing a full unit of trigonometry/pre-calculus/calculus or chemistry or physics will be evaluated through College Review.
7. Students having an ACT score of 19 or less in English (or equivalent SAT score) or a grade lower than B in high school English, must take ENGL 150 Writing and Inquiry or ENGL 151 Writing for Change.

A total of 16 units is required for admission.

Engineering requires that student performance meet one of the following standards: composite ACT of 24, SAT of 1180, ACT Math subscore of 24, SAT Math subscore of 580, or a 3.5 cumulative GPA.

Any domestic first-year student who does not gain admission to Engineering but does gain admission to the University of Nebraska-Lincoln (UNL) will be reviewed through College Review. College Review is conducted through the College Review Committee which considers factors beyond standardized testing. Any first-year student who is not admitted through college review is placed in Pre-Engineering (PENG) with the Exploratory and Pre-Professional Advising Center (Explore Center). Students in the Explore Center can transfer to the College of Engineering once college admission requirements are met.

Students for whom English is not their language of nurture must meet the minimum English proficiency requirements of the University.

Students who lack entrance units may complete precollege training by Independent Study through the University of Nebraska-Lincoln Office of On-line and Distance Education, in summer courses, or as a part of their first or second semester course loads while in the Explore Center or other colleges at UNL.

Students should consult their advisor, their department chair, or Engineering Student Services (ESS) if they have questions on current policies.

### Other Admission Requirements

Students who transfer to the University of Nebraska-Lincoln from other accredited colleges or universities and wish to be admitted to the College of Engineering (COE) must meet COE first-year student entrance requirements, have a minimum cumulative GPA of 2.5, and be calculus-

ready. Students not meeting either of these requirements must enroll in the Explore Center or another University college until they meet COE admission requirements. Students transferring from UNO, UNL, or UNK to the College of Engineering must be in good academic standing with their institution.

The COE accepts courses for transfer for which a C or better grade was received from colleges outside of the NU system. Although the University of Nebraska–Lincoln and the College of Engineering in general accepts C- and D grades from the University of Nebraska Kearney and the University of Nebraska Omaha, not all majors in the COE accept such low grades. Students must conform to the requirements of their intended major and, in any case, are strongly encouraged to repeat courses with a grade of C- or less.

Students who were previously admitted to COE and are returning to the College of Engineering must demonstrate a cumulative GPA of 2.5 to be readmitted to COE.

## College Degree Requirements

### Grade Rules

#### Grade Appeals

In the event of a dispute involving any college policies or grades, the student should appeal to their instructor, and appropriate department chair or school director (in that order). If a satisfactory solution is not achieved, the student may appeal their case through the College Academic Appeals Subcommittee.

## Catalog Rule

Students must fulfill the requirements stated in the catalog for the academic year in which they are first admitted at the University of Nebraska–Lincoln. 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 Engineering. 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.

Students who have transferred from a community college 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 the student's College of Engineering academic advising team (e.g., ESS professional advisor and the chief faculty advisor for the student's declared degree program). The chief faculty advisor has the final authority for this decision. Eligibility is based on a) enrollment in a community college during the catalog year the student wishes to utilize, b) maintaining continuous enrollment of at least 12 credit hours per semester at the previous institution for at least 2 semesters, and c) continuous enrollment at the University of Nebraska–Lincoln within 1 calendar year from the student's last term at the previous institution. Students must complete all degree requirements from a single catalog year and within the timeframe allowable for that catalog year.

## Requirements for Minor Offered by Department

The engineering leadership minor is an interdisciplinary program, providing course offerings through the College of Engineering (COE) and the Department of Agricultural Leadership, Education and

Communication (ALEC). To successfully complete the minor, students are required to complete eighteen (18) credit hours in leadership and professional development, nine (9) of which come from engineering leadership and management courses.

## Courses

### ENGR Leadership & Management Courses

ENGR 100	Interpersonal Skills for Engineering Leaders (ACE 2)	3
ENGR 200	Professionalism and Global Perspective (ACE 6 & 9)	3
ENGR 320	Leadership, Management and Ethics (ACE 6 & 8)	3

Credit Hours Subtotal: 9

### Leadership Courses

Select one or two theory-based courses of the following: 3-6

ALEC 202	Foundations of Leadership Theory and Practice	
ALEC 302	Dynamics of Effective Leadership in Organizations	
ALEC 455	Dynamics of Effective Leadership in Groups & Teams <sup>1</sup>	
ALEC 477	Leadership and Motivation	

Select one or two application courses of the following: 3-6

ALEC 407	Supervisory Leadership	
ALEC 410 / NRES 413	Environmental Leadership <sup>1</sup>	
ALEC 422	Facilitation and Project Planning <sup>1</sup>	
ALEC 466	Leadership and Diversity in Organizations and Communities <sup>1</sup>	

Credit Hours Subtotal: 6

### Experiential Learning in Leadership

Select zero to one course of the following: 0-3

ALEC 337	Instructional Internship in Leadership Development <sup>2</sup>	
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Credit Hours Subtotal: 3

**Total Credit Hours 18**

<sup>1</sup> Junior standing is required for these courses.

<sup>2</sup> Credit received for being an undergraduate teaching assistant at the selection of the instructor.

## Grade Rules

### C- and D Grades

All courses must be completed with a Pass or grade of C or higher.

### Pass/No Pass Limits

Up to 6 credit hours may be taken as Pass/No Pass.

### ENGR 100 Interpersonal Skills for Engineering Leaders

**Prerequisites:** Credit toward the degree may be earned in only one of: ALEC 102, ENGR 100, or ENGR 100H

**Description:** Establishes a foundation in communication and leadership skills that is needed for engineering students to be successful in their academic endeavors and future career opportunities. Introduction to the principles and practices of positive interpersonal relationships for leadership development. Self-awareness, awareness of others, effective interpersonal communication, and the building of trust relationships as a basis for understanding and developing leadership.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** CSCE 488

**ACE:** ACE 2 Communication Competence

**Experiential Learning:** Community Engagement

### ENGR 100H Honors: Interpersonal Skills for Engineering Leaders

**Prerequisites:** Credit toward the degree may be earned in only one of: ALEC 102, ENGR 100, or ENGR 100H

**Notes:** Covers same topics as ENGR 100 but in greater depth. Students in Honors lab section will be expected to complete this work through presentations, writing assignments, and specific Service Learning Project.

**Description:** Establishes a foundation in communication and leadership skills that is needed for engineering students to be successful in their academic endeavors and future career opportunities. Introduction to the principles and practices of positive interpersonal relationships for leadership development. Self-awareness, awareness of others, effective interpersonal communication, and the building of trust relationships as a basis for understanding and developing leadership.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**Offered:** FALL/SPR

**ACE:** ACE 2 Communication Competence

### ENGR 101 Introduction to Engineering

**Description:** Students will examine relevant and practical industrial and commercial engineering applications to gain necessary engineering skills that will help them succeed as a student as well as a professional engineer. A variety of engineering disciplines will be highlighted and discussed, as well as topics in the underlying physical, chemical, and biological scientific principles and processes related to each topic. The class will use a specified focus area that involves real world applications to aid in the conceptualization and learning of the course material. Students will develop engineering problem solving skills; gain expertise and experience using modern engineering and computational tools; and emulate an engineering team atmosphere - each of which can be applied to a professional engineering environment.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

### ENGR 102 PKF Engineering Academy Seminar I

**Prerequisites:** Must be a PKF Engineering Academy Scholar

**Description:** Introduction to resources that support academic, personal, financial, and professional growth. Focuses on success strategies and transitioning from high school to college, as well as building a community within the PKF Engineering Academy.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Grading Option:** Pass No Pass

**Offered:** FALL

**Prerequisite for:** ENGR 103

### ENGR 103 PKF Engineering Academy Seminar II

**Prerequisites:** Must be a PKF Engineering Academy Scholar; ENGR 102

**Description:** Experience the Complete Engineer competencies by engaging in a semester-long service-learning project focused on the advancement and allyship of women in engineering, computing, and construction.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Grading Option:** Pass No Pass

**Offered:** SPRING

### ENGR 191 Freshman Engineering Special Topics

**Description:** Topics vary.

**Credit Hours:** 1-3

**Min credits per semester:** 1

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

### ENGR 193 Kiewit Scholars Freshman Seminar

**Prerequisites:** Must be a Kiewit Scholar.

**Description:** Introduction to The Complete Engineer competencies with an emphasis on leadership and communication. Establishes what it means to be a Complete Engineer and demonstrates and develops the competencies, including industry mentorship from Kiewit. Skills will include greater self-awareness, understanding the complexities of leadership in today's world, and understanding the dynamics of interpersonal communication.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 2

**Grading Option:** Pass No Pass

**Offered:** FALL/SPR

### ENGR 200 Professionalism and Global Perspective

**Description:** Enhance essential professional skills for personal and team success through investigating issues in a global context. Explore in-demand professional aptitudes (self-awareness, emotional intelligence, teamwork, communication, and workplace interaction expectations). Through industry/community interaction, explore cultural and business norms and the application of broader perspectives to identify issues/solutions responsive and adaptive to their global context

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**Prerequisite for:** ENGR 320

**ACE:** ACE 9 Global/Diversity ACE 6 Social Science

**ENGR 220 Technical Communication I****Crosslisted with:** JGEN 200**Description:** Introduction to written and oral communication and document design principles and strategies as applied in the sciences and technology. Communications for various audiences and/or purposes and/or situations.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Prerequisite for:** ECEN 481; ECEN 483; MECH 380**ACE:** ACE 1 Writing**ENGR 291 Sophomore Engineering Special Topics****Description:** Topics vary.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ENGR 300 Principles of Nuclear Engineering****Description:** Introduction to nuclear engineering principles.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded with Option**Prerequisite for:** MECH 421, MECH 821, ENGR 421**ENGR 302 Introduction to Nuclear and Radiation Engineering Concepts****Description:** History of nuclear development, basic concepts of radiation and radioactivity, radioactive waste management, global warming and the impact of nuclear power plants. Industrial applications, health physics, and nuclear medicine. Job opportunities at power plants, graduate school, and national laboratories. Tour of the University of Texas nuclear research reactor and demonstration experiments.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded**Prerequisite for:** ENGR 402; MECH 421, MECH 821, ENGR 421**ENGR 310 Utilization of Nuclear Technologies in Society****Description:** The applications of nuclear science to society and the fundamental radiation principles utilized in these applications.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Prerequisite for:** ENGR 411; MECH 421, MECH 821, ENGR 421**ENGR 320 Leadership, Management and Ethics****Prerequisites:** ENGR 200**Description:** Explore professional leadership, ethics, project management tools and skills, and how to successfully implement and respond to change. In a team based environment, enhance essential professional skills for personal and team success by developing and presenting a responsive proposal considering: client needs, basic project controls and scheduling. Learn about personal styles, motivation and effectively implementing change. Examine ethical dilemmas regarding principles, stewardship, and civics from ethical, legal, and expediency perspectives.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ACE:** ACE 6 Social Science ACE 8 Civic/Ethics/Stewardship**ENGR 350 Engineering Cooperative Education****Prerequisites:** Junior standing; permission of College of Engineering Dean's Office and department chair of student's engineering major.**Notes:** All students in engineering participating in cooperative education must register each term prior to commencing work. P/N only. Special approval is required to take course for credit.**Description:** Cooperative education work in a regularly established cooperative education work-study program in any engineering curriculum.**Credit Hours:** 0-12**Min credits per semester:****Max credits per semester:** 12**Max credits per degree:** 12**Grading Option:** Pass No Pass**ENGR 391 Junior Engineering Special Topics****Description:** Topics vary.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ENGR 395 Engineering Internship****Prerequisites:** Undergraduate major in the College of Engineering; sophomore standing; permission from instructor.**Description:** Provides an opportunity to reflect on experience gained through an internship related to the major field of study and an integral or important part of their program of study. Develop non-technical professional skills through reflective writing assignments. May be repeated.**Credit Hours:** 0-1**Min credits per semester:****Max credits per semester:** 1**Max credits per degree:** 3**Grading Option:** Pass No Pass**Offered:** FALL/SPR**Experiential Learning:** Internship/Co-op

**ENGR 400 Professional Ethics and Social Responsibilities**

**Prerequisites:** Junior standing

**Description:** Professional relations, personal requirements, civic responsibilities, and ethical obligations for engineering practice. Legal registration of engineers and architects. Subprofessional and professional services. Changing conditions in engineering practice. Requirements for placement in engineering.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Grading Option:** Pass No Pass

**Offered:** FALL/SPR

**ENGR 402 Energy Systems and Resources**

**Prerequisites:** ENGR 301.

**Description:** Energy as a critical component of civilization. The critical role of energy from the economic and political point of view world wide. Energy resources available, the technology to use the resources, the economics of energy production, the environmental consequences of energy use, and energy policy.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ENGR 410 Radiation Protection and Shielding**

**Prerequisites:** MATH 221 and ENGR 421.

**Description:** Basic principles and concepts of radiation protection and shield design. Dosi-metric units and response functions, hazards of radiation doses, radiation sources, basic methods for dose evaluation, and shielding design techniques for photons and neutrons.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**ENGR 411 Nuclear Reactor Theory**

**Prerequisites:** ENGR 310.

**Description:** Introduction to neutron diffusion theory, neutron moderation, neutron thermalization, and criticality condition of nuclear reactor.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ENGR 412

**ENGR 412 Nuclear Reactor Analysis**

**Prerequisites:** ENGR 411.

**Description:** Group diffusion method, multiregional reactors, heterogeneous reactors, reactor kinetics, and change in reactivity.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ENGR 420 Nuclear Reactor Engineering**

**Prerequisites:** MECH 421/821/ENGR 421.

**Description:** The physics governing nuclear reactors and the design principles for commercial nuclear power plants. Reactor designs currently operating in the power industry.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ENGR 421 Elements of Nuclear Engineering**

**Crosslisted with:** MECH 421, MECH 821

**Prerequisites:** ENGR 300 or ENGR 301 or ENGR 310; MATH 208/ MATH 208H; and PHYS 212/PHYS 212H

**Description:** Survey of nuclear engineering concepts and applications. Nuclear reactions, radioactivity, radiation interaction with matter, reactor physics, risk and dose assessment, applications in medicine, industry, agriculture, and research.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**Prerequisite for:** ENGR 410; ENGR 420

**ENGR 447 Multi-disciplinary Engineering Capstone**

**Prerequisites:** Senior standing, professional admission to an engineering program, and instructor permission.

**Description:** Definition, scope, analysis, synthesis, and the design for the solution of a comprehensive engineering problem in any major area of engineering, with emphasis on multi-disciplinary engineering problems.

**Credit Hours:** 2-6

**Min credits per semester:** 2

**Max credits per semester:** 6

**Max credits per degree:** 6

**Grading Option:** Graded

**Experiential Learning:** Student Teaching/Education Practicum

**ENGR 469 Technology, Science and Civilization**

**Prerequisites:** Senior standing

**Description:** Study of the development of technology as a trigger of change upon humankind, from the earliest tools of Homo habilis to the advent of the radio telescope in exploring the creation of the universe. Tracing paths from early science to development of the sciences and technologies that dominate the new millennium.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**ACE:** ACE 8 Civic/Ethics/Stewardship

**ENGR 490 Global Experiences**

**Prerequisites:** Permission.

**Notes:** Choice of subject matter and coordination of on- and off-campus activities are at the discretion of the instructor.

**Description:** Individual or group educational experience combining classroom lectures, discussions, and/or seminars with field and/or classroom studies in a foreign country.

**Credit Hours:** 1-3

**Min credits per semester:** 1

**Max credits per semester:** 3

**Max credits per degree:** 12

**Grading Option:** Graded

**Experiential Learning:** Education Abroad

**ENGR 491 Senior Engineering Special Topics**

**Description:** Topics vary.

**Credit Hours:** 1-3

**Min credits per semester:** 1

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ENGR 493 Kiewit Scholars Advanced Seminar**

**Prerequisites:** Students must be in good standing in the Kiewit Scholar program.

**Description:** Focuses on developing and fostering community, gaining exposure to industry leaders and mentors, and enhancing self-awareness and leadership skills.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 6

**Grading Option:** Pass No Pass

**Offered:** FALL/SPR

**ALEC 101 Mechanical Drafting**

**Description:** Develop expertise in the use of drafting equipment, geometric construction, orthographic projections, dimensioning, and the application of American National Standards Institute (ANSI) standards.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 122; ALEC 303; ALEC 346

**ALEC 102 Interpersonal Skills for Leadership**

**Prerequisites:** Credit toward the degree may be earned in only one of: ALEC 102, ENGR 100, or ENGR 100H

**Description:** Introduction to the principles and practices of positive interpersonal relationships for leadership development. Self-awareness, awareness of others, effective interpersonal communication, and the building of trust relationships as a basis for understanding and developing leadership. An experiential approach, field projects and a supervised service project.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ACE:** ACE 2 Communication Competence

**Experiential Learning:** Community Engagement

**ALEC 103 Computer-Aided Drafting**

**Prerequisites:** ALEC 122.

**Description:** Applying computer commands to create two-dimensional engineering and architectural drawings.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 346

**ALEC 104 Wood Technology**

**Description:** Fundamental woodworking tools and processes. Hand tool, lathe and machine related projects.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 242; ALEC 243

**Course and Laboratory Fee:** \$15

**ALEC 105 Introduction to Engineering Design (IED)**

**Notes:** This course is the first course in the Project Lead the Way pre-engineering program and requires no prerequisite. This is a secondary course training option for pre service teachers in Skilled and Technical Sciences. It is a STEM skill requirement for the 2+2 articulation agreement with various community colleges across the state of Nebraska. By allowing pre-service teachers to complete this course, students can reverse transfer the credit back to the community colleges to enforce rigorous training needs in the STEM field for future STS teachers coming out of the ALEC department.

**Description:** Students dig deep into the engineering design process, applying math, science, and engineering standards to hands - on projects. They work both individually and in teams to design solutions to a variety of problems using 3d modeling software, and use an engineering notebook to document their work.

**Credit Hours:** 4

**Max credits per semester:** 4

**Max credits per degree:** 4

**Grading Option:** Graded with Option

**Offered:** SUMMER

**Prerequisite for:** ALEC 115

**ALEC 109 Industrial Metals and Plastics Materials Processing**

**Description:** Forming, molding, separating, and fabricating of industrial materials.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 303

**Course and Laboratory Fee:** \$25

**ALEC 115 Principles of Engineering (POE)**

**Prerequisites:** ALEC 105

**Notes:** This course is the second foundational course taught in the Project Lead the Way pre-engineering curriculum. Students that complete this course will be certified to teach both foundational courses in any secondary PLTW pre-engineering program across the country. This certification gives UNL STS students in the ALEC department a rigorous STEM skill set. Once the course is completed the credit will be reverse transferred back to the community college to fulfill the STEM skill requirement of the 2+2 articulation agreements established with UNL and the ALEC department.

**Description:** Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation.

**Credit Hours:** 5

**Max credits per semester:** 5

**Max credits per degree:** 5

**Grading Option:** Graded with Option

**ALEC 120 Science and Storytelling**

**Description:** Introduction to science writing and storytelling techniques for communicating topics in agricultural sciences and natural resources. Focuses on crafting clear, engaging, and audience-centered narratives that make complex scientific information accessible. Develop skills to research effectively, write compelling stories tailored to distinct audiences, and critically analyze science-focused storytelling. Explores how storytelling bridges discovery in agricultural sciences and natural resources with public understanding.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**ACE:** ACE 1 Writing

**ALEC 122 Architectural Drafting**

**Prerequisites:** ALEC 101.

**Description:** Basic skills in the construction of architectural drawings, plot plans, elevation view, wall and floor sections, and roof construction. Architectural modeling.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 103

**ALEC 134 Agricultural Leadership, Education and Communication Careers**

**Description:** Explore the career opportunities available in agricultural leadership, education and communication focusing on agribusiness, industry training positions, secondary agriscience instruction, extension education, agricultural and environmental sciences communication, and international agricultural education. Course has guest speakers and field trips.

**Credit Hours:** 2

**Max credits per semester:** 2

**Max credits per degree:** 2

**Grading Option:** Graded with Option

**ALEC 135 Introduction to Agricultural Education (Early Field Experience)**

**Prerequisites:** Agricultural leadership, education and communication major

**Notes:** Requires 30 additional hours of field experience time, in an SBAE program, outside of regularly scheduled class hours.

**Description:** Covers the history, philosophy, goals, and objectives of Career and Technical Education, more specifically, School-Based Agricultural Education. Introduction to lesson plan development, writing objectives/essential questions, and peer teaching to provide knowledge and skills to be used in a 40-hour early field experience. The early field experience provides a platform for critical reflection to explore teaching as a potential career.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Offered:** FALL

**Prerequisite for:** ALEC 234; EDPS 362; EDPS 457

**ALEC 135A Introduction to Skilled and Technical Sciences Education**

**Notes:** Requires 30 additional hours of field experience time, in a Skills USA Affiliated STS Education program, outside of regularly scheduled class hours.

**Description:** Covers the history, philosophy, goals, and objectives of Career and Technical Education, more specifically, Skilled and Technical Sciences Education. Introduction to lesson plan development, writing objectives/essential questions, and peer teaching to provide knowledge and skills to be used in a 30-hour early field experience. The early field experience provides a platform for critical reflection to explore teaching as a potential career.

**Credit Hours:** 1

**Max credits per semester:** 1

**Max credits per degree:** 1

**Grading Option:** Graded with Option

**Prerequisite for:** EDPS 362; EDPS 457

**ALEC 136 Fundamentals of Agricultural and Environmental Sciences Communication**

**Description:** Introduction to all areas of agricultural and environmental sciences (AES) communications and core competencies related to communication, including how to share AES stories through multimedia projects. Introduction to various AES issues using different communication styles while exploring how these may differ based on audience and media utilized.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**ALEC 153 Chancellor's Leadership Class**

**Prerequisites:** Admission to the Chancellor's Leadership Class program

**Description:** Leadership development. Understanding of self, develop leadership knowledge, and how to make a difference in the community.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ALEC 165 Pepsi Service Scholars**

**Prerequisites:** Pepsi Scholarship for Outstanding Leadership and Service recipient

**Notes:** Requires 2 to 3 hours per week of outside of class time in community service.

**Description:** Civic and social responsibility through service-learning programming. Introduction to civic life, civic agent, and life-long service.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ACE:** ACE 8 Civic/Ethics/Stewardship

**ALEC 189H University Honors Seminar**

**Prerequisites:** Good standing in the University Honors Program or by invitation.

**Description:** Topic varies.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ALEC 201 Electricity/Electronics**

**Description:** Introduction to electricity and/or electronics and their applications to industry. AC and DC circuit design, construction, and analysis.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Course and Laboratory Fee:** \$15

**ALEC 202 Foundations of Leadership Theory and Practice**

**Notes:** Will be offered both in face-to-face and online formats during fall and spring semesters and will be offered only online during the summer 8-week session.

**Description:** Foundational knowledge of leadership theory and its relationship to the practice of leadership. Resolve complex leadership challenges by evaluating the intersection between leader, follower, and context. Critically assess real-world situations and make decisions about what theoretically-based leadership skills and behaviors are most likely to be effective.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 422

**ACE:** ACE 6 Social Science

**ALEC 203 Automotive Technology**

**Description:** Automotive technology and the equipment related to automotive repairs. The design, theory, and operations of automotive systems through laboratory activities.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 303

**ALEC 204 Machine Tool Technology**

**Description:** Basic machine shop practices involving hand and precision measuring tools, bench work, layout, engine lathe, milling machine, surface and pedestal grinders.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 246; ALEC 303

**ALEC 205 Welding Technology**

**Description:** Basic knowledge and skill in both oxygen-acetylene welding and cutting, and electrical arc welding.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 303

**ALEC 206 Teaching and Learning Design**

**Description:** Cover a broad range of topic areas in the field of teaching and learning. Learn how educational psychology impacts learning and how it is used to design learning opportunities. Focus on developing community centered educational programming with learning science in mind. Design and deliver effective education programming within their community and beyond.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**Offered:** SPRING

**ALEC 207 Communicating Science with Public Audiences**

**Crosslisted with:** ADPR 207

**Description:** Concepts and techniques of strategic communication, with a special focus on issues involving food, agricultural production, environmental sustainability, and natural resources. Skills and theory essential for relating to public audiences and other stakeholders.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 307; ALEC 417, ADPR 417; ALEC 495B

**ALEC 234 Planning SAE and FFA Programs**

**Prerequisites:** Sophomore standing and/or ALEC 135.

**Notes:** Provides a portion of the work-based learning credit (006.34D3) for the Agricultural Education Field Endorsement. Includes 20 hours of required early field experience.

**Description:** Examines the theory of experiential education to middle school and secondary agricultural education programs, especially leadership and career education. Develop Supervised Agricultural Experiences (SAE) as a Work-Based Learning strategy, advising FFA as a CTSO, and alumni activities appropriate to the community, school, and student needs. Introduction to various technologies to support effective program leadership.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ALEC 235 Planning STS Work-Based Learning and Skills USA Programs**

**Notes:** Provides the work-based learning credit (006.34D3) for the Industrial Technology Education Field Endorsement and STS Supplemental endorsements. Includes 20 hours of required early field experience.

**Description:** Applies the theory of experiential education to middle school and secondary Skilled and Technical Sciences education programs, especially leadership and career education. Provides exposure to supervised Work-Based Learning experiences and advising SkillsUSA as a CTSO, appropriate to the community, school, and student needs. Introduction to various technologies to support effective program leadership.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Groups:** Introductory

**ALEC 242 Construction Technology**

**Prerequisites:** ALEC 104

**Description:** Classifications, properties, and uses of common construction materials and building practices. Construction of a residential dwelling from plot plan through trim and finish work.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Course and Laboratory Fee:** \$15

**ALEC 243 Fine Woodworking**

**Prerequisites:** ALEC 104

**Description:** Woodworking special processes. Furniture design, frame and panel construction, veneering and steam bending. Project design and construction on an individual project serve as the final assessment.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 340

**Course and Laboratory Fee:** \$15

**ALEC 246 Modern Industries**

**Prerequisites:** ALEC 204

**Description:** CNC (Computer Numerical Control) programming for tool making to include milling, computer aided manufacturing and/or drafting and/or design and electrical discharge machines.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Course and Laboratory Fee:** \$15

**ALEC 260 Introduction to Digital Media in Agricultural and Environmental Sciences**

**Prerequisites:** Major in Agricultural and Environmental Sciences Communication or Minor in Science Communication

**Description:** Use a variety of digital media tools to communicate agricultural and environmental sciences to diverse audiences. Hands-on approach to utilize digital media and develop communication pieces to add to portfolios.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**Prerequisite for:** ALEC 360; ALEC 361; ALEC 495B

**ALEC 302 Dynamics of Effective Leadership in Organizations**

**Prerequisites:** Open to sophomores or above.

**Description:** Principle and process of effective leadership in complex organizations of society and commerce. Dynamic interactions of personal characteristics, technical skills, interpersonal influence, commitment, goals and power.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Prerequisite for:** ALEC 495A

**ALEC 303 Energy, Power and Transportation Technology**

**Prerequisites:** ALEC 101, 109, 203, 204 and 205.

**Notes:** A synthesis of skill-based courses for Industrial Technology Education (ITE) majors.

**Description:** Design, construct, and test a one-person electric vehicle. Enter the vehicle in a statewide competition.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Course and Laboratory Fee:** \$25

**ALEC 305 Presentation Strategies to Communicate Agricultural and Environmental Sciences**

**Description:** Presentation strategies used in agribusiness, education, government and public service. Attention to audience needs, organization, methodology, and technology when presenting about agricultural and environmental sciences.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ALEC 307 Advanced Strategic Writing for Agricultural and Environmental Sciences Communication**

**Prerequisites:** Major in Agricultural and Environmental Sciences Communication (AESC) or minor in Science Communication, JOUR 200A with a C or higher, and ALEC 207 with a C or higher.

**Description:** Advanced development and refinement of strategic writing skills and storytelling, including Associated Press writing style, audience analysis, interviewing skills, writing mechanics, and nuances of both verbal and nonverbal communication and professional collaboration.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**Prerequisite for:** ALEC 480

**ALEC 308 Laboratory Instruction and Management**

**Notes:** Student demonstrations and presentations required. Partially meets at Southeast Community College in Lincoln to ensure adequate experience with the equipment used in CTE programs. Includes 5 hours of required early field experience.

**Description:** Covers the planning, conducting, and administration of instructional programs related to experientially-based education in school laboratory settings. Introduction to a variety of laboratory settings, including mechanics, greenhouse, and land labs, among others.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**Course and Laboratory Fee:** \$60

**ALEC 330 Foundations of Cooperative Extension**

**Prerequisites:** Junior standing.

**Description:** Cooperative Extension in a variety of settings and its role in the land-grant mission. Processes for developing and conducting need-driven, research-based, extension programs. Relationships with public and private agencies. Strategies for volunteerism.

**Credit Hours:** 3

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded with Option

**ALEC 331 Supervised Field Experiences****Prerequisites:** Junior or senior by application.**Description:** Field course of supervised observation and participation with various phases of agricultural education and/or agribusiness.**Credit Hours:** 2-5**Min credits per semester:** 2**Max credits per semester:** 5**Max credits per degree:** 10**Grading Option:** Graded with Option**ALEC 337 Instructional Internship in Leadership Development****Prerequisites:** Permission.**Description:** A structured professional and personal leadership developmental experience by providing planning, facilitation, instruction, and evaluation assistance in leadership & communication courses.**Credit Hours:** 0-3**Min credits per semester:****Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Experiential Learning:** Internship/Co-op**ALEC 340 Advanced Machine Woodworking****Prerequisites:** ALEC 243**Notes:** A continuation of ALEC 243.**Description:** Machine woodworking on a major individual project. Wood finishing and maintenance of hand and power tools.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Course and Laboratory Fee:** \$25**ALEC 346 Advanced Computer Aided Drafting and Design****Prerequisites:** ALEC 101 or 103.**Description:** Introduction to 3D modeling using sketching and Inventor software.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Course and Laboratory Fee:** \$15**ALEC 350 Agriculture, the Environment & Science in the Media****Prerequisites:** Junior level students and above.**Description:** How agriculture, the environment, and science are covered in media by different types of outlets. Use of framing theory as a foundation to understand why messages are crafted in certain ways, how and why news media portray topics and issues using certain metaphors and story lines. Creation of effective media messages related to agriculture, the environment, and science.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Prerequisite for:** ASCI 381**ALEC 360 Advanced Visual Communication for Agricultural and Environmental Sciences****Prerequisites:** ALEC 260 with a C or higher**Description:** Visual communication to deliver science-based agricultural and environmental information for diverse audiences. Develop an understanding of layout design and digital photography concepts, utilize industry standard technology, create "real-world" portfolio pieces related to agriculture and the environment.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Prerequisite for:** ALEC 480**ALEC 361 Video and Audio Production for Communicating Agricultural and Environmental Sciences****Prerequisites:** ALEC 260 with a C or higher**Description:** Exploration and application of audio and video media storytelling techniques for agricultural communicators as used in promoting, marketing and communicating about agricultural and environmental sciences.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Prerequisite for:** ALEC 480**ALEC 388 Ethics in Agriculture and Natural Resources****Crosslisted with:** AECN 388**Description:** Ethics focusing on agricultural and natural resource issues. Using case studies from the professional workplace and contemporary society, develops intellectual skills necessary to reflect critically on ethical issues and apply appropriate conceptual tools for resolution of issues arising from conflicting ethical and value systems.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ACE:** ACE 8 Civic/Ethics/Stewardship**ALEC 390 Industrial Experience****Prerequisites:** Permission.**Description:** Occupational experience or supervised occupational experience in conjunction with directed observation.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded with Option**ALEC 391 Special Topics****Prerequisites:** Permission.**Description:** Readings; in depth discussions; analysis of current theory, issues, problems, research and practice in leadership, education and/or communication. Topics vary.**Credit Hours:** 0-3**Min credits per semester:****Max credits per semester:** 3**Max credits per degree:** 12**Grading Option:** Graded with Option

**ALEC 393 Digital Imaging and Storytelling in Agriculture and Natural Resources****Crosslisted with:** NRES 393**Prerequisites:** Consent of instructor(s). One college level course in photography or equivalent, and knowledge of the basics of shooting still photographs or video using digital cameras. Open only to College of Agricultural Sciences and Natural Resources students.**Notes:** Can be repeated for a maximum of 9 credit hours by consent of instructor.**Description:** Concepts and techniques related to use of remote and automated digital camera technology to capture images in agriculture and natural resources contexts to communicate a narrative/story. Completion of individual project using a variety of technologies including camera traps, time-lapse camera systems, remote triggered cameras, as well as traditional audio and video and conventional photography.**Credit Hours:** 1-9**Min credits per semester:** 1**Max credits per semester:** 9**Max credits per degree:** 9**Grading Option:** Graded**Course and Laboratory Fee:** \$50**Experiential Learning:** Case/Project-Based Learning**ALEC 399 Independent Study in Communications****Prerequisites:** Permission and advance approval of plan of work.**Description:** Individual or group projects in research, literature review, or extension of course work under supervision and evaluation of a departmental faculty member.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 12**Grading Option:** Graded with Option**ALEC 400 Overview to Program Planning****Crosslisted with:** ALEC 800**Prerequisites:** ALEC 305 or ALEC/TEAC 805/NUTR 806.**Notes:** Designed for individuals interested in developing and/or improving program planning skills.**Description:** Theoretical and applied considerations for identifying content, design, implementation, and evaluation of educational programs that vary in length from several hours to several months.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 405 Methods of Instruction****Prerequisites:** Parallel Enrollment in ALEC 405L and ALEC 413**Description:** Covers the practice of instructional delivery of secondary Agricultural Education and Skilled and Technical Sciences programs in the public school system. Focused on organizing instructional content, individual lesson planning, methods of formal instructional delivery, student behavior management, instructing students with exceptionalities, and assessment. Includes 25 hours of required early field experience.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 405L Methods of Instruction Laboratory****Prerequisites:** Parallel enrollment in ALEC 405L and 413.**Description:** Promotes student practice of instructional delivery in Agricultural Education and Skilled and Technical Sciences programs in the public school system. Engage in practice for teaching at either the middle or high school level.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded with Option**ALEC 407 Supervisory Leadership****Crosslisted with:** ALEC 807, CYAF 807**Prerequisites:** ALEC 202 or ALEC 302; Junior standing**Description:** Knowledge and theoretical basis for practicing supervisors in a changing workplace where supervisors have increasing responsibilities due to the flattening or organizational structures, solving supervisory challenges in organizing and planning, problem solving and decision making, performance appraisal and leading a diverse workforce.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 410 Environmental Leadership****Crosslisted with:** ALEC 810, NRES 413, NRES 813**Prerequisites:** Junior Standing**Notes:** Offered on the World Wide Web (WWW) fall semester of odd-numbered years and in the classroom fall semester of even numbered-years.**Description:** Major leaders in conservation and ecology that emphasizes agricultural and cultural issues and relationships with the environment.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 412 Multimedia Applications for Education and Training****Crosslisted with:** ALEC 812, NUTR 812**Description:** Practical applications in developing and evaluating multimedia resources for students. Surveys new applications, creates and develops various instructional materials, and reviews current practice against relevant theory. Use current software packages to develop materials for various audiences.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 413 Program Development****Prerequisites:** Parallel Enrollment in ALEC 405 and ALEC 405L**Description:** An applied and collaborative engagement toward program planning, marketing, and managing formal and non-formal education programs for youth and adults. Emphasis on building collaborative relationships through a learning process focused on experiential learning.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option

**ALEC 414 Classic Figures in Leadership****Crosslisted with:** ALEC 814**Prerequisites:** Junior standing.**Description:** Leadership theory in an applied context. Leadership analyzed through a variety of genres: autobiography, drama, fiction, tracts and treaties, speeches.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 417 Issues Management and Crisis Communications in Agricultural and Environmental Sciences****Crosslisted with:** ADPR 417**Prerequisites:** Junior standing; ALEC 207. College of Journalism and Mass Communications: Junior standing; JOMC 101, JOMC 130-134, ADPR 151, ADPR 221, and ADPR 283**Notes:** Recommended: ALEC 260**Description:** Examines strategic communication practices of issues management, risk assessment, and crisis communications in agriculture and other industries, explores the process necessary to address current and future issues, and outlines effective communication in times of crisis. Focused on issues and crisis in agriculture, environmental science, natural resources, and society.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 419 Public Information Campaigns****Crosslisted with:** ALEC 819**Prerequisites:** Undergraduates: ALEC 207, ALEC 260; Graduates: permission of instructor**Notes:** Create a thoroughly researched campaign plan and presentation that can be added to a professional portfolio.**Description:** Apply skills in communications, public relations, and journalism to plan a strategic communications campaign. Examine principles and practice of marketing and communications applied to agricultural, science, or environmental issues.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 420 Improvement of Instructional Programs for Post-High-School Occupational Education****Crosslisted with:** ALEC 820**Description:** Designing new instructional programs, expanding the impact of student behavioral objectives, and evaluating the total instructional program.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 422 Facilitation and Project Planning****Prerequisites:** ALEC 202 or equivalent and at least junior standing**Notes:** The course will require travel to project sites, which are within 75 miles of Lincoln. At least 5 project visits are required, and more project visits may be required depending on the project. Generally, students work in pairs, so not all students need to be able to drive, and the instructor will try to create partnerships that facilitate traveling needs. However, if students cannot find transportation to a project site, they will not be able to complete the course.**Description:** Foundational knowledge of project planning and facilitation. An experiential opportunity to facilitate a project within a community.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 424 Foundation of Career and Technical Education****Crosslisted with:** ALEC 824**Description:** Scope and structure of career and technical education within the educational system. Teacher's role and responsibilities in dealing with legislative mandates in planning, management, and evaluation of a local program.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 428 Leadership in Public Organizations****Crosslisted with:** ALEC 828, NRES 428, NRES 828**Prerequisites:** Junior standing**Description:** Leadership in theories, research, and practices in public organizations and natural resource agencies.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Experiential Learning:** Case/Project-Based Learning**ALEC 431 Student Teaching****Prerequisites:** Permission**Notes:** Capstone course. Placement arranged by the department. Student teaching placement arranged by the department. Seven to sixteen weeks of off-campus student teaching. Pass/no pass only. 3 credit hours are needed to meet the ACE 10 requirement.**Description:** Guided participation in various phases of a public school Agricultural Education or Skilled and Technical Sciences programs.**Credit Hours:** 1-12**Min credits per semester:** 1**Max credits per semester:** 12**Max credits per degree:** 12**Grading Option:** Pass No Pass**ACE:** ACE 10 Integrated Product**Experiential Learning:** Student Teaching/Education Practicum

**ALEC 444 Science Writing****Crosslisted with:** JOMC 444, JOMC 844**Prerequisites:** Permission.**Notes:** Open to all majors. Articles may be submitted for publication.**Description:** Advanced writing about science for the non-expert and/or for the general public. Issues in science communication through reading the best writers in science and journalism. Research and write short articles and longer profiles about science and scientists at the University of Nebraska-Lincoln (UNL) and elsewhere. Polish writing skills for doing work in science classes.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**ALEC 455 Dynamics of Effective Leadership in Groups & Teams****Crosslisted with:** ALEC 855, CDEV 855**Prerequisites:** At least Junior standing is required for ALEC 455.**Description:** Explore foundational knowledge of team and group dynamics theory and its relationship to the practice of leadership in organizations and communities. Development of leadership, followership, and teamwork skills in small groups and teams. Focus on team and group decision making, problem solving, and creativity, peer assessment, and evaluation using real-world situations and contexts. Critically apply team and group dynamic theories and research to leadership in organizations and communities.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** SPRING**ALEC 466 Leadership and Diversity in Organizations and Communities****Prerequisites:** Junior standing**Description:** The study of leadership through the lens of diversity and inclusion. Exploration of how your life has shaped your approach and understanding of leadership, diversity, equity, and inclusion. Analyze how leaders create inclusion in the workplace and in communities.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**Offered:** FALL/SPR**Course and Laboratory Fee:** \$20**Experiential Learning:** Community Engagement**ALEC 477 Leadership and Motivation****Crosslisted with:** ALEC 877**Description:** Classic and contemporary motivation theories applied to leadership in organizations and communities.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 480 Capstone Experience in Agricultural and Environmental Sciences Communication****Prerequisites:** Agricultural and Environmental Sciences Communication major and Permission of Instructor. ALEC 307 with a C or higher; ALEC 360 with a C or higher OR ALEC 361 with a C or higher**Notes:** Requires interviews outside of class time.**Description:** Senior capstone for Agricultural and Environmental Sciences Communication. Investigate topics identified by IANR as critical to the state of Nebraska, conduct interviews, write, edit, design and assist in the production of print and multimedia versions of the Strategic Discussions for Nebraska student publication. Emphasis on factual, complete, accurate and clear communication of complex scientific and sociologically important issues in Nebraska agriculture and environmental science. Learning to communicate research and science-based agricultural and environmental concepts to public audiences.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded**Prerequisite for:** ALEC 481**ACE:** ACE 10 Integrated Product**ALEC 481 Editing and Publishing Capstone Experience in Agricultural and Environmental Sciences Communication****Prerequisites:** ALEC 480**Description:** Second course in a two-course capstone series for the Agricultural and Environmental Sciences Communication program. Focused on editing, publishing, and promoting the Strategic Discussions for Nebraska student publication.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded**ALEC 490 Professional Seminar****Description:** Addresses issues of planning for the student teaching experience, entering the profession of teaching secondary agricultural education or skilled and technical sciences education, planning for professional growth as an educator, and recognizing the professional responsibilities associated with being an educator.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 3**Grading Option:** Graded with Option**ALEC 495A Internship in Leadership Development****Prerequisites:** Junior standing; ALEC 302; Agricultural Education major; and permission.**Notes:** Must be taken as 'Pass/No Pass' by Agricultural Education majors. Capstone course.**Description:** Internship in a selected agribusiness, industry, or agency. Collaboration development of a training program and leadership activities.**Credit Hours:** 3-6**Min credits per semester:** 3**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Pass No Pass**ACE:** ACE 10 Integrated Product

**ALEC 495B Internship in Agricultural and Environmental Sciences**

**Communication**

**Prerequisites:** Sophomore Standing. Agricultural and Environmental Sciences Communication major. Instructor Permission. ALEC 207 with a C or higher and ALEC 260 with a C or higher.

**Notes:** Department approval is required. Cannot be taken Pass/No Pass.

**Description:** Internship experience with an organization selected by student and approved by instructor in an agricultural or environmental sciences organization where the focus of the internship is directly related to communications.

**Credit Hours:** 1-3

**Min credits per semester:** 1

**Max credits per semester:** 3

**Max credits per degree:** 6

**Grading Option:** Graded

**ALEC 496 Independent Study in Leadership Education**

**Crosslisted with:** ALEC 896

**Prerequisites:** Permission.

**Description:** Projects to research, literature review, or extension of course work.

**Credit Hours:** 1-9

**Min credits per semester:** 1

**Max credits per semester:** 9

**Max credits per degree:** 9

**Grading Option:** Graded with Option

**ALEC 496A Independent Study in Leadership Education: Experiential Learning in Leadership**

**Notes:** For students majoring in the Leadership Option or minoring in Leadership and Communication or Leadership and Entrepreneurship only

**Description:** Projects to research, literature review, or extension of coursework related specifically to experiential learning in leadership

**Credit Hours:** 0-3

**Min credits per semester:**

**Max credits per semester:** 3

**Max credits per degree:** 3

**Grading Option:** Graded

**ALEC 499H Honors Thesis**

**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

**Grading Option:** Graded