

ENVIRONMENTAL RESTORATION SCIENCE

Description

Environmental restoration initiates or accelerates the recovery of an ecosystem that has been degraded, damaged or contaminated from human activity or natural agents. Environmental restoration begins with a thorough understanding of the soil-water environment. Students interested in environmental restoration science must declare an option and can choose between either the Soil Science or Lake and Stream Restoration.

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 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 UNL and participate in prior-approved education abroad programs. 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, 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>).

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 environmental restoration science will be able to:

1. Describe in detail, the chemical and biological process that act on a chemical once it is released into the soil-water environment.
2. Identify the contributing factors that can lead to ground or surface water contamination and offer corrective actions to mitigate the situation.
3. Use science-based principles to measure, describe, manage and improve soil-water environments.
4. Competitively pursue employment as an environmental scientist or soil scientist with government agencies or private-sector firms.

Major Requirements

College Core Requirements

Natural Resources Core

| | | |
|--------------------------------------|---|---|
| SCIL 101 | Science and Decision-Making for a Complex World | 3 |
| NRES 220 | Principles of Ecology | 3 |
| NRES 312 / GEOG 312 | Introduction to Geospatial Information Sciences | 3 |
| ENSC 220 | Introduction to Energy Systems | 3 |
| SOIL 153 / AGRO 153 / HORT 153 | Soil Resources | 4 |

Select one capstone course (ACE 10) from the following: 3-4

| | | |
|--|---|--|
| ENVR 499A & ENVR 499B | Environmental Studies Senior Thesis I and Environmental Studies Senior Thesis II | |
| NRES 451 | Soils, Water, and Environmental Chemistry | |
| WATS 475 / AGRO 475 / CIVE 475 / CRPL 475 / GEOL 475 / MSYM 475 / NRES 475 / POLS 475 / SOCI 475 / SOIL 475 | Water Quality Strategy | |

Credit Hours Subtotal: 19-20

Natural Sciences (ACE 4)

Select one CASNR approved Life Sciences sequence from the following: 4

| | | |
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| BIOS 101 & BIOS 101L | General Biology and General Biology Laboratory | |
| LIFE 120 & LIFE 120L | Fundamentals of Biology I and Fundamentals of Biology I laboratory | |

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| CHEM 109 | General Chemistry I (ACE 4) | 4 |
| CHEM 110 | General Chemistry II | 4 |

Select one of the following: 4-5

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| PHYS 141 | Elementary General Physics I | |
| PHYS 151 | Elements of Physics | |
| PHYS 211 | General Physics I | |
| MSYM 109 | Physical Principles in Agriculture and Life Sciences (ACE 4) | |

Credit Hours Subtotal: 16-17

Mathematics and Statistics

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| STAT 218 | Introduction to Statistics | 3 |
|----------|----------------------------|---|

Select one of the following: 2-5

| | | |
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| MATH 102 | Trigonometry | |
| MATH 103 | College Algebra and Trigonometry ¹ | |
| MATH 104 | Applied Calculus | |
| MATH 106 | Calculus I | |

Credit Hours Subtotal: 5-8

Communications

Select one Written Communication (ACE 1) course from the following: 3

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| ENGL 150 | Writing and Inquiry | |
| ENGL 151 | Writing and Argument | |
| ENGL 254 | Writing and Communities | |
| JGEN 200 | Technical Communication I | |
| JGEN 300 | Technical Communication II | |

Select one Oral Communication (ACE 2) course from the following: 3

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| COMM 101 | Communication in the 21st Century | |
| COMM 209 | Public Speaking | |
| COMM 210 | Communicating in Small Groups | |
| COMM 215 | Visual Communication | |
| COMM 286 | Business and Professional Communication | |
| MRKT 257 | Sales Communication | |
| NRES 301 | Environmental Communication Skills | |
| TMFD 121 | Visual Communication and Presentation | |

Select one Communication and Interpersonal Skills elective from the following: 3

| | | |
|----------|---|--|
| ALEC 102 | Interpersonal Skills for Leadership | |
| COMM 101 | Communication in the 21st Century | |
| COMM 209 | Public Speaking | |
| COMM 210 | Communicating in Small Groups | |
| COMM 212 | Debate | |
| COMM 215 | Visual Communication | |
| COMM 286 | Business and Professional Communication | |
| ENGL 150 | Writing and Inquiry | |
| ENGL 151 | Writing and Argument | |
| ENGL 252 | Introduction to Fiction Writing | |

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|----------|---------------------------------------|--|
| ENGL 253 | Introduction to Poetry Writing | |
| ENGL 254 | Writing and Communities | |
| JGEN 120 | Basic Business Communication | |
| JGEN 200 | Technical Communication I | |
| JGEN 300 | Technical Communication II | |
| MRKT 257 | Sales Communication | |
| NRES 301 | Environmental Communication Skills | |
| TMFD 121 | Visual Communication and Presentation | |

Credit Hours Subtotal: 9

Economics, Humanities and Social Sciences

Select one of the following: 3

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| ECON 200 | Economic Essentials and Issues | |
| ECON 211 | Principles of Macroeconomics | |
| ECON 212 | Principles of Microeconomics | |
| AECN 141 | Introduction to the Economics of Agriculture (ACE 6) | |

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

Credit Hours Subtotal: 15

Total Credit Hours 64-69

Specific Major Requirements

Requirements

| | | |
|--|---|---|
| NREE 357 / AECN 357 | Natural Resource and Environmental Law | 3 |
| NRES 279 / AGRO 279 / SOIL 279 | Soil Evaluation | 1 |
| NRES 300 / BIOS 300 / ENTO 300 | Toxins in the Environment | 3 |
| NRES 319 | Fundamentals of Environmental Sampling | 2 |
| NRES 320 | Fundamentals of Environmental Sampling Laboratory | 1 |
| NRES 453 | Hydrology | 3 |
| NRES 459 / BIOS 459 / WATS 459 | Limnology | 4 |
| WATS 281 / GEOG 281 / NRES 281 | Introduction to Water Science | 3 |
| WATS 354 / MSYM 354 / SOIL 354 | Soil Conservation and Watershed Management | 3 |
| WATS 361 / AGRO 361 / GEOL 361 / NRES 361 / SOIL 361 | Soils, Environment and Water Quality | 3 |

Select one of the following: 3-4

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| NRES 108 | Earth's Natural Resource Systems Laboratory | |
| GEOL 100 | Introduction to Geology | |
| GEOL 101 | Dynamic Earth | |
| GEOL 106 | Environmental Geology | |
| GEOG 155 | Elements of Physical Geography | |

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| Credit Hours Subtotal: | 29-30 |
| Option Electives and Requirements | |
| Complete requirements | 18-23 |
| Credit Hours Subtotal: | 18-23 |
| Free Electives | |
| Select 1-9 hours | 1-9 |
| Credit Hours Subtotal: | 1-9 |
| Total Credit Hours | 48-62 |

Emphasis Area Requirements

Soil Science Option

This option provides students an understanding of soil as a natural resource and as a component of all terrestrial ecosystems. The student will learn how soils influence ecological processes which take place above and below ground. An understanding of these processes will enable the student to deal with environmental management problems such as groundwater protection, natural resource management, urban and rural development issues, waste management, and pollution abatement. Careers focus on environmental assessment, soil conservation, and remediation of soil contamination. Students interested in preparing for graduate work in soils can aim toward a variety of special areas including soil microbiology, chemistry, physics, mineralogy, and morphology.

Soil Science Option Requirements

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| Select one of the following: | 3 |
| SOIL 460 / Soil Microbiology | |
| AGRO 460 / | |
| BIOS 460 / | |
| NRES 460 | |
| SOIL 461 / Soil Physics | |
| AGRO 461 / | |
| GEOL 461 / | |
| NRES 461 / | |
| WATS 461 | |
| CIVE 326 / Introduction to Environmental Engineering | |
| BSEN 326 | |
| BSEN 355 Introduction to Ecological Engineering | |
| Select two of the following: | 6 |
| NRES 451 Soils, Water, and Environmental Chemistry | |
| NRES 455 / Soil Chemistry and Mineralogy | |
| AGRO 455 / | |
| SOIL 455 | |
| SOIL 269 / Principles of Soil Management | |
| AGRO 269 | |
| SOIL 453 / Urban Soil Properties and Management | |
| AGRO 453 / | |
| HORT 453 / | |
| LARC 453 | |
| NRES 477 / Great Plains Field Pedology | 4 |
| AGRO 477 / | |
| GEOG 467 / | |
| SOIL 477 | |
| Credit Hours Subtotal: | 13 |

Other Soil Science Option Electives

Select 5-10 hours of the following: 5-10

Biological Systems Engineering Courses

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| BSEN 455 / Nonpoint Source Pollution Control | |
| CIVE 455 Engineering ¹ | |
| Chemistry Courses | |
| CHEM 251 Organic Chemistry I | |
| & CHEM 253 and Organic Chemistry I Laboratory | |
| Civil Engineering Courses | |
| CIVE 327 / Environmental Engineering Laboratory ¹ | |
| BSEN 327 | |
| CIVE 421 Hazardous Waste Management and Treatment ¹ | |
| CIVE 422 / Pollution Prevention: Principles and Practices ¹ | |
| BSEN 422 | |
| CIVE 424 Solid Waste Management Engineering ¹ | |
| CIVE 432 Bioremediation of Hazardous Wastes ¹ | |
| Geology Courses | |
| GEOL 488 / Groundwater Geology | |
| NRES 488 | |
| GEOL 470 Field Techniques in Hydrogeology | |
| Natural Resource Courses | |
| NRES 279 / Soil Evaluation ² | |
| AGRO 279 / | |
| SOIL 279 | |
| NRES 399 Independent Research | |
| NRES 412 / Introduction to Geographic Information Systems | |
| GEOG 412 | |
| NRES 418 / Introduction to Remote Sensing | |
| GEOG 418 | |
| NRES 427 / Introduction to the Global Positioning System (GPS) | |
| GEOG 427 | |
| NRES 451 Soils, Water, and Environmental Chemistry | |
| NRES 455 / Soil Chemistry and Mineralogy | |
| AGRO 455 / | |
| SOIL 455 | |
| NRES 496 Independent Study | |
| NRES 497 Career Experiences in Natural Resource Sciences | |
| Plant Pathology Courses | |
| PLPT 270 / Biological Invaders | |
| AGRO 270 / | |
| HORT 270 / | |
| NRES 270 | |
| Soil Courses | |
| SOIL 269 / Principles of Soil Management | |
| AGRO 269 | |
| SOIL 366 / Soil Nutrient Relationships | |
| AGRO 366 | |
| SOIL 453 / Urban Soil Properties and Management | |
| AGRO 453 / | |
| HORT 453 / | |
| LARC 453 | |
| Credit Hours Subtotal: | 5-10 |
| Total Credit Hours | 18-23 |

¹ Engineering courses are recommended, however, because of prerequisites students wishing to enroll in these courses should first seek counsel from their advisor and then request permission from instructor.

² This course can be taken more than once.

Lake and Stream Restoration Option

This option is designed for students considering careers in water quality, aquatic ecology, or limnology. The student will learn the important biotic, physical and chemical processes that occur within lakes and streams and be prepared to environmentally manage problems related to water quality. Students will also be prepared to implement pollution abatement procedures or management practices associated with lake and stream restoration. Careers focus on environmental assessment, water conservation, remediation of lakes and streams. Completion of this program also provides excellent preparation for graduate study.

Lake & Stream Restoration Option Requirements

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| AGRO 131 / HORT 131 & AGRO 132 | Plant Science and Agronomic Plant Science Laboratory | 4 |
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Select one sequence of the following: 4

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| LIFE 120 & LIFE 120L | Fundamentals of Biology I and Fundamentals of Biology I laboratory | |
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| LIFE 121 & LIFE 121L | Fundamentals of Biology II and Fundamentals of Biology II Laboratory | |
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| NRES 481 / BIOS 481 / WATS 481 | Stream and River Ecology | 4 |
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| NRES 470 or BSEN 355 | Lake and Reservoir Restoration Introduction to Ecological Engineering | 3 |
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Credit Hours Subtotal: 15

Other Lake & Stream Restoration Option Electives

Select 4-9 hours of the following: 4-9

Biological Sciences Courses

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| BIOS 381 | Invertebrate Zoology | |
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| BIOS 454 / NRES 454 | Ecological Interactions | |
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| BIOS 457 / GEOL 457 | Ecosystem Ecology | |
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Biological Systems Engineering Courses

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| BSEN 422 / CIVE 422 | Pollution Prevention: Principles and Practices ¹ | |
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| BSEN 455 / CIVE 455 | Nonpoint Source Pollution Control Engineering ¹ | |
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Entomology Courses

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| ENTO 402 / BIOS 485 / NRES 402 | Aquatic Insects and Identification of Aquatic Insects | |
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| & ENTO 402L / BIOS 485L / NRES 402L | | |
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Chemistry Courses

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| CHEM 251 & CHEM 253 | Organic Chemistry I and Organic Chemistry I Laboratory | |
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Natural Resources Courses

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| NRES 211 | Introduction to Conservation Biology | |
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| NRES 312 / GEOG 312 | Introduction to Geospatial Information Sciences | |
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| NRES 388 / AGRI 388 | Employment Seminar | |
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| NRES 412 / GEOG 412 | Introduction to Geographic Information Systems | |
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| NRES 418 / GEOG 418 | Introduction to Remote Sensing | |
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| NRES 419 / GEOL 418 / WATS 418 & NRES 419L / GEOL 418L / WATS 418L | Chemistry of Natural Waters and Chemistry of Natural Waters Laboratory | |
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| NRES 420 / AGRO 419 / GEOL 419 / GEOG 419 | Applications of Remote Sensing in Agriculture and Natural Resources | |
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| NRES 421 / GEOG 421 | Field Techniques in Remote Sensing | |
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| NRES 427 / GEOG 427 | Introduction to the Global Positioning System (GPS) | |
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| NRES 431 | Waterfowl Ecology and Management | |
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| NRES 463 | Fisheries Science | |
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| NRES 464 / BIOS 464 | Fisheries Biology | |
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| NRES 468 / BIOS 458 / WATS 468 | Wetlands | |
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| NRES 475 / AGRO 475 / CIVE 475 / CRPL 475 / GEOL 475 / MSYM 475 / POLS 475 / SOCI 475 / SOIL 475 / WATS 475 | Water Quality Strategy | |
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| NRES 484 / AGRO 484 / GEOG 484 / GEOL 484 / WATS 484 | Water Resources Seminar | |
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| NRES 489 | Ichthyology | |
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| NRES 497 | Career Experiences in Natural Resource Sciences | |
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| NRES 497 | Career Experiences in Natural Resource Sciences | |
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| NRES 497 | Career Experiences in Natural Resource Sciences | |
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Plant Pathology Courses

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| PLPT 270 / AGRO 270 / HORT 270 / NRES 270 | Biological Invaders | |
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| PLPT 270 / AGRO 270 / HORT 270 / NRES 270 | Biological Invaders | |
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Credit Hours Subtotal: 4-9

Total Credit Hours 19-24

¹ Because of prerequisites, students wishing to enroll in these courses should first seek counsel from their advisor and then request permission from instructor.

Requirements for Minor Offered by Department

Environmental Restoration Science Minor

Category 1 – Required Courses

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|--|--------------------------------------|----|
| NRES 281 / GEOG 281 / WATS 281 | Introduction to Water Science | 3 |
| SOIL 153 / AGRO 153 / HORT 153 | Soil Resources | 4 |
| SOIL 361 / AGRO 361 / GEOG 361 / NRES 361 / WATS 361 | Soils, Environment and Water Quality | 3 |
| SOIL 477 / AGRO 477 / GEOG 467 / NRES 477 | Great Plains Field Pedology | 4 |
| Credit Hours Subtotal: | | 14 |

Category 2 – Advanced Courses

| | | |
|--|---|---|
| Select 6 hours of the following: | | 6 |
| NRES 319 | Fundamentals of Environmental Sampling | |
| NRES 320 | Fundamentals of Environmental Sampling Laboratory | |
| NRES 451 | Soils, Water, and Environmental Chemistry | |
| SOIL 354 / MSYM 354 / WATS 354 | Soil Conservation and Watershed Management | |
| SOIL 455 / AGRO 455 / NRES 455 | Soil Chemistry and Mineralogy | |
| SOIL 460 / AGRO 460 / NRES 460 / BIOS 460 | Soil Microbiology | |
| SOIL 461 / AGRO 461 / GEOG 461 / NRES 461 / WATS 461 | Soil Physics | |
| SOIL 453 / AGRO 453 / HORT 453 / LARC 453 | Urban Soil Properties and Management | |

| | |
|------------|------------------------|
| WATS 475 / | Water Quality Strategy |
| AGRO 475 / | |
| CIVE 475 / | |
| CRPL 475 / | |
| GEOG 475 / | |
| MSYM 475 / | |
| NRES 475 / | |
| POLS 475 / | |
| SOCI 475 / | |
| SOIL 475 | |

Credit Hours Subtotal: 6

Category 3 – Related Courses

| | | |
|--------------------------------------|---|-------|
| Select one of the following: | | 3-4 |
| CIVE 326 / BSEN 326 | Introduction to Environmental Engineering | |
| BSEN 355 | Introduction to Ecological Engineering | |
| NRES 312 / GEOG 312 | Introduction to Geospatial Information Sciences | |
| NRES 453 | Hydrology | |
| NRES 459 / BIOS 459 / WATS 459 | Limnology | |
| NRES 412 / GEOG 412 | Introduction to Geographic Information Systems | |
| Credit Hours Subtotal: | | 3-4 |
| Total Credit Hours | | 23-24 |

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.

Environmental Restoration Science - Lake & Stream Restoration

Environmental Restoration Science - Soil Science

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

- Technical Sales, LI-COR Biosciences - Lincoln NE
- Soil Scientist, USDA-NRCS - Powell WY
- Integrated Water Management Planner, The Nebraska Department of Natural Resources - Lincoln NE
- Soil Conservationist, Natural Resource Conservation Service - Central City NE
- Ecologist, Forrest Preserve Districtb - IL
- Young for Preventative Maintenance Associate, University of Nebraska-Lincoln - Lincoln NE