ENVIRONMENTAL ENGINEERING

Description

The Department of Civil and Environmental Engineering offers a complete environmental engineering undergraduate program to students on the Lincoln and Omaha campuses of the University of Nebraska. Curriculum requirements are nearly identical on both campuses. The goal is to prepare students for entry into the environmental engineering profession immediately after graduation or to pursue graduate-level studies.

The general educational objectives of the University of Nebraska–Lincoln environmental engineering undergraduate program are to prepare our graduates so that, with a UNL BS ENVE degree, a few years beyond graduation, alumni will:

• Be employed in environmental engineering or a closely related field and successfully pursue professional licensure; or, graduates will be pursuing an advanced degree in environmental engineering, a closely related field or professional education in engineering, medicine, business, or law.
• Contribute to society and address societal and environmental needs through engagement in professional, community, or service organizations.
• Agree that the environmental engineering program prepared them for success in their careers in terms of knowledge and skill sets as embodied in the program and the Complete Engineer ™ Initiative.

The professional discipline of environmental engineering is defined as the application of engineering principles to improve and maintain the environment for the protection of human health, for the protection of nature’s beneficial ecosystems, and for environment-related enhancement of the quality of human life. In all professional endeavors, the environmental engineer must consider ecological effects as well as the social, economic, and political needs of people.

The environmental engineer devises solutions for topics ranging from water and air pollution control and treatment, drinking water supply, wastewater management, solid waste management, public health, water resources management, sustainable design, and industrial ecology. Environmental engineers focus on minimizing the impacts of air, water, and land pollution, minimizing waste production, maximizing the use of renewable energy in environmental systems, and protecting the environment.

Instructional emphasis is placed on fundamental engineering principles derived from mathematics, chemistry, physics, biology, earth science, and engineering science. These subjects provide a sound background for the subsequent introductory courses in environmental engineering, water resources engineering, fate and transport, process design, and sustainable design. Students are introduced to design concepts in their freshman year. Design is incorporated throughout the curriculum that culminates in two senior-level courses, CIVE 385 Professional Practice and Management in Civil Engineering and CIVE 489 Senior Design Project.

Instructional laboratories that provide experiences with more than one media (water, soil, and air) in environmental engineering provide each student with an opportunity to learn, through individual participation.

Criteria for Professional Admission to the Environmental Engineering Degree Program

Pre-professionally admitted College of Engineering students majoring in environmental engineering must have their academic records reviewed for professional admission to the Environmental Engineering Degree Program during the fall, spring, or summer immediately following the term in which:

• At least 12 credits (one semester) have been completed after admission to the College of Engineering.
• At least 43 credits applicable to the degree have been earned.
• PHYS 211 General Physics I, MECH 223 Engineering Statics, and MECH 325 Mechanics of Elastic Bodies or MECH 373 Engineering Dynamics have been completed.

Additionally, the student can have no more than two declined professional admission requests to other engineering majors. It is likely a student may need to complete four full semesters of credits applying to the Program before these requirements are able to be completed.

Professional admission approval to the Environmental Engineering Degree Program also requires that all of the following Departmental-specific criteria must be met:

• Earn a C letter grade or better in PHYS 211, MECH 223, and MECH 325 or MECH 373.
• Earn a cumulative grade point average of 2.4 or greater.
• Earn a C letter grade or better in ALL math, science, and engineering courses required for the bachelor of science in environmental engineering degree if the cumulative grade point average is less than 2.700.

Students approved for professional admission to the Program are then allowed to take 400-level environmental engineering courses to complete their degree.

Graduate Programs

The Department of Civil and Environmental Engineering offers several graduate degree programs: master of science in environmental engineering and an accelerated master of science in environmental engineering. See the Graduate Studies Catalog for details.

College Requirements

College Admission

College 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/calculation 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 and Argument.

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. Although the University of Nebraska–Lincoln accepts 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.

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 the environmental engineering program
include courses involving ACE outcomes 3, 4, and 10. Students should
work with their advisor to select courses that satisfy ACE outcomes 1, 2,
5, 6, 7, 8 and 9.

Learning Outcomes

Graduates of the environmental engineering program will have:

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.

**Major Requirements**

**Requirements for the Degree**

**Environmental Engineering Core**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVE 101</td>
<td>Introduction to Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 210</td>
<td>Fundamentals of Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>or CHME 202</td>
<td>Mass and Energy Balances</td>
<td></td>
</tr>
<tr>
<td>ENVE 322</td>
<td>Biological Principles of Environmental Engineering</td>
<td>2</td>
</tr>
<tr>
<td>ENVE 410</td>
<td>Environmental Fate and Transport</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 430</td>
<td>Sustainable Design in Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 401</td>
<td>Environmental Engineering Design I</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 402</td>
<td>Environmental Engineering Design II</td>
<td>3</td>
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</tbody>
</table>

**Credit Hours Subtotal:** 20

**Civil and Environmental Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 310</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>or MECH 310</td>
<td>Fluid Mechanics</td>
<td></td>
</tr>
<tr>
<td>CIVE 321</td>
<td>Principles of Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 321L</td>
<td>Environmental Engineering Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CIVE 351</td>
<td>Introduction to Water Resources Engineering</td>
<td>3</td>
</tr>
<tr>
<td>or BSEN 350</td>
<td>Natural Resources Engineering</td>
<td></td>
</tr>
<tr>
<td>CIVE 420</td>
<td>Environmental Engineering Process Design</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 419</td>
<td>Flow Systems Design</td>
<td>3</td>
</tr>
<tr>
<td>or CIVE 452</td>
<td>Water Resources Development</td>
<td></td>
</tr>
<tr>
<td>CIVE 424</td>
<td>Solid and Hazardous Waste Management</td>
<td>3</td>
</tr>
<tr>
<td>or CHME 489</td>
<td>Air Pollution, Assessment and Control</td>
<td></td>
</tr>
</tbody>
</table>

**Credit Hours Subtotal:** 19

**General Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCE 101</td>
<td>Fundamentals of Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>or CSCE 155T</td>
<td>Computer Science I: Informatics Focus</td>
<td></td>
</tr>
<tr>
<td>MECH 223</td>
<td>Engineering Statics</td>
<td>3</td>
</tr>
<tr>
<td>MECH 325</td>
<td>Mechanics of Elastic Bodies</td>
<td>3</td>
</tr>
<tr>
<td>or MECH 373</td>
<td>Engineering Dynamics</td>
<td></td>
</tr>
<tr>
<td>BSEN 244</td>
<td>Thermodynamics of Living Systems</td>
<td>3</td>
</tr>
<tr>
<td>or MECH 200</td>
<td>Engineering Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>or CHME 223</td>
<td>Chemical Engineering Thermodynamics I</td>
<td></td>
</tr>
<tr>
<td>ENGR 10</td>
<td>Freshman Engineering Seminar</td>
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</tr>
<tr>
<td>ENGR 20</td>
<td>Sophomore Engineering Seminar</td>
<td>0</td>
</tr>
</tbody>
</table>

**Credit Hours Subtotal:** 12

**Environmental Engineering Electives**

Select six credits from the following that have not been used to fulfill another requirement:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 331</td>
<td>Introduction to Geotechnical Engineering</td>
</tr>
<tr>
<td>CIVE 371</td>
<td>Materials of Construction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 419</td>
<td>Flow Systems Design</td>
</tr>
<tr>
<td>CIVE 422</td>
<td>Pollution Prevention: Principles and Practices</td>
</tr>
<tr>
<td>CIVE 424</td>
<td>Solid and Hazardous Waste Management</td>
</tr>
<tr>
<td>CIVE 425</td>
<td>Design of Water Treatment Facilities</td>
</tr>
<tr>
<td>CIVE 427</td>
<td>Design of Wastewater Treatment and Disposal Facilities</td>
</tr>
<tr>
<td>CIVE 430</td>
<td>Fundamentals of Water Treatment Modeling</td>
</tr>
<tr>
<td>CIVE 452</td>
<td>Water Resources Development</td>
</tr>
<tr>
<td>CIVE 454</td>
<td>Hydraulic Engineering</td>
</tr>
<tr>
<td>CIVE 455</td>
<td>Nonpoint Source Pollution Control Engineering</td>
</tr>
<tr>
<td>CIVE 456</td>
<td>Surface Water Hydrology</td>
</tr>
<tr>
<td>CIVE 458</td>
<td>Groundwater Engineering</td>
</tr>
<tr>
<td>CIVE 475</td>
<td>Water Quality Strategy</td>
</tr>
<tr>
<td>CIVE 481</td>
<td>Computational Problem Solving In Civil Engineering</td>
</tr>
</tbody>
</table>

**CHME 489 | Air Pollution, Assessment and Control**

**Credit Hours Subtotal:** 6

**Technical Electives**

Choose a total of six credits from:

- Any 200-, 300- or 400-level course in any engineering major not used to fulfill another requirement
- Any 200-, 300- or 400-level course in Biology, Chemistry, Community and Regional Planning, Geology, Mathematics, Meteorology-Climatology, Statistics, Physics or Astronomy not used to fulfill another requirement
- Any course in the following list: ACCT 200, AECN 109, AGRI 115, ANTH 232, ANTH 242, ARCH 107, ASTR 117, BIOS 101, BIOS 110, BIOS 115, BIOS 189H, BLAW 300, CHEM 131, CHEM 131H, ENTO 115, ENVR 109, FDST 131, FDST 131H, FDST 301, FINA 300, GEOF 109, GEOF 155, GEOL 101, GEOL 103, GEOL 105, GEOL 106, GEOL 109, GEOL 110, GEOL 120, GEOL 125, GEOL 197, LIFE 120, LIFE 121, METR 100, METR 180, MNGT 300, MRKT 300, NRES 108, NRES 109, NUTR 131, NUTR 131H, PLAS 100, PLAS 131, POLS 250, PSYC 273, SCIL 109, TMFD 206

**Credit Hours Subtotal:** 6

**Science**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIFE 120</td>
<td>Fundamentals of Biology I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; LIFE 120L</td>
<td>and Fundamentals of Biology I laboratory</td>
<td></td>
</tr>
<tr>
<td>or BIOS 101</td>
<td>General Biology</td>
<td></td>
</tr>
<tr>
<td>&amp; 101L</td>
<td>and General Biology Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHEM 113A</td>
<td>Fundamental Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM 113L</td>
<td>and Fundamental Chemistry I Laboratory</td>
<td></td>
</tr>
<tr>
<td>or CHEM 109A</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 109L</td>
<td>and General Chemistry I Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHEM 114</td>
<td>Fundamental Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>&amp; CHEM 110A</td>
<td>General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 110L</td>
<td>and General Chemistry II Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHEM 251</td>
<td>Organic Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHEM 253</td>
<td>and Organic Chemistry I Laboratory</td>
<td></td>
</tr>
<tr>
<td>or CHEM 261</td>
<td>Organic Chemistry</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 263A</td>
<td>and Mechanistic Organic Chemistry I Laboratory</td>
<td></td>
</tr>
</tbody>
</table>
## Requirements for Minor Offered by Department

This minor is for engineering majors ONLY.

### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 321 / BSEN 321</td>
<td>Principles of Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIVE 351</td>
<td>Introduction to Water Resources Engineering</td>
<td>3</td>
</tr>
<tr>
<td>or BSEN 350 / AGEN 350</td>
<td>Natural Resources Engineering</td>
<td></td>
</tr>
<tr>
<td>CIVE 420</td>
<td>Environmental Engineering Process Design</td>
<td>3</td>
</tr>
</tbody>
</table>

### Electives I

Select one or two of the following: 3-6

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 419</td>
<td>Flow Systems Design</td>
</tr>
<tr>
<td>CIVE 424</td>
<td>Solid and Hazardous Waste Management</td>
</tr>
<tr>
<td>CHME 489</td>
<td>Air Pollution, Assessment and Control</td>
</tr>
</tbody>
</table>

### Mathematics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 106</td>
<td>Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>MATH 107</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 208</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>STAT 380</td>
<td>Statistics and Applications</td>
<td>3</td>
</tr>
<tr>
<td>or MECH 321</td>
<td>Engineering Statistics and Data Analysis</td>
<td></td>
</tr>
</tbody>
</table>

### ACE Requirements

- **ACE 1: Writing**
  - Choose from the list of approved ACE 1 courses
  - 3 Credit Hours Subtotal:

- **ACE 2: Communication Skills**
  - Choose from the list of approved ACE 2 courses
  - 3 Credit Hours Subtotal:

- **ACE 3: Math/Stat/Reasoning**
  - This requirement is satisfied by CSCE 101, MATH 106, MATH 107, MATH 208, or STAT 380
  - 3 Credit Hours Subtotal:

- **ACE 4: Science**
  - This requirement is satisfied by CHEM 113A, CHEM 109A, CHEM 110A, LIFE 120, BIOS 101, GEOL 101, or PHYS 211
  - 3 Credit Hours Subtotal:

- **ACE 5: Humanities**
  - Choose from the list of approved ACE 5 courses
  - 3 Credit Hours Subtotal:

- **ACE 6: Social Sciences**
  - Choose from the list of approved ACE 6 courses
  - 3 Credit Hours Subtotal:

- **ACE 7: Arts**
  - Choose from the list of approved ACE 7 courses
  - 3 Credit Hours Subtotal:

- **ACE 8: Ethics**
  - Choose from the list of approved ACE 8 courses
  - 3 Credit Hours Subtotal:

- **ACE 9: Global Awareness and Human Diversity**
  - Choose from the list of approved ACE 9 courses
  - 3 Credit Hours Subtotal:

- **ACE 10: Capstone Experience**
  - This requirement is satisfied by ENVE 402
  - 3 Credit Hours Subtotal:

### Total Credit Hours

**125**

### Grade Rules

**C- and D Grades**

All courses must be completed with a grade of D- or higher.

**Pass/No Pass Limits**

No course taken Pass/No Pass will be counted toward the minor.

**ENVE 101 Introduction to Environmental Engineering**

**Description:** Introduction to engineering design process through hands-on projects supported by instruction of underlying engineering science and fundamentals, model development, and the required tools. Be exposed to environmental engineering to know what it means to be an environmental engineer and an introduction to environmental engineering profession with focus on ethics.

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max credits per semester</td>
<td>3</td>
</tr>
<tr>
<td>Max credits per degree</td>
<td>3</td>
</tr>
<tr>
<td>Grading Option</td>
<td>Graded</td>
</tr>
<tr>
<td>Offered</td>
<td>FALL</td>
</tr>
</tbody>
</table>
ENVE 210 Fundamentals of Environmental Engineering
Prerequisites: CHEM 109A or CHEM 113A with a C or better, and MATH 106 with a C or better
Description: Introduction to material and energy balances on environmental systems involving physical, chemical, and biological processes. Primary focus on single phase systems.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded
Offered: FALL
Prerequisite for: ENVE 410

ENVE 322 Biological Principles of Environmental Engineering
Prerequisites: CIVE/BSEN 321
Notes: There will be two lab sessions, one focusing on microbes in water and one focusing on microbes in soil/sludge.
Description: Introduction to the basics of microbes in the environment, including basic microbiological concepts, microbial environment, detection/enumeration/identification of microbes, microbial interactions with environment, microbial remediation of pollutants, waterborne pathogens, and wastewater treatment and disinfection.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Grading Option: Graded
Prerequisite for: ENVE 410

ENVE 401 Environmental Engineering Design I
Prerequisites: CIVE321, ENVE 322; CIVE 352 or BSEN 350
Notes: The first of two courses in the capstone sequence.
Description: Practical application of the engineering design process in a team project focused on an authentic and comprehensive environmental engineering design project.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded with Option
Offered: FALL/SPR
Prerequisite for: ENVE 402

ENVE 402 Environmental Engineering Design II
Prerequisites: ENVE 401
Notes: The second of two courses in the capstone sequence.
Description: Practical application of the engineering design process in a team project focused on an authentic and comprehensive environmental engineering design project.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded with Option
Offered: FALL/SPR
ACE: ACE 10 Integrated Product
Experiential Learning: Case/Project-Based Learning

ENVE 410 Environmental Fate and Transport
Prerequisites: CIVE 310 or CHME 332; ENVE 210 or CHME 202; and CIVE 321
Description: Covers fate and transport principles, such as interphase chemical equilibrium, the formulation and application of the advection-diffusion equation, and their specific environmental engineering applications.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

ENVE 430 Sustainable Design in Environmental Engineering
Prerequisites: CIVE 321; Co-requisite STAT 380
Description: Introduction to sustainability concepts and sustainable engineering design processes for environmental engineers such as life cycle assessment, multi-criteria decision analysis, and analysis of renewable energy systems.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded
Offered: FALL

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.