ENVIRONMENTAL SCIENCE, BACHELOR OF SCIENCE WITH A CONCENTRATION IN ANALYTICAL SCIENCES

Environmental Science, Bachelor of Science with a Concentration in Analytical Sciences Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>GENERAL EDUCATION REQUIREMENTS - 46 Hours Required</strong></td>
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<tr>
<td>Minimum of &quot;C&quot;-required</td>
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**Fundamental Academic Skills** 15

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1150</td>
<td>ENGLISH COMPOSITION I</td>
<td></td>
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<tr>
<td>ENGL 1160</td>
<td>ENGLISH COMPOSITION II</td>
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<tr>
<td>CMST 1110</td>
<td>PUBLIC SPEAKING FUNDS</td>
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<tr>
<td>or CMST 2120</td>
<td>ARGUMENTATION AND DEBATE</td>
<td></td>
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<tr>
<td>ENGL 3980</td>
<td>TECHNICAL WRITING ACROSS THE DISCIPLINES (or another advisor-approved course - Writing in the Discipline Course)</td>
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</tbody>
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**MATH 1120** INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING

or MATH 1100 DATA LITERACY AND VISUALIZATION

or MATH 1130 QUANTITATIVE LITERACY

or MATH 1140 QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS

or MATH 1300 COLLEGE ALGEBRA WITH SUPPORT

or STAT 1100 DATA LITERACY AND VISUALIZATION

or STAT 1530 ELEMENTARY STATISTICS

**Distribution Requirements** 31

- Natural Science - From two disciplines and at least one lab - 7 hrs
- Social Science - From two disciplines - 9 hrs
- Humanities and Fine Arts - From two disciplines - 9 hrs
- Global Diversity - 3 hrs
- US Diversity - 3 hrs

**MAJOR REQUIREMENTS**

- **Course will satisfy UNO’s General Education requirement**
- *Course requires pre-requisite(s)

**Environmental Science Major with a Concentration in Analytical Sciences - 82-91 Hours Required**

**Required coursework** 16-18

- (Note that in the case of cross-listed courses, Environmental Science majors must enroll in the ENVN section)
- ENVN 2010 ENVIRONMENTAL PROBLEMS AND SOLUTIONS (*)
- GEOL 1010 ENVIRONMENTAL GEOLOGY (**) 
- GEOG 1050 HUMAN-ENVIRONMENT GEOGRAPHY (**) 
- ENVN/GEOL/BIOL 4610 ENVIRONMENTAL MONITORING AND ASSESSMENT (*)
- ENVN/BIOL 4800 INTERNSHIP IN ENVIRONMENTAL MANAGEMENT AND PLANNING (*)
- ENVN/GEOG 4820 INTRODUCTION TO ENVIRONMENTAL LAW & REGULATIONS (*)

**Select one of the following Statistics courses -** 3-4

- BIOL 4110 STATISTICS FOR BIOLOGICAL SCIENCES (*)
- ENVN 2020 STATISTICS FOR LIFE AND ENVIRONMENTAL SCIENCE (*)
- STAT 1530 ELEMENTARY STATISTICS (**) 
- STAT 3000 STATISTICAL METHODS I (*)
- PSYC 3130 STATISTICS FOR THE BEHAVIORAL SCIENCES (*)
- SOC 2130 SOCIAL STATISTICS (*)

**Select one of the following GIS courses** 1-4

- ENVN 4600 GIS APPLICATIONS FOR ENVIRONMENTAL SCIENCE (*)
- GEOG 1090 INTRODUCTION TO GEOSPATIAL SCIENCES (**) 
- GEOG 3530 CARTOGRAPHY AND DATA VISUALIZATION (*)
- GEOG 4050 GEOGRAPHIC INFORMATION SYSTEMS I (*)

**Select one of the following courses on the human dimensions of Environmental Studies** 3

- ANTH 4250 ENVIRONMENTAL ANTHROPOLOGY AND NATIVE PEOPLES OF THE GREAT PLAINS (*)
- ECON 3320 ENVIRONMENTAL ECONOMICS AND SUSTAINABILITY (*)
- ENVN/PHIL 3180 ENVIRONMENTAL ETHICS (*)
- ENVN 3310 SUSTAINABILITY AND THE ENVIRONMENT IN THE SPANISH-SPEAKING WORLD (*)
- ENVN/PSCI 4270 GLOBAL ENVIRONMENTAL POLITICS (*)
- ENVN 4390 THE NATURE OF THE PAST: AMERICAN ENVIRONMENTAL HISTORY, PRE-HISTORY TO THE PRESENT (*)
- SOC 4760 ENVIRONMENTAL SOCIOLOGY (*)

**Analytical Sciences Concentration requirements** 8

- CHEM 1180 GENERAL CHEMISTRY I (**) 
- CHEM 1184 GENERAL CHEMISTRY I LABORATORY (**) 
- CHEM 1190 GENERAL CHEMISTRY II (*)
- CHEM 1194 GENERAL CHEMISTRY II LABORATORY (*)

**Select one of the following Organic Chemistry sequences** 5-8

- CHEM 2210 & CHEM 2214 FUNDAMENTALS OF ORGANIC CHEMISTRY
- and FUNDAMENTALS OF ORGANIC CHEMISTRY LABORATORY (*)

**OR**

- CHEM 2250 ORGANIC CHEMISTRY I (*)
- CHEM 2260 & CHEM 2274 ORGANIC CHEMISTRY II and ORGANIC CHEMISTRY LABORATORY (*)

**Other required Chemistry courses** 18

- CHEM 2400 QUANTITATIVE ANALYSIS (*)
- CHEM 2404 QUANTITATIVE ANALYSIS LAB (*)
CHEM 2500  INTRODUCTION TO INORGANIC CHEMISTRY (*)
CHEM 3030  ENVIRONMENTAL CHEMISTRY (*)
CHEM 3650  FUNDAMENTALS OF BIOCHEMISTRY (*)
CHEM 3654  FUNDAMENTALS OF BIOCHEMISTRY LABORATORY (*)
CHEM 4400  INSTRUMENTAL ANALYSIS (*)
CHEM 4404  INSTRUMENTAL ANALYSIS LABORATORY (*)

Required Biology and Physics Courses  17
BIOL 1330  ENVIRONMENTAL BIOLOGY
BIOL 2440  THE BIOLOGY OF MICROORGANISMS
PHYS 1110  GENERAL PHYSICS I
PHYS 1154  GENERAL PHYSICS LABORATORY I
PHYS 1120  GENERAL PHYSICS II
PHYS 1164  GENERAL PHYSICS LABORATORY II

Select a minimum 11 hours from the following:  11
ENVN 3030  MICROBIAL ECOLOGY (*)
ENVN 4320  ECOCLOGICAL SUSTAINABILITY AND HUMAN HEALTH (*)
GEOL 1170  INTRODUCTION TO PHYSICAL GEOLOGY (**)
GEOL 2750  MINERALOGY
& GEOL 2754  MINERALOGY LABORATORY (*)
GEOL 2760  IGNEOUS AND METAMORPHIC PETROLOGY
& GEOL 2764  IGNEOUS AND METAMORPHIC PETROLOGY LABORATORY (*)
GEOL 3300  STRUCTURAL GEOLOGY
& GEOL 3310  STRUCTURAL GEOLOGY FIELD METHODS (*)
GEOL 4200  WATER QUALITY (*)
GEOL 4540  GEOCHEMISTRY (*)
GEOL/GEOG 4640  CRITICAL ZONE SCIENCE (*)
GEOG 3510  METEOROLOGY (**)
GEOG 4010  CONSERVATION OF NATURAL RESOURCES (*)
GEOG 4020  SPATIAL ANALYSIS IN GEOGRAPHY (*)
GEOG 4030  COMPUTER MAPPING AND VISUALIZATION (*)
GEOG 4050  GEOGRAPHIC INFORMATION SYSTEMS I (*)
GEOG 4100  BIOGEOGRAPHY (*)
GEOG 4260  PROCESS GEOMORPHOLOGY (*)
GEOG 4320  CLIMATOLOGY (*)
GEOG 4330  SOIL GENESIS, MORPHOLOGY AND CLASSIFICATION (*)
GEOG 4340  WATER RESOURCES (*)
GEOG 4630  ENVIRONMENTAL REMOTE SENSING (*)
GEOG 4660  GEOGRAPHIC INFORMATION SYSTEMS II (*)
BIOL 3020  MOLECULAR BIOLOGY OF THE CELL (*)
BIOL 3340  ECOLOGY (*)
BIOL 3530  FLORA OF THE GREAT PLAINS (*)
BIOL 4120  CONSERVATION BIOLOGY (*)
ENVN 4180  FRESHWATER ECOLOGY (*)
ENVN 4350  GLOBAL CLIMATE CHANGE (*)
ENVN 4410  WETLAND ECOLOGY AND MANAGEMENT (*)

Environmental Science, Bachelor of Science with a Concentration in Analytical Sciences

College Breadth  0
College of Arts and Sciences' breadth requirement satisfied by this major

Bachelor of Science Cognate Requirement  0
See Major -

ELECTIVES
Elective hours as required to reach a total of 120 hours

Environmental Science, Bachelor of Science with a Concentration in Analytical Sciences Four Year Plan

Freshman
Fall
ENGL 1150  ENGLISH COMPOSITION I  3
CHEM 1180  GENERAL CHEMISTRY I
& CHEM 1184  GENERAL CHEMISTRY I LABORATORY  4
PHYS 1110  GENERAL PHYSICS I
& PHYS 1154  GENERAL PHYSICS LABORATORY I  5
Humanities and Fine Arts/US Diversity  3

Credits  14

Spring
BIOI 1330  ENVIRONMENTAL BIOLOGY  3
CHEM 1190  GENERAL CHEMISTRY II
& CHEM 1194  GENERAL CHEMISTRY II LABORATORY  4
ENVN 2010  ENVIRONMENTAL PROBLEMS AND SOLUTIONS  2
PHYS 1120  GENERAL PHYSICS II
& PHYS 1164  GENERAL PHYSICS LABORATORY II  5

Credits  14

Sophomore
Fall
CHEM 2250  ORGANIC CHEMISTRY I  3
CHEM 2400  QUANTITATIVE ANALYSIS
& CHEM 2404  QUANTITATIVE ANALYSIS LAB  4
CMST 1110  PUBLIC SPEAKING FUNDS
or CMST 2120  or ARGUMENTATION AND DEBATE  3
Social Science/Global Diversity  3

Credits  13

Spring
CHEM 2260  ORGANIC CHEMISTRY II
& CHEM 2274  ORGANIC CHEMISTRY LABORATORY  5
CHEM 2500  INTRODUCTION TO INORGANIC CHEMISTRY  3
GEOL 1010  ENVIRONMENTAL GEOLOGY  3
Humanities and Fine Arts  3

Credits  14

Junior
Fall
CHEM 3650  FUNDAMENTALS OF BIOCHEMISTRY
& CHEM 3654  FUNDAMENTALS OF BIOCHEMISTRY LABORATORY  4
<table>
<thead>
<tr>
<th>Approved Statistics Course</th>
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<tbody>
<tr>
<td>Humanities and Fine Arts*</td>
<td>3</td>
</tr>
<tr>
<td>Social Science</td>
<td>3</td>
</tr>
<tr>
<td>An approved course focusing on the human dimensions of environmental studies</td>
<td>3</td>
</tr>
<tr>
<td>*HFA #3 – must be in a 2nd discipline</td>
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<tr>
<th>Credits</th>
<th>16</th>
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### Spring
- GEOG 1050  HUMAN-ENVIRONMENT GEOGRAPHY  4
- Approved GIS Course  4
- Approved GEOL/GEOG/BIOL/ENVN elective  3
- Social Science*  3
- Elective of choice, if needed to reach 120**  1-3
  *SS #3 – must be in a 2nd discipline

**120 total credits are required for a degree, with a minimum of 18 upper level (3000-4000) credits in the major and 27 upper level credits throughout the degree. Selecting 3000-4000 level electives or course options can help you reach these minimums.

### Credits
15-17

### Summer
- ENVN 4800  INTERNSHIP IN ENVIRONMENTAL MANAGEMENT AND PLANNING ('
*ENVN 4800: Requires permission of instructor.

### Senior
### Fall
- ENVN/GEOG/GEOL/ BIOL 4610  ENVIRONMENTAL MONITORING AND ASSESSMENT ('
- ENVN 4820  INTRODUCTION TO ENVIRONMENTAL LAW & REGULATIONS (**)
- Approved GEOL/GEOG/BIOL/ENVN elective***  3
- Approved GEOL/GEOG/BIOL/ENVN elective***  3
- Elective of choice, if needed to reach 120.***  3
  *120 total credits are required for a degree, with a minimum of 18 upper level (3000-4000) level credits in the major and 27 upper level credits throughout the degree. Selecting 3000-4000 level electives or course options, when given, can help you reach these minimums.

### Credits
15

### Spring
- BIOL 2440  THE BIOLOGY OF MICROORGANISMS  4
- CHEM 3030  ENVIRONMENTAL CHEMISTRY  3
- CHEM 4400  INSTRUMENTAL ANALYSIS & CHEM 4404  INSTRUMENTAL ANALYSIS LABORATORY
- NSCI 3940  WRITING IN CHEMISTRY  2
- Approved GEOL/GEOG/BIOL/ENVN elective  3

### Credits
16

### Total Credits
119-121

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

Additional Information About this Plan:
University Degree Requirements: The minimum number of hours for a UNO undergraduate degree is 120 credit hours. Please review the requirements for your specific program to determine all requirements for the program. In order to graduate on-time (four years for an undergraduate degree), you need to take 30 hours each year.

Placement Exams: For Math, English, Foreign Language, a placement exam may be required. More information on these exams can be found at [https://www.unomaha.edu/enrollment-management/testing-center/placement-exams/information.php](https://www.unomaha.edu/enrollment-management/testing-center/placement-exams/information.php)

**Transfer credit or placement exam scores may change suggested plan of study

This plan is not a contract and curriculum is subject to change