## GENERAL REQUIREMENTS

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>Total Credit Hours</td>
<td>145-152*</td>
</tr>
<tr>
<td>Minimum Retention/Graduation Grade Point Averages</td>
<td>3.00</td>
</tr>
<tr>
<td>Overall - Combined and OU</td>
<td>3.00</td>
</tr>
<tr>
<td>Major - Combined and OU</td>
<td>3.00</td>
</tr>
<tr>
<td>Curriculum - Combined and OU</td>
<td>3.00</td>
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</tbody>
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*A minimum grade of C is required for each course in the curriculum.

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### OU encourages students to complete at least 29-31 hours of applicable coursework each year to have the opportunity to graduate in five years.

<table>
<thead>
<tr>
<th>Year</th>
<th>FIRST SEMESTER</th>
<th>Hours</th>
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<table>
<thead>
<tr>
<th>Year</th>
<th>SECOND SEMESTER</th>
<th>Hours</th>
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### FOR STUDENTS ENTERING THE OKLAHOMA STATE SYSTEM FOR HIGHER EDUCATION

**Summer 2012 through Spring 2013**

- **Freshman**
  - **Chemistry**
    - 1113, Organic Chemistry I: Biological Emphasis
  - **Physics**
    - 2414, General Physics for Engineering & Science
  - **Environmental Science**
    - 1112, Intro to Civil Engr & Environmental Science
  - **Engineering**
    - 1410, Freshman Engineering Orientation I

<table>
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<tr>
<th>Total Credit Hours</th>
<th>16</th>
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**Sophomore**

<table>
<thead>
<tr>
<th>BIO</th>
<th>3053, Organic Chemistry I: Biological Emphasis</th>
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<tbody>
<tr>
<td>PHYS</td>
<td>2514, Gen. Physics for Engineering &amp; Science, or</td>
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<tr>
<td>CHEM</td>
<td>1123, Intro. to Civil Engr. &amp; Environmental Science</td>
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<tr>
<td>ENGR</td>
<td>1410, Freshman Engineering Orientation I</td>
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**First Semester**

- **Chemistry**
  - 3153, Organic Chemistry II: Biological Emphasis
  - 2815, Introduction to Microbiology
- **Environmental Science**
  - 3223, Environmental Transport and Fate Process
- **Civil Engineering**
  - 1000, CEES Seminar

**Second Semester**

- **Chemistry**
  - 3153, Organic Chemistry II: Biological Emphasis
  - 2815, Introduction to Microbiology
- **Environmental Science**
  - 3223, Environmental Transport and Fate Process
- **Civil Engineering**
  - 1000, CEES Seminar

<table>
<thead>
<tr>
<th>Total Credit Hours</th>
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</table>

**Junior**

- **Biology**
  - 3403, Principles of Ecology, or
  - 3453, Principles of Plant Ecology
- **English**
  - 3153, Technical Writing
- **Communications**
  - 1113, American Federal Government (Core III)
- **Humanities**
  - 2333, Inventing the Modern World, or approved substitute (Core IV, West. Civ. & Culture)
- **Electives**
  - 1000, CEES Seminar

<table>
<thead>
<tr>
<th>Total Credit Hours</th>
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</table>

**Senior**

- **Environmental Science**
  - 4114, Aquatic Chemistry
  - 4324, Environmental Biology & Ecology
  - 4263, Hazardous & Solid Waste Management
  - 4813, Professional Practice

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<tr>
<th>Total Credit Hours</th>
<th>14</th>
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**Fifth Year**

- **Environmental Science**
  - 5981, Thesis Research, or Graduate-level Elective

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<tr>
<th>Total Credit Hours</th>
<th>11-13</th>
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- **Graduate-level Elective**
  - 5021, Technical Communications
  - 5022, Special Topics

**Environmental Science**

- 5980, Thesis Research, or Graduate-level Elective

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<thead>
<tr>
<th>Total Credit Hours</th>
<th>12-13</th>
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**Admission to the accelerated program is by application and requires a minimum GPA of 3.20.**

**Students are eligible for graduate status upon graduation with the Bachelor of Science in Environmental Science.**

**NOTE:** Engineering transfer students may take ENGR 3410 in place of ENGR 1410 and ENGR 1420.

Courses designated as Core I, II, III, IV, or Capstone are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.

Courses are designed to be taken in the order listed. Students must complete a minimum of 30 hours of credit in the major. Students must successfully complete prerequisites (with a minimum C grade) before proceeding to the next course.

- Two college-level courses in a single foreign language are required; this may be satisfied by successful completion of 2 years of a single foreign language in high school. Students majoring in foreign language at the University will have an additional 6-10 hours of coursework.

1. The Environmental Science electives will be selected from CEES courses with the approval of the adviser.
2. Students must choose a specialization in either Environmental Science or Environmental Management.

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**For Students Entering the Oklahoma State System for Higher Education Summer 2012 through Spring 2013**

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**Environmental Science**

- A405 Bachelor of Science in Environmental Science
  - F405 Master of Science in Environmental Science
Environmental Science, Accelerated BS/MS—A405/F405—Page 2

COURSES IN ANTHROPOLOGY
4623 Approaches to Cross-Cultural Human Problems. Prerequisite: 1113 or junior standing. Introduces students to the complex problems of contemporary global-scale cultures and helps them better understand their place on this global arena. This course will look at specific international issues or problems, and relate them to processes occurring in many parts of the world. (Irreg.) [IV-NW]

COURSES IN BIOLOGY (BIOL)
1114 Introductory Zoology. Major biological principles and concepts as illustrated in the structure, function and behavior of animals. Emphasis is on self-regulating mechanisms, especially in the vertebrates, and their adaptive significance. (F, Sp, Su) [II-NL]

1134 Introductory Biology: Evolution, Ecology and Diversity. Prerequisite: Life science majors only. Major biological principles and concepts as illustrated in a survey of the diversity, behavior, and ecological functions of animals, plants, fungi, protozoa, and microbes. Emphasis is on evolution, ecology, and diversity. Will include biological laboratory experience with emphasis on problem solving. Problems will be derived from topics in evolution, ecology and diversity. Will include training in scientific procedures, including laboratory technical skills, writing skills, and statistical analysis. Undergraduate students will also be included in case study analysis of major biological principles presented in the lecture within the context of health and the environment. This course will involve problem sets, primary journal articles, and writing assignments. Includes both online and classroom activities. Laboratory (Sp) [II-LAB]

120403 Prin. of Natural History. Prerequisite: 1114 and 1121, or 1134, or Plant Biology 14. Patterns of environments and biological communities; the processes maintaining these patterns. Laboratory (F, Sp)

COURSES IN CHEMISTRY AND BIOCHEMISTRY (CHEM)
1315 General Chemistry. Prerequisite: Mathematics 1503 or 1643, or math ACT equal to or greater than 23. First of a two-semester sequence in general chemistry. Topics covered: basic measurement, gas laws, changes in state, stoichiometry, atomic theory, electron configuration, periodicity, bonding, molecular structure and thermodynamics. Laboratory (F, Sp, Su) [II-LAB]

1415 General Chemistry (Continued). Prerequisite: 1315 with a minimum grade of C or a satisfactory score on the chemistry placement examination. Topics covered: nature of solutions, equilibrium, thermodynamics, acid and base properties, kinetics and electrochemistry. Laboratory (F, Sp, Su) [II-LAB]

3053 Organic Chemistry I: Biological Emphasis. Prerequisite: CHEM 1415 or CHEM 1425. Intended for life science majors. First course in a two-semester sequence (3053 and 3153). This course will cover the concepts of organic structure, nomenclature, and reactivity with an emphasis on the biological chemistry of cells. Laboratory (F, Sp, Su) [II-LAB]

3153 Organic Chemistry II: Biological Emphasis. Prerequisite: CHEM 3053 with a grade of C or better. Intended for life science majors. Second course in a two-semester sequence (3053 and 3153). This course will cover the concepts of organic chemical reactivity with an emphasis on carbohydrates, lipids, and proteins. (F, Sp, Su)

COURSES IN CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCE (CEES)
1000 CEES Seminar. Seminar provides a common meeting time for students and faculty for department activities, such as invited speakers, project presentations, educational surveys, cross-course project coordination, and policy announcements. Students must enroll every semester that they are matriculated in CEES at OU after the freshman year, but in no case can a student graduate without successfully completing four semesters of seminar. (F, Sp)

1112 Introduction to Civil Engineering and Environmental Science. Prerequisite: freshman only. Introduction to civil engineering and environmental science, problem solving, and design, and simple computing software for architectural, civil or environmental engineers and environmental scientists. (F)

1213 Computing Applications in Civil Engineering and Environmental Science. Prerequisite: Math 2423, Physics 2514 or concurrent enrollment. Introduction to application software and programs relevant to civil engineering, environmental engineering, and environmental science, including programming, spreadsheets and computer-aided design. (F, Sp)

2313 Water Quality Fundamentals. Prerequisite: Chemistry 1415, Mathematics 2423. Introduction to environmental mass balance and fate processes. Studies of mass and energy transfer, introductory environmental chemistry, water quality parameters, mathematics of growth, statistics and data analysis, introduction to environmental laws and regulations. (F, Sp, Su)

2323 Environmental Transport and Fate Process. Prerequisite: 2313. Physicochemical and biological processes controlling contaminant distribution and fate; hydrological processes controlling contaminant transport; sources, prevention and remediation of environmental pollutants. (Sp)

3334 Measurements in CEES. Prerequisites: Mathematics 2423, Physics 2424 or Physics 2524. Introduction to measurement (laboratory and field) techniques, data analysis and interpretation and applications to architectural, civil or environmental engineering and environmental science. Topics include statistics, land surveying, remote sensing, GIS, environmental sampling and analysis, and sensors. Laboratory (Sp)

4114 Aquatic Chemistry (Slashed with 5114). Prerequisite: Senior standing and one year of general chemistry. Environmental kinetics and thermodynamics in aquatic systems; acid-base, precipitation-deposition, metal complexation and oxidation-reduction reactions; environmental colloidal and solid-liquid interface chemistry. No student may earn credit for both 4114 and 5114 or Environmental Science 4114 and 5114. Laboratory (F)

G4263 Hazardous and Solid Waste Management. Prerequisite: 2323 or 3212 or permission of instructor. Sources and types of solid wastes; identification and classification of hazardous wastes; waste handling, transportation, treatment and disposal techniques, federal and state legislation; and environmental and health effects. (F)

4324 Environmental Biology and Ecology (Slashed with 5324). Prerequisite: 3334. Examines applied environmental biology, biological consequences of environmental impacts; mitigation techniques; and the application of animal, plant, and microorganism population processes. No student may earn credit for both 4324 and 5324. Laboratory (F)

4813 Environmental Science and Environmental Engineering Professional Practice. Prerequisite: senior standing in environmental science or environmental engineering. Nature of professional practice and administrative responsibilities. Organization and management of operating divisions with emphasis on role of environmental professional. Functional approach to planning and implementing public works needs with emphasis on role of environmental professional. (F)