ENVIRONMENTAL SCIENCE AND TECHNOLOGY (BS)

Degree: Bachelor of Science
Major: Environmental Science and Technology
Program Code: 3443

About This Major . . .

We educate students in the science, protection, and restoration of our natural resources—air, water, land, and ecosystems. Students develop a foundation in biology, chemistry, mathematics, statistics, and communication skills, then apply this knowledge to the study and solution of environmental problems. We balance theory with hands-on practice, and include considerable work outdoors in our spectacular local environment. Students choose either the Pollution Monitoring & Control option, which focuses on pollution prevention as well as investigation and cleanup, or the Ecosystem Restoration option, which focuses on strategies for managing natural resources. Students complete the program with our Capstone course, in which they work in small groups on real-life projects for an off-campus client. Each group plans and implements a project and presents the final results to its client. In addition to providing students with a chance to showcase the knowledge and abilities they have acquired through their studies, students learn how to deal with the challenges of real-life project work.

Our graduates take positions as environmental professionals with consulting firms, industry, and government agencies (e.g., U.S. Bureau of Land Management, U.S. Geological Survey, and U.S. Army Corps of Engineers). Some continue their studies in graduate school (e.g., Colorado School of Mines, Colorado State University, University of Denver).

For more information on what you can do with this major, visit Career Services’ What to Do with a Major? resource.

All CMU baccalaureate graduates are expected to demonstrate proficiency in specialized knowledge/applied learning, quantitative fluency, communication fluency, critical thinking, personal and social responsibility, and information literacy. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

a. Define terminology, concepts, theories, and practices in environmental science. (specialized knowledge)
b. Find information relevant to environmental science, evaluate information critically, and apply the information appropriately and effectively to specific purposes (information literacy, critical thinking).
c. Demonstrate the ability to design an environmental study. (quantitative fluency, critical thinking, applied learning)
d. Demonstrate the ability to use appropriate tools, technology, and methods for measuring and analyzing environmental data. (quantitative fluency, applied learning)
e. Demonstrate the ability to analyze quantitative environmental data, effectively translate data into graphs or tables, and interpret the results. (quantitative fluency)
f. Construct an organized argument (oral and written) supported by current research on a technical issue in environmental science appropriate for a specialized audience. (communication fluency)
g. Complete a field-based project that evaluates and proposes a logical solution for an environmental issue or need by effectively synthesizing applicable concepts from environmental science and related disciplines. (applied learning, critical thinking, personal and social responsibility)

Requirements

Each section below contains details about the requirements for this program. Select a header to expand the information/requirements for that particular section of the program’s requirements.

To print or save an overview of this program's information, including the program description, learning outcomes, requirements, suggested course sequencing (if applicable), and advising and graduation information, scroll to the bottom of the left-hand navigation menu and select "Print Options." This will give you the options to either "Send Page to Printer" or "Download PDF of This Page." The "Download PDF of This Page" option prepares a much more concise presentation of all program information. The PDF is also printable and may be preferable due to its brevity.

Institutional Degree Requirements

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree. A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See “Requirements for Undergraduate Degrees and Certificates” in the catalog for a complete list of graduation requirements.

Essential Learning Requirements

(31 semester hours)

See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.
2023-2024 - Environmental Science and Technology (BS)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL 111</td>
<td>English Composition I-GTCO1</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 112</td>
<td>English Composition II-GTCO2</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 113</td>
<td>College Algebra-GTMA1 2,3</td>
<td>3</td>
</tr>
<tr>
<td>History</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one History course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one Humanities course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one Social and Behavioral Sciences course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select one Social and Behavioral Sciences course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Fine Arts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one Fine Arts course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Natural Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one Natural Sciences course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select one Natural Sciences course with a lab</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total Semester Credit Hours</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

1. Must receive a grade of “C” or better and must be complete by the time the student has 60 semester hours.
2. This is a 4 credit course. 3 credits apply to the Essential Learning requirements and 1 credit applies to elective credit.
3. Students who plan to take Calculus I-GT-MA1 (MATH 151) should take Precalculus Mathematics-GTMA1 (MATH 119) or Algebra for Calculus (MATH 119A) and Trigonometry for Calculus (MATH 119B) instead of College Algebra-GTMA1 (MATH 113).
4. 7 semester hours, one course must include a lab.
5. Students who did not pass the CHEM 131 placement exam should take CHEM 111.

Other Lower Division Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellness Requirement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KINE 100</td>
<td>Health and Wellness</td>
<td>1</td>
</tr>
<tr>
<td>Select one Activity course</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Essential Learning Capstone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESSL 290</td>
<td>Maverick Milestone</td>
<td>3</td>
</tr>
<tr>
<td>ESSL 200</td>
<td>Essential Speech</td>
<td>1</td>
</tr>
<tr>
<td>Total Semester Credit Hours</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

1. Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.

Foundation Courses

(12-14 semester hours, must pass all courses with a grade of “C” or higher)
Option 2: Ecosystem Restoration (15 credits):

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 312</td>
<td>Soil Science and Sustainability</td>
</tr>
<tr>
<td>ENVS 312L</td>
<td>Soil Science and Sustainability Laboratory</td>
</tr>
<tr>
<td>ENVS 455</td>
<td>Restoration Ecology</td>
</tr>
<tr>
<td>ENVS 455L</td>
<td>Restoration Ecology Laboratory</td>
</tr>
<tr>
<td>POLS 488</td>
<td>Environmental Politics and Policy</td>
</tr>
<tr>
<td>BIOL 107</td>
<td>Principles of Plant Biology</td>
</tr>
<tr>
<td>BIOL 107L</td>
<td>Principles of Plant Biology Laboratory</td>
</tr>
</tbody>
</table>

Total Semester Credit Hours: 38-41

\(^1\) BIOL 107/BIOL 107L have BIOL 105/BIOL 105L as prerequisites. It is suggested students take BIOL 105/BIOL 105L to fulfill their Natural Sciences with Lab Essential Learning requirement or ask the BIOL 107 instructor for permission to register without these prerequisites.

General Electives

All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. 16-17 semester hours

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 113</td>
<td>College Algebra-GTMA1</td>
</tr>
<tr>
<td>Select additional electives</td>
<td>15-16</td>
</tr>
</tbody>
</table>

Total Semester Credit Hours: 16-17

Suggested Course Plan

Pollution Monitoring and Control

While the sequencing below culminates in a total of 119-122 semester credit hours, students must complete a minimum of 120 semester credit hours as required for completion of this degree, including satisfactory completion of all required courses. Plan to complete requirements with varying hour options accordingly.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Fall Semester</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111</td>
<td>English Composition I-GTCD1</td>
<td>3</td>
</tr>
<tr>
<td>MATH 113</td>
<td>College Algebra-GTMA1</td>
<td>4</td>
</tr>
<tr>
<td>ENVS 104</td>
<td>Environmental Science: Global Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>Essential Learning - Natural Science with Lab</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>KINE 100</td>
<td>Health and Wellness</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Semester Credit Hours</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Semester</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 111</td>
<td>Principles of Physical Geology-GTSC1 &amp; 111L</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 111L</td>
<td>and Principles of Physical Geology Laboratory-GTSC1</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 112</td>
<td>English Composition II-GTC02</td>
<td>3</td>
</tr>
<tr>
<td>STAT 200</td>
<td>Probability and Statistics-GTMA1</td>
<td>3</td>
</tr>
<tr>
<td>Essential Learning - Social and Behavioral Science</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Essential Learning - Natural Science without lab (Students who did not pass the CHEM 131 placement exam should take CHEM 111)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Semester Credit Hours</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Fall Semester</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 131</td>
<td>General Chemistry-GTSC1</td>
<td>5</td>
</tr>
<tr>
<td>&amp; 131L</td>
<td>General Chemistry Laboratory-GTSC1</td>
<td>5</td>
</tr>
<tr>
<td>ENVS 204</td>
<td>Introduction to Ecosystem Management &amp; 204L</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 204L</td>
<td>and Introduction to Ecosystem Management Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>Restricted Elective</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Essential Learning - Fine Arts</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>KINA Activity</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Semester Credit Hours</td>
<td>14</td>
</tr>
</tbody>
</table>
Spring Semester
ENVS 221 Science and Technology of Pollution Control 4
& 221L and Science and Technology of Pollution Control Laboratory
CHEM 132 General Chemistry II-GTSC1 4-5
& 132L or Introduction to Environmental Chemistry or CHEM 123
MATH 131 Applied Calculus 4-5
or MATH 151 or Calculus I-GTMA1
Essential Learning - Social and Behavioral Sciences 3

Semester Credit Hours 15-17

Third Year
Fall Semester
Restricted Electives 3
ENVS 331 Water Quality 4
& 331L and Water Quality Laboratory
Essential Learning - Humanities 3
ESSL 200 Essential Speech 1
ESSL 290 Maverick Milestone 3

Semester Credit Hours 14

Spring Semester
ENVS 340 Applied Atmospheric Science 3
ENVS 410 Environmental Regulatory Compliance 3
Restricted Electives 5
Essential Learning - History 3

Semester Credit Hours 14

Fourth Year
Fall Semester
Restricted Electives 8
General Electives 7-8

Semester Credit Hours 15-16

Spring Semester
ENVS 377 Systems Thinking in Environmental Science 3
ENVS 492 Capstone in Environmental Science and Technology 3
ENVS 420 Pollution Investigation & Monitoring 4
& 420L and Pollution Investigation & Monitoring Laboratory
General Electives 6

Semester Credit Hours 16

Total Semester Credit Hours 119-122

Ecosystem Restoration

While the sequencing below culminates in a total of 119-122 semester credit hours, students must complete a minimum of 120 semester credit hours as required for completion of this degree. Plan to complete requirements with varying hour options accordingly.

First Year
Fall Semester
ENGL 111 English Composition I-GTCO1 3
MATH 113 College Algebra-GTMA1 4
ENVS 104 Environmental Science: Global Sustainability 3
Essential Learning - Natural Science with Lab 4
KINE 100 Health and Wellness 1

Semester Credit Hours 15

Spring Semester
BIOL 107 Principles of Plant Biology 4
& 107L and Principles of Plant Biology Laboratory
ENGL 112 English Composition II-GTCO2 3
STAT 200 Probability and Statistics-GTMA1 3
Essential Learning - Social and Behavioral Science 3

Semester Credit Hours 15

Second Year
Fall Semester
CHEM 131 General Chemistry I-GTSC1 5
& 131L and General Chemistry Laboratory I-GTSC1
ENVS 204 Introduction to Ecosystem Management 4
Restricted Elective 1
Essential Learning - Fine Arts 3
KINA Activity 1

Semester Credit Hours 14

Spring Semester
ENVS 221 Science and Technology of Pollution Control 4
& 221L and Science and Technology of Pollution Control Laboratory
CHEM 132 General Chemistry II-GTSC1 4-5
& 132L or Introduction to Environmental Chemistry or CHEM 123
MATH 131 Applied Calculus 4-5
or MATH 151 or Calculus I-GTMA1
Essential Learning - Social and Behavioral Sciences 3

Semester Credit Hours 15-17

Third Year
Fall Semester
ENVS 312 Soil Science and Sustainability 4
& 312L and Soil Science and Sustainability Laboratory
ENVS 331 Water Quality 4
& 331L and Water Quality Laboratory
Essential Learning - Humanities 3
ESSL 200 Essential Speech 1
ESSL 290 Maverick Milestone 3

Semester Credit Hours 15

Spring Semester
Restricted Electives 5
ENVS 377 Systems Thinking in Environmental Science 3
POL 488 Environmental Politics and Policy 3
Essential Learning - History 3

Semester Credit Hours 14

Fourth Year
Fall Semester
Restricted Electives 7
General Electives 7-8

Semester Credit Hours 14-15

Spring Semester
ENVS 492 Capstone in Environmental Science and Technology 3
ENVS 455 Restoration Ecology 4
& 455L and Restoration Ecology Laboratory
General Electives 9

Semester Credit Hours 16

Total Semester Credit Hours 119-122

Advising and Graduation

Advising Process and DegreeWorks

Documentation on the pages related to this program is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It
is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

**Graduation Process**

Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at [http://www.coloradomesa.edu/registrar/graduation.html](http://www.coloradomesa.edu/registrar/graduation.html).

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.