ENVIRONMENTAL SCIENCES,  
B.A. (L&S)

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (http://guide.wisc.edu/undergraduate/#requirementsforundergraduatestudytext) section of the Guide.

General Education

• Breadth—Humanities/Literature/Arts: 6 credits
• Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
• Breadth—Social Studies: 3 credits
• Communication Part A & Part B *
• Ethnic Studies *
• Quantitative Reasoning Part A & Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF LETTERS & SCIENCE DEGREE REQUIREMENTS: BACHELOR OF ARTS (B.A.)

Students pursuing a bachelor of arts degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either a bachelor of arts or a bachelor of science curriculum.

BACHELOR OF ARTS DEGREE REQUIREMENTS

Mathematics

Complete the University General Education Requirements for Quantitative Reasoning A (QR-A) and Quantitative Reasoning B (QR-B) coursework.

Foreign Language

• Complete the fourth unit of a foreign language; OR
• Complete the third unit of a foreign language and the second unit of an additional foreign language.

L&S Breadth

• 12 credits of Humanities, which must include 6 credits of literature; and
• 12 credits of Social Science; and
• 12 credits of Natural Science, which must include one 3+ credit Biological Science course and one 3+ credit Physical Science course.

Liberal Arts and Science Coursework

Complete at least 108 credits.

Depth of Intermediate/Advanced work

Complete at least 60 credits at the intermediate or advanced level.

Major

Declare and complete at least one major.

Total Credits

Complete at least 120 credits.

UW-Madison Experience

• 30 credits in residence, overall; and
• 30 credits in residence after the 86th credit.

Quality of Work

• 2.000 in all coursework at UW–Madison
• 2.000 in Intermediate/Advanced level coursework at UW–Madison

NON–L&S STUDENTS PURSUING AN L&S MAJOR

Non–L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements. They do not need to complete the L&S Degree Requirements above.

REQUIREMENTS FOR THE MAJOR

MATHEMATICS AND STATISTICS

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<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MATH 221</td>
<td>Calculus and Analytic Geometry 1</td>
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<tr>
<td>MATH 171 &amp; MATH 217</td>
<td>Calculus with Algebra and Trigonometry I and Calculus with Algebra and Trigonometry II</td>
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<td>MATH 211</td>
<td>Calculus</td>
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<td>STAT 302</td>
<td>Accelerated Introduction to Statistical Methods</td>
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<tr>
<td>STAT/MATH 309</td>
<td>Introduction to Probability and Mathematical Statistics I</td>
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<tr>
<td>STAT 311</td>
<td>Introduction to Theory and Methods of Mathematical Statistics I</td>
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<tr>
<td>STAT 371</td>
<td>Introductory Applied Statistics for the Life Sciences</td>
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Total Credits

8-13

CHEMISTRY

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<tr>
<td>CHEM 103 &amp; CHEM 104</td>
<td>General Chemistry I and General Chemistry II</td>
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<td>or CHEM 109</td>
<td>Advanced General Chemistry</td>
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Complete one of the following: 3

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<tr>
<td>CHEM 341</td>
<td>Elementary Organic Chemistry</td>
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<td>CHEM 343</td>
<td>Introductory Organic Chemistry</td>
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<td>CHEM 561</td>
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Total Credits 8-12

### BIOLOGY

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<td>BIOLOGY/</td>
<td>Introductory Biology</td>
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<tr>
<td>BOTANY/</td>
<td>and Introductory Biology</td>
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<tr>
<td>ZOOLOGY 151</td>
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<tr>
<td>&amp; BIOLOGY/</td>
<td>General Botany and Animal Biology</td>
<td>10</td>
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<tr>
<td>BOTANY/</td>
<td>and Animal Biology Laboratory</td>
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<tr>
<td>BIOLOGY 130</td>
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<tr>
<td>&amp; ZOOLOGY/</td>
<td>Evolution, Ecology, and Genetics</td>
<td>10</td>
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<tr>
<td>BIOLOGY 101</td>
<td>and Evolution, Ecology, and</td>
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<td>&amp; ZOOLOGY/</td>
<td>General Botany and Animal Biology</td>
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<tr>
<td>BIOLOGY 102</td>
<td>and Animal Biology Laboratory</td>
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<tr>
<td>BIOCORE 381</td>
<td>Evolution, Ecology, and Genetics</td>
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<tr>
<td>&amp; BIOCORE 382</td>
<td>and Evolution, Ecology, and</td>
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<td>&amp; BIOCORE 383</td>
<td>General Botany and Animal Biology</td>
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Total Credits 10

### PHYSICS

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<td>PHYSICS 207</td>
<td>General Physics and General Physics</td>
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<tr>
<td>&amp; PHYSICS 208</td>
<td>(Recommended)</td>
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<td>PHYSICS 103</td>
<td>General Physics and General Physics</td>
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<tr>
<td>&amp; PHYSICS 104</td>
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<tr>
<td>PHYSICS 201</td>
<td>General Physics and General Physics</td>
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<tr>
<td>&amp; PHYSICS 202</td>
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Total Credits 8-10

### MAJOR FOUNDATION

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<tr>
<td>ENVIR ST/</td>
<td>Principles of Environmental Science</td>
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<tr>
<td>ILS 126</td>
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<td>ENVIR ST/</td>
<td>Physical Systems of the Environment</td>
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<td>GEOG 127</td>
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<tr>
<td>GEOG/</td>
<td>Introduction to the Earth System</td>
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<td>ENVIR ST</td>
<td>Environmental Geology</td>
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<td>120</td>
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<td>GEOSCI/</td>
<td>Soil: Ecosystem and Resource</td>
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<td>ENVIR ST</td>
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<td>106</td>
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<tr>
<td>SOIL SCI/</td>
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<tr>
<td>ENVIR ST/</td>
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<td>GEOG 230</td>
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Total Credits 3-5

### MAJOR CORE

Complete at least one course and 3 credits from each of these following areas:

#### Ecology

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<td>AGRONOMY 300</td>
<td>Cropping Systems</td>
<td>3</td>
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<tr>
<td>AGRONOMY/</td>
<td>Grassland Ecology</td>
<td>3</td>
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<tr>
<td>BOTANY/</td>
<td>The Vegetation of Wisconsin</td>
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<tr>
<td>SOIL SCI 370</td>
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<tr>
<td>BOTANY/</td>
<td>General Ecology (Recommended)</td>
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<tr>
<td>F&amp;W ECOL 455</td>
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<tr>
<td>ENTOM 450</td>
<td>Basic and Applied Insect Ecology</td>
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<tr>
<td>ENTOM 451</td>
<td>Basic and Applied Insect Ecology</td>
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<tr>
<td>Laboratory</td>
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<tr>
<td>ENTOM/BOTANY/</td>
<td>Plant-Insect Interactions</td>
<td>3</td>
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<td>ZOOLOGY 473</td>
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<tr>
<td>ENVIR ST/</td>
<td>Ecology of Fishes</td>
<td>3</td>
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<td>ZOOLOGY 510</td>
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<td>ENVIR ST/</td>
<td>Ecology of Fishes Lab</td>
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<td>ZOOLOGY 511</td>
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<tr>
<td>F&amp;W ECOL/</td>
<td>Extinction of Species</td>
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<td>ENVIR ST/</td>
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<tr>
<td>ZOOLOGY 360</td>
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<tr>
<td>F&amp;W ECOL 410</td>
<td>Principles of Silviculture</td>
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<td>F&amp;W ECOL 550</td>
<td>Forest Ecology</td>
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<td>Forest Ecology Lab</td>
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<tr>
<td>F&amp;W ECOL/</td>
<td>Principles of Landscape Ecology</td>
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<td>LAND ARC/</td>
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<td>ZOOLOGY 565</td>
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<tr>
<td>HORT 334</td>
<td>Greenhouse Cultivation</td>
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<td>HORT 335</td>
<td>Greenhouse Cultivation Lab</td>
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<td>LAND ARC/</td>
<td>Wetlands Ecology</td>
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<td>ENVIR ST</td>
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<td>361</td>
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<td>ZOOLOGY/</td>
<td>Limnology-Conservation of Aquatic</td>
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<td>ENVIR ST</td>
<td>Resources</td>
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<td>315</td>
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<td>ZOOLOGY 316</td>
<td>Laboratory for Limnology-</td>
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<tr>
<td>Conservation of Aquatic Resources</td>
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#### Physical Environment

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<tr>
<td>ATM OCN 310</td>
<td>Dynamics of the Atmosphere and</td>
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<tr>
<td>Ocean I</td>
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<tr>
<td>ATM OCN/GEOG 323</td>
<td>Climate Change</td>
<td>3</td>
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<tr>
<td>ATM OCN/ENVIR ST/</td>
<td>Climatic Environments of the Past</td>
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<td>GEOG/GEOSCI 335</td>
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<tr>
<td>ATM OCN/ENVIR ST 355</td>
<td>Introduction to Air Quality</td>
<td>3</td>
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<tr>
<td>ATM OCN/ENVIR ST 520</td>
<td>Bioclimatology</td>
<td>3</td>
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Total Credits 3-5
<table>
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<tr>
<td>ATM OCN/ENVIR ST 535</td>
<td>Atmospheric Dispersion and Air Pollution</td>
<td>3</td>
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<tr>
<td>BSE 365</td>
<td>Measurements and Instrumentation for Biological Systems</td>
<td>3</td>
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<tr>
<td>BSE/ENVIR ST 367</td>
<td>Renewable Energy Systems</td>
<td>3</td>
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<tr>
<td>BSE 460</td>
<td>Biorefining: Energy and Products from Renewable Resources</td>
<td>3</td>
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<tr>
<td>CIV ENGR 310</td>
<td>Fluid Mechanics</td>
<td>3</td>
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<td>CIV ENGR 320</td>
<td>Environmental Engineering</td>
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<tr>
<td>CIV ENGR 423</td>
<td>Air Pollution Effects, Measurement and Control</td>
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<td>CIV ENGR 424</td>
<td>Environmental Engineering Laboratory</td>
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<td>ENVIR ST/POP HLTH 502</td>
<td>Air Pollution and Human Health</td>
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<td>GEOG/GEOSCI 320</td>
<td>Geomorphology</td>
<td>3</td>
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<tr>
<td>GEOG 329</td>
<td>Landforms and Landscapes of North America</td>
<td>3</td>
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<tr>
<td>GEOG/ATM OCN/ENVIR ST 332</td>
<td>Global Warming: Science and Impacts</td>
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<td>GEOG/BOTANY 338</td>
<td>Environmental Biogeography</td>
<td>3</td>
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<td>GEOG/GEOSCI 420</td>
<td>Glacial and Pleistocene Geology</td>
<td>3</td>
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<td>GEOSCI 304</td>
<td>Geobiology</td>
<td>3</td>
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<td>GEOSCI/G LE 627</td>
<td>Hydrogeology</td>
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<tr>
<td>POP HLTH/ENVIR ST 471</td>
<td>Introduction to Environmental Health</td>
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<td>SOIL SCI 301</td>
<td>General Soil Science</td>
<td>4</td>
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<td>SOIL SCI 321</td>
<td>Soils and Environmental Chemistry</td>
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<td>SOIL SCI/ENVIR ST 324</td>
<td>Soils and Environmental Quality</td>
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<tr>
<td>SOIL SCI/F&amp;W ECOL 451</td>
<td>Environmental Biogeochemistry</td>
<td>3</td>
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<tr>
<td>SOIL SCI/AGRONOMY/ATM OCN 532</td>
<td>Environmental Biophysics</td>
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<tr>
<td>SOIL SCI/CIV ENGR/M&amp;ENVTOX 631</td>
<td>Toxicants in the Environment: Sources, Distribution, Fate, &amp; Effects</td>
<td>3</td>
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<td>GEOSPATIAL SCIENCES</td>
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<tr>
<td>COMP SCI 220</td>
<td>Data Science Programming I</td>
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<td>ENVR ST/CIV ENGR/LAND ARC 556</td>
<td>Remote Sensing Digital Image Processing</td>
<td>3</td>
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<td>GEOG 360</td>
<td>Quantitative Methods in Geographical Analysis</td>
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<tr>
<td>GEOG 370</td>
<td>Introduction to Cartography</td>
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<tr>
<td>GEOG/ENVR ST/F&amp;W ECOL/G LE/GEOSCI/LAND ARC 371</td>
<td>Introduction to Environmental Remote Sensing</td>
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<tr>
<td>GEOG/CIV ENGR/ENVIR ST 377</td>
<td>An Introduction to Geographic Information Systems</td>
<td>4</td>
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<tr>
<td>GEOSCI/CIV ENGR/ENVIR ST/G LE 444</td>
<td>Practical Applications of GPS Surveying</td>
<td>2</td>
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<tr>
<td>SOIL SCI/ENVIR ST/LAND ARC 695</td>
<td>Applications of Geographic Information Systems in Natural Resources</td>
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**Environmental Policy & Social Perspectives**

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<tr>
<td>A A E/ENVIR ST 244</td>
<td>The Environment and the Global Economy</td>
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<td>A A E 246</td>
<td>Climate Change Economics and Policy</td>
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<tr>
<td>A A E/ECON/ENVIR ST 343</td>
<td>Environmental Economics</td>
<td>3-4</td>
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<tr>
<td>C&amp;E SOC/F&amp;W ECOL/SOC 248</td>
<td>Environment, Natural Resources, and Society</td>
<td>3</td>
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<tr>
<td>C&amp;E SOC/ENVIR ST/GEOSCI 434</td>
<td>People, Wildlife and Landscapes</td>
<td>3</td>
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<tr>
<td>C&amp;E SOC/SOC 540</td>
<td>Sociology of International Development, Environment, and Sustainability</td>
<td>3</td>
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<tr>
<td>C&amp;E SOC/SOC 541</td>
<td>Environmental Stewardship and Social Justice</td>
<td>3</td>
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<tr>
<td>ENVIR ST 349</td>
<td>Climate Change Governance</td>
<td>3</td>
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<tr>
<td>ENVIR ST/PL PATH 368</td>
<td>Environmental Law, Toxic Substances, and Conservation</td>
<td>2</td>
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<td>ENVIR ST/GEOSCI 439</td>
<td>US Environmental Policy and Regulation</td>
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<td>ENVIR ST/PHILOS 441</td>
<td>Environmental Ethics</td>
<td>3-4</td>
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<td>ENVR ST 513</td>
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<td>F&amp;W ECOL 375</td>
<td>Special Topics (Forest &amp; Climate Change Policy)</td>
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<tr>
<td>GEOG/ENVR ST 339</td>
<td>Environmental Conservation</td>
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<tr>
<td>GEOG/URB R PL 305</td>
<td>Introduction to the City</td>
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<td>GEOG/ENVR ST/HISTORY 460</td>
<td>American Environmental History</td>
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<tr>
<td>GEOG/ENVR ST 537</td>
<td>Culture and Environment</td>
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<td>GEOSCI/ENVIR ST 411</td>
<td>Energy Resources</td>
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<tr>
<td>HISTORY/ENVIR ST/GEOSCI 469</td>
<td>The Making of the American Landscape</td>
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<td>POLI SCI 510</td>
<td>Politics of Government Regulation</td>
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<tr>
<td>URB R PL/ECON/ENVIR ST/POLI SCI 449</td>
<td>Government and Natural Resources</td>
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**MAJOR ELECTIVES**

There are two ways to complete this requirement, either by distributing 12 credits across at least three categories, or by concentrating those credits in a single category. ¹

**DISTRIBUTED Electives**

Students choosing the Distributed Electives path must complete a total of 12 credits of Environmental Sciences Electives from the categories below, including at least one course from each category.
### Ecology

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<td>AGRONOMY 300</td>
<td>Cropping Systems</td>
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<td>AGRONOMY/</td>
<td>Grassland Ecology</td>
<td>3</td>
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<td>BOTANY/</td>
<td>The Vegetation of Wisconsin</td>
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<td>Extinction of Species</td>
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<td>HORT 335</td>
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<td>Wetlands Ecology</td>
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### Geospatial Sciences

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<td>Remote Sensing Digital Image Processing</td>
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<td>Introduction to Cartography</td>
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<td>Introduction to Geocomputing</td>
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<td>GEOF 560</td>
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<td>GIS Applications</td>
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<td>SOIL SC/ENVIR ST/LAND ARC 695</td>
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### Physical Environment

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<td>Science of Climate Change</td>
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<td>ATM OCN/ENVIR ST/ GEOF/GEOSCI 335</td>
<td>Climatic Environments of the Past Geospatial Sciences</td>
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<td>ATM OCN/ ENVIR ST 355</td>
<td>Introduction to Air Quality</td>
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<td>ATM OCN/ ENVIR ST 520</td>
<td>Bioclimatology</td>
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<td>ATM OCN/ ENVIR ST 535</td>
<td>Atmospheric Dispersion and Air Pollution</td>
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<tr>
<td>BSE 365</td>
<td>Measurements and Instrumentation for Biological Systems</td>
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<tr>
<td>BSE/ENVIR ST 367</td>
<td>Renewable Energy Systems</td>
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FOCUSED Electives
Students choosing the Focused Electives path must complete a total of 12 credits of Environmental Sciences Electives from one of the following categories.

Ecology

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<tr>
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<td>Cropping Systems</td>
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<td>Grassland Ecology</td>
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Geospatial Sciences

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<td>Quantitative Methods in Geographical Analysis</td>
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**Environmental Policy & Social Perspectives**

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<td>Environment, Natural Resources, and Society</td>
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<td>C&amp;E SOC/ENVIR ST/</td>
<td>People, Wildlife and Landscapes</td>
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<td>C&amp;E SOC/SOC 541</td>
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1 Students may consult their environmental sciences advisor regarding alternate ways to complete the major electives requirement.

2 Students may speak with their environmental science advisor about alternatives (e.g., courses, directed study, senior thesis) to complete the capstone. To be approved, the alternative must be taken for a minimum of 3 credits, clearly focused on environmental science, and approved by the Environmental Sciences Administrative Committee. Students must consult with their environmental sciences advisor and fill out all necessary paperwork before registering.

**RESIDENCE & QUALITY OF WORK**

- 2.000 GPA in all major courses
- 2.000 GPA and 15 credits of upper level major courses taken in residence 3
- 15 credits in the major taken on the UW–Madison campus

3 Major courses numbered 300 through 699 are considered upper level.

**HONORS IN THE MAJOR**

Honors in the Major is not available in Environmental Sciences.

**UNIVERSITY DEGREE REQUIREMENTS**

**Total Degree** To receive a bachelor's degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

**Residency** Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. "In residence" means on the UW–Madison campus with an undergraduate degree classification. "In residence" credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.

**Quality of Work** Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.