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ENVIRONMENTAL SCIENCES, B.S. (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 SCIENCE (B.S.)

Students pursuing a Bachelor of Science 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 the Bachelor of Arts or the Bachelor of Science degree requirements.

BACHELOR OF SCIENCE DEGREE REQUIREMENTS

Mathematics Complete two courses of 3+ credits at the Intermediate or Advanced level in MATH, COMP SCI, or STAT subjects. A maximum of one course in each of COMP SCI and STAT subjects counts toward this requirement.

Foreign Complete the third unit of a foreign language.
Language

L&S Breadth Complete:

- 12 credits of Humanities, which must include at least 6 credits of Literature; and
- 12 credits of Social Science; and
- 12 credits of Natural Science, which must include 6 credits of Biological Science and 6 credits of Physical Science.

Liberal Arts Complete at least 108 credits. and Science

Depth of Complete at least 60 credits at the Intermediate or Intermediate/ Advanced level.

Advanced Coursework

Coursework

Major Declare and complete at least one major.

Total Credits Complete at least 120 credits.

UW-Madison Complete both:

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

Students majoring in Environmental Sciences must complete a minimum of 59 credits (detailed below)

MATHEMATICS AND STATISTICS

| Code | Title | Credits |
|------------------------|---|---------|
| Complete one of the | following: | 5-10 |
| MATH 221 | Calculus and Analytic Geometry 1 (Recommended) | |
| MATH 171 & MATH 217 | Calculus with Algebra and Trigonometry I and Calculus with Algebra and Trigonometry II | |
| MATH 211 | Calculus | |
| Complete one of the | following: | 3-4 |
| STAT 240 | Data Science Modeling I | |
| STAT 302 | Accelerated Introduction to Statistical Methods | |
| STAT 371 | Introductory Applied Statistics for the Life Sciences | |
| Total Credits | | 8-14 |

CHEMISTRY

| Code | Title | Credits |
|--------------------|----------------------------|---------|
| CHEM 103 | General Chemistry I | 5-9 |
| & CHEM 104 | and General Chemistry II | |
| or CHEM 109 | Advanced General Chemistry | |
| Complete one of th | e following: | 3 |

| Codo | Title | Cuadita |
|---------------|------------------------------|---------|
| BIOLOGY | | |
| Total Credits | | 8-12 |
| CHEM 343 | Organic Chemistry I | |
| CHEM 341 | Elementary Organic Chemistry | |

| Code | Title | Credits |
|---|---|---------|
| Complete one of the | following: | 10 |
| BIOLOGY/ BOTANY/ ZOOLOGY 151 & BIOLOGY/ BOTANY/ ZOOLOGY 152 | Introductory Biology and Introductory Biology | |
| BOTANY/ BIOLOGY 130 & ZOOLOGY/ BIOLOGY 101 & ZOOLOGY/ BIOLOGY 102 | General Botany and Animal Biology and Animal Biology Laboratory | |
| BIOCORE 381 & BIOCORE 382 & BIOCORE 383 & BIOCORE 384 | Evolution, Ecology, and Genetics and Evolution, Ecology, and Genetics Laboratory and Cellular Biology and Cellular Biology Laboratory | |

Total Credits 10

PHYSICS

| Code | | Title | Credits |
|------------|------------|-------------------------------|---------|
| Complete | one of the | e following: | 4-5 |
| PHYSIC | S 207 | General Physics (recommended) | |
| PHYSIC | S 201 | General Physics | |
| PHYSIC | S 103 | General Physics | |
| Total Cred | dits | | 4-5 |

MAJOR FOUNDATION

| (| Code | Title | Credits |
|---|------------------------------------|---------------------------------------|---------|
| (| Complete one of the f | following: | 3-5 |
| | ENVIR ST/ILS 126 | Principles of Environmental Science | |
| | GEOG/ ENVIR ST 120 | Introduction to the Earth System | |
| | GEOSCI/ ENVIR ST 106 | Environmental Geology | |
| | SOIL SCI/ ENVIR ST/ GEOG 230 | Soil: Ecosystem and Resource | |
| | SOIL SCI 250 | Introduction to Environmental Science | |
| 1 | otal Credits | | 3-5 |

MAJOR CORE

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

| Ecology Code | Title | Credits |
|---------------------------------------|--|---------|
| AGRONOMY 300 | Cropping Systems | 3 |
| AGRONOMY/ BOTANY/ SOIL SCI 370 | Grassland Ecology | 3 |
| AGRONOMY/ DY SCI 471 | Food Production Systems and Sustainability | 3 |
| BOTANY/ F&W ECOL 455 | The Vegetation of Wisconsin | 4 |
| BOTANY/ F&W ECOL/ ZOOLOGY 460 | General Ecology (Recommended) | 4 |
| ENTOM 450 | Basic and Applied Insect Ecology | 3 |
| ENTOM 451 | Basic and Applied Insect Ecology Laboratory | 1 |
| ENTOM/BOTANY/ ZOOLOGY 473 | Plant-Insect Interactions | 3 |
| ENVIR ST 400 | Special Topics in the Environment: Biological Aspects of Envir St | 1-4 |
| ENVIR ST/ ZOOLOGY 510 | Ecology of Fishes | 3 |
| ENVIR ST/ ZOOLOGY 511 | Ecology of Fishes Lab | 2 |
| F&W ECOL/ ENVIR ST/ ZOOLOGY 360 | Extinction of Species | 3 |
| F&W ECOL 410 | Principles of Silviculture | 3 |
| F&W ECOL/AN SCI/ ZOOLOGY 520 | Ornithology | 3 |
| F&W ECOL/AN SCI/ ZOOLOGY 521 | Birds of Southern Wisconsin | 3 |
| F&W ECOL 550 | Forest Ecology | 3 |
| F&W ECOL 551 | Forest Ecology Lab | 1 |
| F&W ECOL/ LAND ARC/ ZOOLOGY 565 | Principles of Landscape Ecology | 2 |
| HORT 334 | Greenhouse Cultivation | 2 |
| HORT 335 | Greenhouse Cultivation Lab | 1 |
| LAND ARC/ ENVIR ST 361 | Wetlands Ecology | 3 |
| LAND ARC/ ENVIR ST 581 | Prescribed Fire: Ecology and Implementation | 3 |
| SOIL SCI/ PL PATH 323 | Soil Biology | 3 |
| ZOOLOGY 304 | Marine Biology | 2 |
| ZOOLOGY/ ENVIR ST 315 | Limnology-Conservation of Aquatic Resources | 2 |
| ZOOLOGY 316 | Laboratory for Limnology- Conservation of Aquatic Resources | 2-3 |
| | | |

Physical Environment

| Code | Title | Credits |
|-------------|--------------------------------|---------|
| ATM OCN 310 | Dynamics of the Atmosphere and | 3 |
| | Ocean I | |

| ATM OCN/ | Polar Regions and Their Importance | 3 |
|--|--|-----|
| ENVIR ST/ | in the Global Environment | |
| GEOG 322 | | |
| ATM OCN/ GEOG 323 | Science of Climate Change | 3 |
| ATM OCN/ ENVIR ST/GEOG/ GEOSCI 335 | Climatic Environments of the Past | 3 |
| ATM OCN/ ENVIR ST 355 | Introduction to Air Quality | 3 |
| ATM OCN/ ENVIR ST 520 | Bioclimatology | 3 |
| ATM OCN/ ENVIR ST 535 | Atmospheric Dispersion and Air Pollution | 3 |
| BSE 365 | Measurements and Instrumentation for Biological Systems | 3 |
| BSE/ENVIR ST 367 | Renewable Energy Systems | 3 |
| BSE 460 | Biorefining: Energy and Products | 3 |
| | from Renewable Resources | |
| CIV ENGR 320 | Environmental Engineering | 3 |
| CIV ENGR 423 | Air Pollution Effects, Measurement and Control | 3 |
| CIV ENGR 424 | Environmental Engineering Laboratory | 2 |
| ENVIR ST/ POP HLTH 502 | Air Pollution and Human Health | 3 |
| GEOG/GEOSCI 320 | Geomorphology | 3 |
| GEOG 329 | Landforms and Landscapes of North America | 3 |
| GEOG/ATM OCN/ ENVIR ST 332 | Global Warming: Science and Impacts | 3 |
| GEOG/BOTANY 338 | Environmental Biogeography | 3 |
| GEOG/GEOSCI 420 | Glacial and Pleistocene Geology | 3 |
| GEOSCI 304 | Geobiology | 3 |
| GEOSCI 551 | Paleoceanography | 3 |
| GEOSCI/G L E 627 | Hydrogeology | 3-4 |
| GEOSCI/G L E 629 | Contaminant Hydrogeology | 3 |
| POP HLTH/ ENVIR ST 471 | Introduction to Environmental Health | 3 |
| SOIL SCI 301 | General Soil Science | 3 |
| SOIL SCI 302 | Meet Your Soil: Soil Analysis and Interpretation Laboratory | 1 |
| SOIL SCI 321 | Soils and Environmental Chemistry | 3 |
| SOIL SCI 322 | Physical Principles of Soil and Water Management | 3 |
| SOIL SCI 327 | Environmental Monitoring and Soil Characterization for Earth's Critical Zone | 4 |
| SOIL SCI/ ENVIR ST 324 | Soils and Environmental Quality | 3 |
| SOIL SCI 430 | Environmental Soil Contamination | 3 |
| SOIL SCI/ F&W ECOL 451 | Environmental Biogeochemistry | 3 |
| SOIL SCI/ AGRONOMY/ ATM OCN 532 | Environmental Biophysics | 3 |

| SOIL SCI/ | Toxicants in the Environment: | 3 |
|--------------|--------------------------------|---|
| CIV ENGR/ | Sources, Distribution, Fate, & | |
| M&ENVTOX 631 | Effects | |

| Geospatial Sciences | | | |
|--|---|---------|--|
| Code | Title | Credits | |
| COMP SCI 220 | Data Science Programming I | 4 | |
| ENVIR ST/ CIV ENGR/ LAND ARC 556 | Remote Sensing Digital Image Processing | 3 | |
| GEOG 360 | Quantitative Methods in Geographical Analysis | 4 | |
| GEOG 370 | Introduction to Cartography | 4 | |
| GEOG/ENVIR ST/ F&W ECOL/ G L E/GEOSCI/ LAND ARC 371 | Introduction to Environmental Remote Sensing | 3 | |
| GEOG/CIV ENGR/ ENVIR ST 377 | An Introduction to Geographic Information Systems | 4 | |
| GEOSCI/CIV ENGR/ ENVIR ST/G L E 444 | Practical Applications of GPS Surveying | 2 | |
| LAND ARC 311 | Introduction to Design Frameworks and Spatial Technologies | 2 | |
| LAND ARC 511 | Geodesign Methods and Applications | 3 | |
| SOIL SCI 585 | Using R for Soil and Environmental Sciences | 3 | |
| SOIL SCI/ENVIR ST/ LAND ARC 695 | Applications of Geographic Information Systems in Natural Resources | 3 | |

Environmental Policy & Social Perspectives Code Title

| Code | Title | Credits |
|------------------------------------|---|---------|
| A A E/ENVIR ST 244 | The Environment and the Global Economy | 4 |
| A A E 246 | Climate Change Economics and Policy | 3 |
| A A E/ECON/ ENVIR ST 343 | Environmental Economics | 3-4 |
| AMER IND/ ENVIR ST 306 | Indigenous Peoples and the Environment | 3 |
| AMER IND/ ENVIR ST/ GEOG 345 | Managing Nature in Native North America | 3 |
| C&E SOC/ F&W ECOL/ SOC 248 | Environment, Natural Resources, and Society | 3 |
| C&E SOC/CURRIC/ ENVIR ST 405 | Education for Sustainable Communities | 3 |
| C&E SOC/ENVIR ST/ GEOG 434 | People, Wildlife and Landscapes | 3 |
| C&E SOC/ENVIR ST/ SOC 540 | Sociology of International Development, Environment, and Sustainability | 3 |
| C&E SOC/SOC 541 | Environmental Stewardship and Social Justice | 3 |
| ENVIR ST 349 | Climate Change Governance | 3 |

| ENVIR ST/ GEOG 439 | US Environmental Policy and Regulation | 3-4 |
|---|---|-----|
| ENVIR ST/ PHILOS 441 | Environmental Ethics | 3-4 |
| GEOG/ ENVIR ST 339 | Environmental Conservation | 4 |
| GEOG/ URB R PL 305 | Introduction to the City | 3-4 |
| GEOG/ENVIR ST/ HISTORY 460 | American Environmental History | 4 |
| GEOG/ ENVIR ST 537 | Culture and Environment | 4 |
| GEOSCI/ ENVIR ST 411 | Energy Resources | 3 |
| HISTORY/ENVIR ST/ GEOG 469 | The Making of the American Landscape | 4 |
| POLI SCI 510 | Politics of Government Regulation | 3-4 |
| URB R PL/ ECON/ENVIR ST/ POLI SCI 449 | Government and Natural Resources | 3-4 |

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. $^{\rm 1}$

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 | |
|---------|-------|
| | Title |

| Title | Credits |
|--|---|
| Cropping Systems | 3 |
| Grassland Ecology | 3 |
| Food Production Systems and Sustainability | 3 |
| The Vegetation of Wisconsin | 4 |
| General Ecology | 4 |
| Plant-Insect Interactions | 3 |
| Basic and Applied Insect Ecology | 3 |
| Basic and Applied Insect Ecology Laboratory | 1 |
| Special Topics in the Environment: Biological Aspects of Envir St | 1-4 |
| Ecology of Fishes | 3 |
| Ecology of Fishes Lab | 2 |
| Extinction of Species | 3 |
| | Grassland Ecology Food Production Systems and Sustainability The Vegetation of Wisconsin General Ecology Plant-Insect Interactions Basic and Applied Insect Ecology Basic and Applied Insect Ecology Laboratory Special Topics in the Environment: Biological Aspects of Envir St Ecology of Fishes Ecology of Fishes Lab |

| F&W ECOL 410 | Principles of Silviculture | 3 |
|---------------------------------------|--|-----|
| F&W ECOL/AN SCI/ ZOOLOGY 520 | Ornithology | 3 |
| F&W ECOL/AN SCI/ ZOOLOGY 521 | Birds of Southern Wisconsin | 3 |
| F&W ECOL 550 | Forest Ecology | 3 |
| F&W ECOL 551 | Forest Ecology Lab | 1 |
| F&W ECOL/ LAND ARC/ ZOOLOGY 565 | Principles of Landscape Ecology | 2 |
| F&W ECOL/ ZOOLOGY 660 | Climate Change Ecology | 3 |
| HORT 334 | Greenhouse Cultivation | 2 |
| HORT 335 | Greenhouse Cultivation Lab | 1 |
| LAND ARC/ ENVIR ST 361 | Wetlands Ecology | 3 |
| LAND ARC/ ENVIR ST 581 | Prescribed Fire: Ecology and Implementation | 3 |
| SOIL SCI/ PL PATH 323 | Soil Biology | 3 |
| ZOOLOGY 304 | Marine Biology | 2 |
| ZOOLOGY/ ENVIR ST 315 | Limnology-Conservation of Aquatic Resources | 2 |
| ZOOLOGY 316 | Laboratory for Limnology- Conservation of Aquatic Resources | 2-3 |

Physical Environment

| Code | Title | Credits |
|--|--|---------|
| ATM OCN 310 | Dynamics of the Atmosphere and Ocean I | 3 |
| ATM OCN/ ENVIR ST/ GEOG 322 | Polar Regions and Their Importance in the Global Environment | 3 |
| ATM OCN/ GEOG 323 | Science of Climate Change | 3 |
| ATM OCN/ ENVIR ST/GEOG/ GEOSCI 335 | Climatic Environments of the Past | 3 |
| ATM OCN/ ENVIR ST 355 | Introduction to Air Quality | 3 |
| ATM OCN/ ENVIR ST 520 | Bioclimatology | 3 |
| ATM OCN/ ENVIR ST 535 | Atmospheric Dispersion and Air Pollution | 3 |
| BSE 365 | Measurements and Instrumentation for Biological Systems | 3 |
| BSE/ENVIR ST 367 | Renewable Energy Systems | 3 |
| BSE 460 | Biorefining: Energy and Products from Renewable Resources | 3 |
| CIV ENGR 320 | Environmental Engineering | 3 |
| CIV ENGR 423 | Air Pollution Effects, Measurement and Control | 3 |
| CIV ENGR 424 | Environmental Engineering Laboratory | 2 |
| ENVIR ST/ POP HLTH 502 | Air Pollution and Human Health | 3 |

| GEOG/GEOSCI 320 | Geomorphology | 3 |
|--|--|-----|
| GEOG 329 | Landforms and Landscapes of North America | 3 |
| GEOG/ATM OCN/ ENVIR ST 332 | Global Warming: Science and Impacts | 3 |
| GEOG/BOTANY 338 | Environmental Biogeography | 3 |
| GEOG/GEOSCI 420 | Glacial and Pleistocene Geology | 3 |
| GEOSCI 304 | Geobiology | 3 |
| GEOSCI 551 | Paleoceanography | 3 |
| GEOSCI/G L E 627 | Hydrogeology | 3-4 |
| GEOSCI/G L E 629 | Contaminant Hydrogeology | 3 |
| POP HLTH/ ENVIR ST 471 | Introduction to Environmental Health | 3 |
| SOIL SCI 301 | General Soil Science | 3 |
| SOIL SCI 302 | Meet Your Soil: Soil Analysis and Interpretation Laboratory | 1 |
| SOIL SCI 321 | Soils and Environmental Chemistry | 3 |
| SOIL SCI 322 | Physical Principles of Soil and Water Management | 3 |
| SOIL SCI/ ENVIR ST 324 | Soils and Environmental Quality | 3 |
| SOIL SCI 327 | Environmental Monitoring and Soil Characterization for Earth's Critical Zone | 4 |
| SOIL SCI 430 | Environmental Soil Contamination | 3 |
| SOIL SCI/ F&W ECOL 451 | Environmental Biogeochemistry | 3 |
| SOIL SCI/ AGRONOMY/ ATM OCN 532 | Environmental Biophysics | 3 |
| SOIL SCI/ CIV ENGR/ M&ENVTOX 631 | Toxicants in the Environment: Sources, Distribution, Fate, & Effects | 3 |

| Geos | patial | Sciences | |
|------|--------|----------|--|
| | | | |

| Code | Title | Credits |
|--|--|---------|
| ENVIR ST/ CIV ENGR/ LAND ARC 556 | Remote Sensing Digital Image Processing | 3 |
| GEOG 360 | Quantitative Methods in Geographical Analysis | 4 |
| GEOG 370 | Introduction to Cartography | 4 |
| GEOG/ENVIR ST/ F&W ECOL/ G L E/GEOSCI/ LAND ARC 372 | Intermediate Environmental Remote Sensing | 3 |
| GEOG/CIV ENGR/ ENVIR ST 377 | An Introduction to Geographic Information Systems | 4 |
| GEOG 378 | Introduction to Geocomputing | 4 |
| GEOG 560 | Advanced Quantitative Methods | 3 |
| GEOG 578 | GIS Applications | 4 |
| GEOG 579 | GIS and Spatial Analysis | 4 |
| GEOSCI/CIV ENGR/ ENVIR ST/G L E 444 | Practical Applications of GPS Surveying | 2 |
| LAND ARC 311 | Introduction to Design Frameworks and Spatial Technologies | 2 |

| LAND ARC 511 | Geodesign Methods and Applications | 3 |
|------------------------------------|---|---|
| SOIL SCI 585 | Using R for Soil and Environmental Sciences | 3 |
| SOIL SCI/ENVIR ST/ LAND ARC 695 | Applications of Geographic Information Systems in Natural Resources | 3 |

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 | | |
|---------------------------------------|--|---------|
| Code | Title | Credits |
| AGRONOMY 300 | Cropping Systems | 3 |
| AGRONOMY/ BOTANY/ SOIL SCI 370 | Grassland Ecology | 3 |
| AGRONOMY/ DY SCI 471 | Food Production Systems and Sustainability | 3 |
| BOTANY/ F&W ECOL 455 | The Vegetation of Wisconsin | 4 |
| BOTANY/ F&W ECOL/ ZOOLOGY 460 | General Ecology | 4 |
| ENTOM/BOTANY/ ZOOLOGY 473 | Plant-Insect Interactions | 3 |
| ENTOM 450 | Basic and Applied Insect Ecology | 3 |
| ENTOM 451 | Basic and Applied Insect Ecology Laboratory | 1 |
| ENVIR ST 400 | Special Topics in the Environment: Biological Aspects of Envir St | 1-4 |
| ENVIR ST/ ZOOLOGY 510 | Ecology of Fishes | 3 |
| ENVIR ST/ ZOOLOGY 511 | Ecology of Fishes Lab | 2 |
| F&W ECOL/ ENVIR ST/ ZOOLOGY 360 | Extinction of Species | 3 |
| F&W ECOL 410 | Principles of Silviculture | 3 |
| F&W ECOL/AN SCI/ ZOOLOGY 520 | Ornithology | 3 |
| F&W ECOL/AN SCI/ ZOOLOGY 521 | Birds of Southern Wisconsin | 3 |
| F&W ECOL 550 | Forest Ecology | 3 |
| F&W ECOL 551 | Forest Ecology Lab | 1 |
| F&W ECOL/ LAND ARC/ ZOOLOGY 565 | Principles of Landscape Ecology | 2 |
| F&W ECOL/ ZOOLOGY 660 | Climate Change Ecology | 3 |
| HORT 334 | Greenhouse Cultivation | 2 |
| HORT 335 | Greenhouse Cultivation Lab | 1 |
| LAND ARC/ ENVIR ST 361 | Wetlands Ecology | 3 |

| LAND ARC/ ENVIR ST 581 | Prescribed Fire: Ecology and Implementation | 3 |
|---------------------------|--|-----|
| SOIL SCI/ PL PATH 323 | Soil Biology | 3 |
| ZOOLOGY 304 | Marine Biology | 2 |
| ZOOLOGY/ ENVIR ST 315 | Limnology-Conservation of Aquatic Resources | 2 |
| ZOOLOGY 316 | Laboratory for Limnology- Conservation of Aquatic Resources | 2-3 |

Physical Environment

| Physical Environment | | | |
|--|--|---------|--|
| Code | Title | Credits | |
| ATM OCN 310 | Dynamics of the Atmosphere and Ocean I | 3 | |
| ATM OCN/ ENVIR ST/ GEOG 322 | Polar Regions and Their Importance in the Global Environment | 3 | |
| ATM OCN/ GEOG 323 | Science of Climate Change | 3 | |
| ATM OCN/ ENVIR ST/GEOG/ GEOSCI 335 | Climatic Environments of the Past | 3 | |
| ATM OCN/ ENVIR ST 355 | Introduction to Air Quality | 3 | |
| ATM OCN/ ENVIR ST 520 | Bioclimatology | 3 | |
| ATM OCN/ ENVIR ST 535 | Atmospheric Dispersion and Air Pollution | 3 | |
| BSE 365 | Measurements and Instrumentation for Biological Systems | 3 | |
| BSE/ENVIRST 367 | Renewable Energy Systems | 3 | |
| BSE 460 | Biorefining: Energy and Products from Renewable Resources | 3 | |
| CIV ENGR 320 | Environmental Engineering | 3 | |
| CIV ENGR 423 | Air Pollution Effects, Measurement and Control | 3 | |
| CIV ENGR 424 | Environmental Engineering Laboratory | 2 | |
| ENVIR ST/ POP HLTH 502 | Air Pollution and Human Health | 3 | |
| GEOG/GEOSCI 320 | Geomorphology | 3 | |
| GEOG 329 | Landforms and Landscapes of North America | 3 | |
| GEOG/ATM OCN/ ENVIR ST 332 | Global Warming: Science and Impacts | 3 | |
| GEOG/BOTANY 338 | Environmental Biogeography | 3 | |
| GEOG/GEOSCI 420 | Glacial and Pleistocene Geology | 3 | |
| GEOSCI 304 | Geobiology | 3 | |
| GEOSCI 551 | Paleoceanography | 3 | |
| GEOSCI/G L E 627 | Hydrogeology | 3-4 | |
| GEOSCI/G L E 629 | Contaminant Hydrogeology | 3 | |
| POP HLTH/ ENVIR ST 471 | Introduction to Environmental Health | 3 | |
| SOIL SCI 301 | General Soil Science | 3 | |
| SOIL SCI 302 | Meet Your Soil: Soil Analysis and Interpretation Laboratory | 1 | |
| | | | |

| Soils and Environmental Chemistry | 3 |
|--|---|
| Physical Principles of Soil and Water Management | 3 |
| Soils and Environmental Quality | 3 |
| Environmental Monitoring and Soil Characterization for Earth's Critical Zone | 4 |
| Environmental Soil Contamination | 3 |
| Environmental Biogeochemistry | 3 |
| Environmental Biophysics | 3 |
| Toxicants in the Environment: Sources, Distribution, Fate, & Effects | 3 |
| | Physical Principles of Soil and Water Management Soils and Environmental Quality Environmental Monitoring and Soil Characterization for Earth's Critical Zone Environmental Soil Contamination Environmental Biogeochemistry Environmental Biophysics Toxicants in the Environment: Sources, Distribution, Fate, & |

Geospatial Sciences

| Code | Title | Credits |
|--|---|---------|
| ENVIR ST/ CIV ENGR/ LAND ARC 556 | Remote Sensing Digital Image Processing | 3 |
| GEOG 360 | Quantitative Methods in Geographical Analysis | 4 |
| GEOG 370 | Introduction to Cartography | 4 |
| GEOG/ENVIR ST/ F&W ECOL/ G L E/GEOSCI/ LAND ARC 372 | Intermediate Environmental Remote Sensing | 3 |
| GEOG/CIV ENGR/ ENVIR ST 377 | An Introduction to Geographic Information Systems | 4 |
| GEOG 378 | Introduction to Geocomputing | 4 |
| GEOG 560 | Advanced Quantitative Methods | 3 |
| GEOG 578 | GIS Applications | 4 |
| GEOG 579 | GIS and Spatial Analysis | 4 |
| GEOSCI/CIV ENGR/ ENVIR ST/G L E 444 | Practical Applications of GPS Surveying | 2 |
| LAND ARC 311 | Introduction to Design Frameworks and Spatial Technologies | 2 |
| LAND ARC 511 | Geodesign Methods and Applications | 3 |
| SOIL SCI 585 | Using R for Soil and Environmental Sciences | 3 |
| SOIL SCI/ENVIR ST/ LAND ARC 695 | Applications of Geographic Information Systems in Natural Resources | 3 |

Environmental Policy & Social Perspectives

| Code | Title | Credits |
|-----------------------------|--|---------|
| A A E/ENVIR ST 24 | 4 The Environment and the Global Economy | 4 |
| A A E 246 | Climate Change Economics and Policy | 3 |
| A A E/ECON/ ENVIR ST 343 | Environmental Economics | 3-4 |

| | AMER IND/ ENVIR ST 306 | Indigenous Peoples and the Environment | 3 |
|--|---|---|-----|
| | AMER IND/ ENVIR ST/ GEOG 345 | Managing Nature in Native North America | 3 |
| | C&E SOC/ F&W ECOL/ SOC 248 | Environment, Natural Resources, and Society | 3 |
| | C&E SOC/CURRIC/ ENVIR ST 405 | Education for Sustainable Communities | 3 |
| | C&E SOC/ENVIR ST/ GEOG 434 | People, Wildlife and Landscapes | 3 |
| | C&E SOC/ENVIR ST/ SOC 540 | Sociology of International Development, Environment, and Sustainability | 3 |
| | C&E SOC/SOC 541 | Environmental Stewardship and Social Justice | 3 |
| | ENVIR ST 349 | Climate Change Governance | 3 |
| | ENVIR ST/ GEOG 439 | US Environmental Policy and Regulation | 3-4 |
| | ENVIR ST/ PHILOS 441 | Environmental Ethics | 3-4 |
| | GEOG/ URB R PL 305 | Introduction to the City | 3-4 |
| | GEOG/ ENVIR ST 339 | Environmental Conservation | 4 |
| | GEOG/ENVIR ST/ HISTORY 460 | American Environmental History | 4 |
| | GEOG/ ENVIR ST 537 | Culture and Environment | 4 |
| | GEOSCI/ ENVIR ST 411 | Energy Resources | 3 |
| | HISTORY/ENVIR ST/ GEOG 469 | The Making of the American Landscape | 4 |
| | POLI SCI 510 | Politics of Government Regulation | 3-4 |
| | URB R PL/ ECON/ENVIR ST/ POLI SCI 449 | Government and Natural Resources | 3-4 |
| | 1 | | |

Students may consult their environmental sciences advisor regarding alternate ways to complete the major electives requirement.

CAPSTONE 2

1

| Code | Title | Credits |
|--|--|---------|
| AGRONOMY 500 | Senior Capstone Experience | 2 |
| BOTANY/ENVIR ST/ F&W ECOL/ ZOOLOGY 651 | Conservation Biology | 3 |
| CIV ENGR 515 | Hydroclimatology for Water Resources Management | 3 |
| ENVIR ST/ SOIL SCI 575 | Assessment of Environmental Impact | 3 |
| F&W ECOL/A A E/ ENVIR ST 652 | Decision Methods for Natural Resource Managers | 3-4 |
| LAND ARC 668 | Restoration Ecology | 3 |

| PL PATH 315 | Plant Microbiomes | 4 |
|--------------|-------------------|---|
| SOIL SCI 499 | Soil Management | 3 |

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 $^{\rm 3}$
- 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.