ENVIRONMENTAL SCIENCES, BA (L&S)

The Environmental Sciences major satisfies the growing demand among entry-level students for a rigorous, science-based program that promotes critical thinking and emphasizes environmental problem solving in service to society. The program is designed to prepare graduates who will be highly competitive for entry-level positions in nonprofit and private sectors, and for master's programs and doctoral research programs in environmental fields. Possible career paths include environmental monitoring, consulting, education, research, and planning, as well as natural resource management, ecology restoration, remediation, water and air quality assessment, sustainability practices, and more. Undergraduates in Environmental Sciences prepare for a variety of career and graduate school opportunities that require a strong background in the natural sciences. Foundational course work in the major includes calculus, biology, chemistry, and physics. Core and elective course work is fulfilled through diverse offerings from both the College of Agricultural and Life Sciences and the College of Letters & Science.

The Environmental Sciences major can be earned in either the College of Agricultural and Life Sciences (CALS) or the College of Letters & Science (L&S) under the bachelor of science (BS) or bachelor of arts (BA) degree program. An undergraduate BS degree is offered through both colleges. A BA option is offered through L&S only. Students are encouraged to review the degree requirements for both L&S and CALS and choose the college from which they would prefer to earn their degree; students may choose only one degree "home."

- In CALS, the major is housed in the Department of Soil and Environmental Sciences.
- In L&S, the major is housed in the Department of Atmospheric and Oceanic Sciences.

The major can be taken as a stand-alone or as a double major with a variety of other majors on campus, including Biology, Community & Environmental Sociology, Life Sciences Communication, foreign language/culture, and a number of other disciplines.

HOW TO GET IN

HOW TO GET IN

Requirements	Details
How to get in	No application required. All students who meet the requirements listed below are eligible to declare. For information on how to declare, visit Advising & Careers.
Courses required to get in	None
GPA requirements to get in	None
Credits required to get in	None
Other	None

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 (https://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 (BA)

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.
Language	• Complete the fourth unit of a language other than English; OR • Complete the third unit of a language and the second unit of an additional language other than English.

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

Students majoring in Environmental Sciences must complete a minimum of 58 credits (detailed below). Courses may not double count within the major (unless specifically noted otherwise), but courses counted toward the major requirements may also be used to satisfy a university requirement and/or a college requirement.

MATHEMATICS AND STATISTICS

Code	Title	Credits
Complete one of the following:		4-10
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	Survey of Calculus 1	
Complete one of the following:		3-4
STAT 240	Data Science Modeling I	
STAT 324	Introduction to Statistics for Science and Engineering	
STAT 371	Introductory Applied Statistics for the Life Sciences	
Total Credits		**7-14**

CHEMISTRY

Code	Title	Credits
General Chemistry (complete one of the following):		5-10
CHEM 103 & CHEM 104	General Chemistry I and General Chemistry II	
CHEM 109	Advanced General Chemistry	
CHEM 115 & CHEM 116	Chemical Principles I and Chemical Principles II	
Organic Chemistry (complete one of the following):		3
CHEM 341	Elementary Organic Chemistry	
CHEM 343	Organic Chemistry I	
Total Credits		**8-13**

BIOLOGY

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 following:		4-5
PHYSICS 207	General Physics (recommended)	
PHYSICS 201	General Physics	
PHYSICS 103	General Physics	
Total Credits		**4-5**

MAJOR FOUNDATION

Code	Title	Credits
Complete one of the following:		3
GEOSCI/ ENVIR ST 106	Environmental Geology	
SOIL SCI/ ENVIR ST/ GEOG 230	Soil: Ecosystem and Resource	
SOIL SCI 250	Introduction to Environmental Science	
Total Credits		**3**

MAJOR CORE

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

Ecology

Code	Title	Credits
AGROECOL 370	Grassland Ecology	3
BOTANY 455	The Vegetation of Wisconsin	4
BOTANY/ F&W ECOL/ ZOOLOGY 460	General Ecology (Recommended)	4
DY SCI 471	Food Production Systems and Sustainability	3
ENTOM 450	Basic and Applied Insect Ecology	3
ENTOM/BOTANY/ ZOOLOGY 473	Plant-Insect Interactions	3
ENTOM 490	Biodiversity and Global Change	3
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	Silviculture: Applied Forest Ecology	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
LAND ARC/ ENVIR ST 361	Wetlands Ecology	3
LAND ARC/ ENVIR ST 581	Prescribed Fire: Ecology and Implementation	3
PLANTSCI 300	Cropping Systems	3
PLANTSCI 334	Greenhouse Cultivation	2
PLANTSCI 335	Greenhouse Cultivation Lab	1
SOIL SCI 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/ ENVIR ST/GEOG/ GEOSCI 335	Climatic Environments of the Past	3
ATM OCN/ ENVIR ST 355	Introduction to Air Quality	3
ATM OCN 425	Global Climate Processes	3
ATM OCN/ ENVIR ST 520	Bioclimatology	3
ATM OCN/ PLANTSCI 532	Environmental Biophysics	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/G L E 421	Environmental Sustainability Engineering	3
CIV ENGR 423	Air Pollution Effects, Measurement and Control	3
ENVIR ST/ POP HLTH 502	Air Pollution and Human Health	3
GEOG/GEOSCI 320	Geomorphology	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/ ENVIR ST 324	Soils and Environmental Quality	3
SOIL SCI 327	Environmental Monitoring and Soil Characterization	3
SOIL SCI 430	Soil Pollution and Human Health	3
SOIL SCI/ F&W ECOL 451	Environmental Biogeochemistry	3
SOIL SCI 621	Soil and Environmental Chemistry	3
SOIL SCI/ CIV ENGR/ M&ENVTOX 631	Toxicants in the Environment: Sources, Distribution, Fate, & Effects	3

Geospatial Sciences

Code	Title	Credits
ATM OCN 575	Climatological Analysis	3-4
COMP SCI 220	Data Science Programming I	4
ENVIR ST/ CIV ENGR/ LAND ARC 556	Remote Sensing Digital Image Processing	3
F&W ECOL 458	Environmental Data Science	3

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	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	Caring for 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
LSC 340	Misinformation, Fake News, and Correcting False Beliefs about Science	3
URB R PL/ ECON/ENVIR ST/ POLI SCI 449	Government and Natural Resources	3-4

MAJOR ELECTIVES

Students may consult with their environmental sciences advisor regarding pathways to complete the major electives requirement. Students must complete 12 credits of electives either by:

1. distributing 12 credits across at least three categories;
2. focusing 12 credits in a single category.

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, Physical Environment, Geospatial Sciences).

Ecology

Code	Title	Credits
AGROECOL 370	Grassland Ecology	3
BOTANY 455	The Vegetation of Wisconsin	4
BOTANY/ F&W ECOL/ ZOOLOGY 460	General Ecology	4
DY SCI 471	Food Production Systems and Sustainability	3
ENTOM/BOTANY/ ZOOLOGY 473	Plant-Insect Interactions	3
ENTOM 450	Basic and Applied Insect Ecology	3
ENTOM 490	Biodiversity and Global Change	3
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	Silviculture: Applied Forest Ecology	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
LAND ARC/ ENVIR ST 361	Wetlands Ecology	3

LAND ARC/ ENVIR ST 581	Prescribed Fire: Ecology and Implementation	3
PLANTSCI 300	Cropping Systems	3
PLANTSCI 334	Greenhouse Cultivation	2
PLANTSCI 335	Greenhouse Cultivation Lab	1
SOIL SCI 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
ZOOLOGY 320	Field Marine Biology	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/ ENVIR ST/GEOG/ GEOSCI 335	Climatic Environments of the Past	3
ATM OCN/ ENVIR ST 355	Introduction to Air Quality	3
ATM OCN 425	Global Climate Processes	3
ATM OCN/ ENVIR ST 520	Bioclimatology	3
ATM OCN/ PLANTSCI 532	Environmental Biophysics	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 311	Hydroscience	3
CIV ENGR 320	Environmental Engineering	3
CIV ENGR 324	Environmental Engineering Thermodynamics	3
CIV ENGR/G L E 421	Environmental Sustainability Engineering	3
CIV ENGR 423	Air Pollution Effects, Measurement and Control	3
ENVIR ST/ POP HLTH 502	Air Pollution and Human Health	3
GEOG/GEOSCI 320	Geomorphology	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/ ENVIR ST 324	Soils and Environmental Quality	3
SOIL SCI 327	Environmental Monitoring and Soil Characterization	3
SOIL SCI 430	Soil Pollution and Human Health	3
SOIL SCI/ F&W ECOL 451	Environmental Biogeochemistry	3
SOIL SCI 621	Soil and Environmental Chemistry	3
SOIL SCI/ CIV ENGR/ M&ENVTOX 631	Toxicants in the Environment: Sources, Distribution, Fate, & Effects	3

Geospatial Sciences

Code	Title	Credits
ATM OCN 575	Climatological Analysis	3-4
ENVIR ST/ CIV ENGR/ LAND ARC 556	Remote Sensing Digital Image Processing	3
F&W ECOL 458	Environmental Data Science	3
GEOG 370	Introduction to Cartography	4
GEOG/CIV ENGR/ ENVIR ST 377	An Introduction to Geographic Information Systems	4
GEOG 378	Introduction to Geocomputing	4
GEOG 523	Advanced Paleoecology: Species Responses to Past Environmental Change	3
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, Physical Environment, Geospatial Sciences, or Environmental Policy & Social Perspectives).

Ecology

Code	Title	Credits
AGROECOL 370	Grassland Ecology	3
BOTANY 455	The Vegetation of Wisconsin	4
BOTANY/ F&W ECOL/ ZOOLOGY 460	General Ecology	4

DY SCI 471	Food Production Systems and Sustainability	3
ENTOM/BOTANY/ ZOOLOGY 473	Plant-Insect Interactions	3
ENTOM 450	Basic and Applied Insect Ecology	3
ENTOM 490	Biodiversity and Global Change	3
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	Silviculture: Applied Forest Ecology	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
LAND ARC/ ENVIR ST 361	Wetlands Ecology	3
LAND ARC/ ENVIR ST 581	Prescribed Fire: Ecology and Implementation	3
PLANTSCI 300	Cropping Systems	3
PLANTSCI 334	Greenhouse Cultivation	2
PLANTSCI 335	Greenhouse Cultivation Lab	1
SOIL SCI 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
ZOOLOGY 320	Field Marine Biology	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/ ENVIR ST/GEOG/ GEOSCI 335	Climatic Environments of the Past	3
ATM OCN/ ENVIR ST 355	Introduction to Air Quality	3
ATM OCN 425	Global Climate Processes	3
ATM OCN/ ENVIR ST 520	Bioclimatology	3
ATM OCN/ PLANTSCI 532	Environmental Biophysics	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 311	Hydroscience	3
CIV ENGR 320	Environmental Engineering	3
CIV ENGR 324	Environmental Engineering Thermodynamics	3
CIV ENGR/G L E 421	Environmental Sustainability Engineering	3
CIV ENGR 423	Air Pollution Effects, Measurement and Control	3
ENVIR ST/ POP HLTH 502	Air Pollution and Human Health	3
GEOG/GEOSCI 320	Geomorphology	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/ ENVIR ST 324	Soils and Environmental Quality	3
SOIL SCI 327	Environmental Monitoring and Soil Characterization	3
SOIL SCI 430	Soil Pollution and Human Health	3
SOIL SCI/ F&W ECOL 451	Environmental Biogeochemistry	3
SOIL SCI 621	Soil and Environmental Chemistry	3
SOIL SCI/ CIV ENGR/ M&ENVTOX 631	Toxicants in the Environment: Sources, Distribution, Fate, & Effects	3

Geospatial Sciences

Code	Title	Credits
ATM OCN 575	Climatological Analysis	3-4
ENVIR ST/ CIV ENGR/ LAND ARC 556	Remote Sensing Digital Image Processing	3
F&W ECOL 458	Environmental Data Science	3
GEOG 370	Introduction to Cartography	4
GEOG/CIV ENGR/ ENVIR ST 377	An Introduction to Geographic Information Systems	4
GEOG 378	Introduction to Geocomputing	4

GEOG 523	Advanced Paleoecology: Species Responses to Past Environmental Change	3
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 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	Caring for 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
LSC 340	Misinformation, Fake News, and Correcting False Beliefs about Science	3
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]

Code	Title	Credits
BOTANY/ENVIR ST/ F&W ECOL/ ZOOLOGY 516	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 430	Decision Methods for Natural Resource Managers	3
LAND ARC 668	Restoration Ecology	3
PL PATH 315	Plant Microbiomes	4
PLANTSCI 376 & PLANTSCI 378	Tropical Horticultural Systems and Tropical Horticultural Systems International Field Study	4
PLANTSCI 510	Senior Capstone Experience	2
SOIL SCI 499	Soil Management	3

[2] Students may speak with their Environmental Sciences 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.

LEARNING OUTCOMES

LEARNING OUTCOMES

1. Demonstrate understanding of Environmental Science fundamentals in the context of biology, chemistry, mathematics, statistics, and physics.
2. Demonstrate a quantitative and qualitative understanding of the ecological relationships (material and energetic) between organisms, both as individuals and in groups, and their biotic and abiotic environment. This may include processes influencing the distribution and abundance of organisms.
3. Demonstrate a quantitative and qualitative understanding of the physical, largely abiotic, conditions (e.g. climate, water, soil, air, noise, greenspace, etc.) of the environment. The physical environment can include natural or managed settings such as urban environments.
4. Demonstrate a quantitative and qualitative understanding of geospatial processes and information as it relates to the environment including how to collect, interpret, and analyze geospatial information regarding the features of the Earth's surface. These technologies may include geographic information systems (GIS), the global positioning system (GPS), digital maps, and satellite based remote sensing.
5. Demonstrate a basic understanding of relationships that focus on the organization and implementation of laws, regulations, and other policy mechanisms concerning environmental issues and sustainability and their effect on society. This includes how human behaviors influences, and are also influenced by, the natural environment.
6. Apply skills in critical thinking, problem identification and resolution of a complex environmental issues that require interdisciplinary solutions and team-based work.
7. Articulate the role of environmental science in one or more focused areas of a specific environmental discipline (e.g. geology, soils, atmosphere, water, plants, animals).
8. Demonstrate expertise in organizing and presenting (written and oral) scientific information to both lay and professional audiences.

FOUR-YEAR PLAN

FOUR-YEAR PLAN

This Four-Year Plan is only one way a student may complete an L&S degree with this major. Many factors can affect student degree planning, including placement scores, credit for transferred courses, credits earned by examination, and individual scholarly interests. In addition, many students have commitments (e.g., athletics, honors, research, student organizations, study abroad, work and volunteer experiences) that necessitate they adjust their plans accordingly. Informed students engage in their own unique Wisconsin Experience by consulting their academic advisors, Guide, DARS, and Course Search & Enroll for assistance making and adjusting their plan.

First Year

Fall	Credits	Spring	Credits
CHEM 103 or 109	4	CHEM 104	5
MATH 114 or 171	5	MATH 221 or 217	5
Foreign Language	4	Environmental Sciences Foundation Course	3
Comm A	3	Foreign Language	4
	16		**17**

Second Year

Fall	Credits	Spring	Credits
BIOLOGY/BOTANY/ ZOOLOGY 151 or BOTANY 130	5	BIOLOGY/ ZOOLOGY 101 & BIOLOGY/ ZOOLOGY 102 (or BIOLOGY 152)	5
CHEM 341, 343, or 561	3	STAT 371	3
Social Science Course	3	Humanities/Ethnic Studies Course	4
Literature Course	3	Elective	3
INTER-LS 210	1		
	15		**15**

Third Year

Fall	Credits	Spring	Credits
PHYSICS 207, 201, or 103	5	Major Core Course	3
Major Core Course	3	Major Core Course	4
Major Core Course	3	Literature Course	3
Social Science Course	3	Elective	3
		Elective	2
	14		**15**

Fourth Year

Fall	Credits	Spring	Credits
Environmental Sciences Major Elective Course	3	Environmental Sciences Major Elective Course	3
Environmental Sciences Major Elective Course	3	Social Science Course	3
Capstone	3	Environmental Sciences Major Elective Course	4
Elective	3	Humanities Course	3

Social Science Course	3	
	15	**13**

Total Credits 120

ADVISING AND CAREERS

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DECLARE OR CANCEL THIS MAJOR

Please follow the process described on the Environmental Sciences website (https://envirosci.wisc.edu/advising/).

Any Letters & Science student interested in the Environmental Sciences major should the Undergraduate Academic Advising Manager to set up an appointment to explore or declare the major.

CAREERS

A major in Environmental Sciences serves as excellent preparation for careers of great diversity, including environmental modeling, agricultural scientist, botanist, ecologist, park ranger, agricultural technician, air and water quality manager, environmental analyst, air pollution analyst, environmental consultant, environmental educator, GIS analyst, project manager, hazardous waste manager, hydrologist, environmental lawyer, soil conservation technician, and natural resource specialist. For more info about careers, please visit our website (http://envirosci.wisc.edu/careers-internships/).

SUCCESSWORKS

SuccessWorks (https://successworks.wisc.edu/) at the College of Letters & Science helps you turn the academic skills learned in your classes into a fulfilling life, guiding you every step of the way to securing jobs, internships, or admission to graduate school.

Through one-on-one career advising, events, and resources, you can explore career options, build valuable internship and research experience, and connect with supportive alumni and employers who open doors of opportunity.

- What you can do with your major (https://successworks.wisc.edu/what-you-can-do-with-your-major/) (Major Skills & Outcomes Sheets)
- Make a career advising appointment (https://successworks.wisc.edu/make-an-appointment/)
- Learn about internships and internship funding (https://successworks.wisc.edu/finding-a-job-or-internship/)
- Try "Jobs, Internships, & How to Get Them," (https://successworks.wisc.edu/canvas/) an interactive guide in Canvas for enrolled UW–Madison students