

Environmental Technology and Management (BS)

To see more about what you will learn in this program, visit the Learning Outcomes website (<https://apps.oirp.ncsu.edu/pgas/>)!

Environmental Technology and Management offers a comprehensive teaching and research program, preparing students for careers within the arenas of environmental regulation, environmental site assessment, and environmental health and safety. This curriculum prepares graduates to collect data, analyze and interpret those data, and determine appropriate solutions for sound environmental management. The curriculum focuses on the sciences behind the biological and chemical mechanisms of environmental processes. Students learn how to deal with a range of topics from every day environmental management activities to natural and man-made disasters such as chemical spills, fires, hurricanes, oil spills, and more. Many Environmental Technology courses emphasize hands-on training with state-of-the-art monitoring equipment. An internship to obtain actual working-world experience is required.

Contact

For information on entrance requirements, contact the program director:

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Plan Requirements

Code	Title	Hours	Counts towards
Orientation Courses			
ENV 100	Student Success in Environmental First Year	1	
ENV 101	Exploring the Environment	2	
Mathematical Sciences			
MA 131	Calculus for Life and Management Sciences A	3	
or MA 141	Calculus I		
ST 311	Introduction to Statistics	3	
Natural Sciences			
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4	

BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4	
Select one of the following:		4	
CH 220	Introductory Organic Chemistry		
CH 221 & CH 222	Organic Chemistry I and Organic Chemistry I Lab		
Select one of the following:		4	
CH 223 & CH 224	Organic Chemistry II and Organic Chemistry II Lab		
TOX 415	Environmental Toxicology and Chemistry		
SSC 200 & SSC 201	Soil Science and Soil Science Laboratory	4	
PY 131	Conceptual Physics	4	
or PY 211	College Physics I		
Ecology Elective (p. 2)		4	
Required Courses			
ET 105	Introduction to Environmental Regulations	3	
Environmental Technology Lab Electives (p. 2)		6	
ET 201	Environmental Technology Laboratory I		
ET 202	Environmental Technology Laboratory II		
ET 203	Pollution Prevention		
ET 301	Environmental Technology Laboratory III		
ET 302	Environmental Technology Laboratory IV		
ET 303	Laboratory Safety Systems and Management		
ET 401	Environmental Technology Laboratory V		
FOR 353	GIS and Remote Sensing for Environmental Analysis and Assessment	3	

or GIS 280	Introduction to GIS	
ET 310	Environmental Monitoring and Analysis	3
ET 320	Fundamentals of Air Pollution	3
ET 330	Environmental Technology Practicum	3
ET 455	Adaptive Management and Governance	3
FOR 420	Watershed and Wetlands Hydrology	4
or NR 484	Environmental Impact Assessment	
Capstone Elective (p. 3)		3
NR 301	Practicum for Professional Development I	1
MA 231	Calculus for Life and Management Sciences B	3
or ST 312	Introduction to Statistics II	
CH 201 & CH 202	Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory	4
or NR 300	Natural Resource Measurements	
Policy Elective (p. 3)		3
Economics Elective (p. 3)		3
IP Elective (p. 3)		3
Advised Electives (p. 3)		15

Students are encouraged to select courses that will fulfill an academic minor. Courses should enhance students' career objectives and must be approved by faculty advisor.

Note: Courses cannot be counted toward both core course requirements and advised electives.

General Education Program (GEP) Courses

ENG 101	Academic Writing and Research ¹	4
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		6
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		2

GEP US Diversity, Equity, and Inclusion (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-usdei/)		3
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		2
GEP Global Knowledge (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-global-knowledge/) (Verify Requirement)		
Foreign Language Proficiency (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/foreign-language-proficiency/) (Verify Requirement)		
Free Electives		
Free Electives (12 Hr S/U Lmt) ²		3
Total Hours		120

¹ A grade of C- or better required.

² Students should consult their academic advisors to determine which courses fill this requirement.

Ecology Electives

Code	Title	Hours	Counts towards
AEC 360	Ecology	4	
FOR 260	Forest Ecology	4	
PB 360	Ecology	4	

Environmental Technology Laboratory Electives

Code	Title	Hours	Counts towards
ET 201	Environmental Technology Laboratory I	1	
ET 202	Environmental Technology Laboratory II	1	
ET 203	Pollution Prevention	1	
ET 301	Environmental Technology Laboratory III	1	
ET 302	Environmental Technology Laboratory IV	1	
ET 303	Laboratory Safety Systems and Management	1	
ET 401	Environmental Technology Laboratory V	1	

Capstone Electives

Code	Title	Hours	Counts towards
ES 400	Analysis of Environmental Issues	3	
ET 460	Practice of Environmental Technology	3	
NR 406	Conservation of Biological Diversity	3	

Policy Electives

Code	Title	Hours	Counts towards
ARE 309	Environmental Law & Economic Policy	3	
FOR 472	Forest Soils	4	
NR 460	Renewable Natural Resource Management and Policy	3	
NR 560	Renewable Natural Resource Management and Policy	3	
PS 320	U.S. Environmental Law and Politics	3	
PS 336	Global Environmental Politics	3	

Economics Electives

Code	Title	Hours	Counts towards
ARE 201	Introduction to Agricultural & Resource Economics	3	
ARE 201A	Introduction to Agricultural & Resource Economics	3	
EC 201	Principles of Microeconomics	3	
EC 205	Fundamentals of Economics	3	

IP Electives

Code	Title	Hours	Counts towards
ES 100	Introduction to Environmental Sciences	3	
FW 221	Conservation of Natural Resources	3	

MEA 100	Earth System Science: Exploring the Connections	4	
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Advised Electives

Code	Title	Hours	Counts towards
AEC 419	Freshwater Ecology	4	
AEC 441	Biology of Fishes	3	
AEC 442	Biology of Fishes Laboratory	1	
AEC 519	Freshwater Ecology	4	
BUS 350	Economics and Business Statistics	3	
COM 436	Environmental Communication	3	
ES 113	Earth from Space	3	
ES 150	Water and the Environment	3	
ES 200	Climate Change and Sustainability	3	
ES 300	Energy and Environment	3	
ES 400	Analysis of Environmental Issues	3	
ET 120	Introduction to Renewable Energy Technologies and Assessments	3	
ET 220	Solar Photovoltaics Assessment	3	
ET 255	Hydro, Wind, and Bioenergy Assessment	3	
ET 262	Renewable Energy Adoption: Barriers and Incentives	3	
FOR 150	Critical Thinking and Data Analysis	2	
FOR 248	Forest History, Technology and Society	3	
FOR 260	Forest Ecology	4	
FOR 304	Theory of Silviculture	4	
FOR 330	North Carolina Forests	3	
FOR 339	Dendrology	4	

FOR 353	GIS and Remote Sensing for Environmental Analysis and Assessment	3	NR 350	International Sustainable Resource Use	4
FOR 414	World Forestry	3	NR 400	Natural Resource Management	4
FOR 420	Watershed and Wetlands Hydrology	4	NR 420	Watershed and Wetlands Hydrology	4
FOR 520	Watershed and Wetlands Hydrology	4	NR 421	Wetland Science and Management	3
GIS 280	Introduction to GIS	3	NR 500	Natural Resource Management	4
MB 411	Medical Microbiology	3	NR 520	Watershed and Wetlands Hydrology	4
MB 412	Medical Microbiology Laboratory	1	NR 521	Wetland Science and Management	3
MB 451	Microbial Diversity	3	PB 200	Plant Life	4
MB 452	Microbial Diversity Lab	2	PB 213	Plants and Civilization	3
MEA 101	Geology I: Physical	3	PB 220	Local Flora	3
MEA 110	Geology I Laboratory	1	PB 400	Plant Diversity and Evolution	4
MEA 130	Introduction to Weather and Climate	3	PB 403	Systematic Botany	4
MEA 135	Introduction to Weather and Climate Laboratory	1	PB 413	Plant Anatomy	2
MEA 200	Introduction to Oceanography	3	PB 421	Plant Physiology	3
MEA 202	Geology II: Historical	3	PB 480	Introduction to Plant Biotechnology	3
MEA 210	Oceanography Lab	1	PB 503	Systematic Botany	4
MEA 211	Geology II Laboratory	1	PB 513	Plant Anatomy	2
MEA 220	Marine Biology	3	PB 580	Introduction to Plant Biotechnology	3
MEA 250	Introduction to Coastal Environments	3	PP 315	Principles of Plant Pathology	4
MEA 251	Introduction to Coastal Environments Laboratory	1	SMT 200	Introduction to Sustainable Materials and Technology	3
MEA 300	Environmental Geology	4	SMT 201	Sustainable Materials for Green Housing	2
MEA 323	Geochemistry of Natural Waters	3	SMT 310	Introduction to Industrial Ecology	3
NR 219	Natural Resource Markets	3	SSC 341	Soil Fertility and Nutrient Management	3
			SSC 461	Soil Physical Properties and Plant Growth	3
			SSC 470	Wetland Soils	3
			SSC 570	Wetland Soils	3

ST 350	Economics and Business Statistics	3
ST 370	Probability and Statistics for Engineers	3
TOX 201	Poisons, People and the Environment	3
TOX 401	Principles of Toxicology	4
TOX 415	Environmental Toxicology and Chemistry	4
TOX 501	Principles of Toxicology	4

Semester Sequence

This is a sample.

Critical Path Courses – Identify using the code (CP) which courses are considered critical path courses which represent specific major requirements that are predictive of student success in a given program/plan. Place the (CP) next to the credit hours for the course.

First Year

Fall Semester		Hours
ENV 100 & ENV 101	Student Success in Environmental First Year and Exploring the Environment	3
ENG 101	Academic Writing and Research ¹	4
MA 131 or MA 141	Calculus for Life and Management Sciences A (CP) ² or Calculus I	3-4
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity (CP)	4
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1

Hours 15

Spring Semester

PY 131	Conceptual Physics	4
ET 105	Introduction to Environmental Regulations	3
Economics Requirement (p. 3)		3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
IP Elective (p.)		3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1

Hours 17

Second Year

Fall Semester

ST 311	Introduction to Statistics	3
CH 101 & 102 GENERAL CHEMISTRY LABORATORY	Chemistry - A Molecular Science	4
Environmental Technology Lab Electives (p. 2)		1

Ecology Elective (CP) (p. 2)	4
Policy Requirement (p. 3)	3

Hours 15

Spring Semester

Environmental Technology Lab Elective (p. 2)	1	
ST 312 or MA 231	Introduction to Statistics II or Calculus for Life and Management Sciences B	3
NR 301	Practicum for Professional Development I	1
SSC 200 & SSC 201 SOIL SCIENCE LABORATORY (CP)	Soil Science	4
CH 201 & CH 202 QUANTITATIVE or	Chemistry - A Quantitative Science	4
or NR 300 NATURAL		

Hours 13

Summer

Summer Session I

ET 330	Environmental Technology Practicum	3
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Hours 3

Third Year

Fall Semester

CH 220 & CH 222 ORGANIC CHEMISTRY I LAB	Introductory Organic Chemistry	4
or CH 221 ORGANIC CHEMISTRY I		

Environmental Technology Lab Electives (p. 2)	1
Spatial Technology Elective (p. 1)	3
Advised Elective (p. 3) ³	3
GEP US Diversity, Equity, and Inclusion (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-usdei/)	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)	3

Hours 17

Spring Semester

Environmental Technology Lab Elective (p. 2)	1	
Environmental Technology Lab Electives (p. 2)	1	
ET 310	Environmental Monitoring and Analysis (CP)	3
ET/MEA 320	Fundamentals of Air Pollution	3
Advised Elective (p. 3) ³		3
CH 223 & CH 224 ORGANIC CHEMISTRY II LAB	Organic Chemistry II	4
or TOX 415 ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY		

Hours 15

Fourth Year

Fall Semester

Environmental Technology Lab Elective (p. 2)	1	
ET 455	Adaptive Management and Governance	3
NR 484 or NR 420	Environmental Impact Assessment or Watershed and Wetlands Hydrology	4

Advised Elective (p. 3) ³	6
Hours	14
Spring Semester	
Capstone Elective (p. 3)	3
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)	2
Advised Elective (p. 3) ⁴	3
Free Elective ³	3
Hours	11
Total Hours	120

¹ A grade of C- or better required.

² Students with appropriate math skills are encouraged to take MA 141 Calculus I.

³ Students are encouraged to select courses that will fulfill an academic minor.

⁴ Students should consult their academic advisors to determine which courses fill this requirement.

Career Opportunities

Career opportunities include technical positions with: firms that offer environmental services; manufacturing companies that are required to maintain sophisticated environmental monitoring networks; consulting and audit firms that perform independent environmental audits; and state and federal regulatory agencies. A number of graduates have also pursued graduate degrees. Several professional certifications can be achieved through the major. Students may receive Hazardous Waste Operations and Emergency Response training and are eligible to sit for two professional certification exams: the exam for certification as an Associate Environmental Professional, and the exam Certified Hazardous Materials Manager.