

Environmental Technology and Management (BS)

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
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	Ecotoxicology	
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. 2) 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 Chemistry - A Quantitative Science 4

& CH 202 and Quantitative Chemistry Laboratory

or NR 300 Natural Resource Measurements

Policy Elective (p. 2) 3

Economics Elective (p. 2) 3

IP Elective (p. 2) 3

Advised Electives (p. 2) 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 Elective (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/>) 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)

GEP Foundations of American Democracy (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-fad/>) (verify requirement)

World Language Proficiency (<http://catalog.ncsu.edu/undergraduate/gep-category-requirements/world-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
AEC 360	Ecology	4
FOR 260	Forest Ecology	4
PB 360	Ecology	4

Environmental Technology Laboratory Electives

Code	Title	Hours
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
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
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
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
ES 100	Introduction to Environmental Sciences	3
FW 221	Conservation of Natural Resources	3
MEA 100	Earth System Science: Exploring the Connections	4

Advised Electives

Code	Title	Hours
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		4
FOR 353	GIS and Remote Sensing for Environmental Analysis and Assessment	3
FOR 414	World Forestry	3
FOR 420	Watershed and Wetlands Hydrology	4
FOR 520	Watershed and Wetlands Hydrology	4
GIS 280	Introduction to GIS	3
MB 411	Medical Microbiology	3
MB 412	Medical Microbiology Laboratory	1
MB 451	Microbial Diversity	3
MB 452	Microbial Diversity Lab	2
MEA 101	Geology I: Physical	3
MEA 110	Geology I Laboratory	1
MEA 130	Introduction to Weather and Climate	3
MEA 135	Introduction to Weather and Climate Laboratory	1
MEA 200	Introduction to Oceanography	3
MEA 202	Geology II: Historical	3
MEA 210	Oceanography Lab	1
MEA 211	Geology II Laboratory	1
MEA 220	Marine Biology	3
MEA 250	Introduction to Coastal Environments	3
MEA 251	Introduction to Coastal Environments Laboratory	1

MEA 300	Environmental Geology	4
MEA 323	Geochemistry of Natural Waters	3
NR 219	Natural Resource Markets	3
NR 350	International Sustainable Resource Use	4
NR 400	Natural Resource Management	4
NR 420	Watershed and Wetlands Hydrology	4
NR 421	Wetland Science and Management	3
NR 500	Natural Resource Management	4
NR 520	Watershed and Wetlands Hydrology	4
NR 521	Wetland Science and Management	3
PB 200	Plant Life	4
PB 213	Plants and Civilization	3
PB 220	Local Flora	3
PB 400	Plant Diversity and Evolution	4
PB 403	Systematic Botany	4
PB 413	Plant Anatomy	2
PB 421	Plant Physiology	3
PB 480	Introduction to Plant Biotechnology	3
PB 503	Systematic Botany	4
PB 513	Plant Anatomy	2
PB 580	Introduction to Plant Biotechnology	3
PP 315	Principles of Plant Pathology	4
SMT 200	Introduction to Sustainable Materials and Technology	3
SMT 201	Sustainable Materials for Green Housing	2
SMT 310	Introduction to Industrial Ecology	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	Ecotoxicology	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. 2)		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 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4
Environmental Technology Lab Electives (p. 2)		1
Ecology Elective (CP) (p. 2)		4
Policy Requirement (p. 2)		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 and Soil Science Laboratory (CP)	4
CH 201 & CH 202 or NR 300	Chemistry - A Quantitative Science or Natural Resource Measurements	4

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 or CH 221	Introductory Organic Chemistry or Organic Chemistry I	4
Environmental Technology Lab Electives (p. 2)		1
Spatial Technology Elective (p. 1)		3
Advised Elective (p. 2) ³		3
GEP Elective (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		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. 2) ³		3
CH 223 & CH 224 or TOX 415	Organic Chemistry II or Ecotoxicology	4
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. 2) ³		6
Hours		14
Spring Semester		
Capstone Elective (p. 2)		3
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)		2
Advised Elective (p. 2) 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.

Career Titles

- Environmental Compliance Inspector
- Environmental Science Professor
- Environmental Technician
- Industrial Air Pollution Analyst
- Solar Energy Systems Designer
- Transportation Engineer
- Wind Energy Engineer
- Wind Turbine Service Technicians

Learn More About Careers

NCcareers.org (<https://nccareers.org/>)

Explore North Carolina's central online resource for students, parents, educators, job seekers and career counselors looking for high quality job and career information.

Occupational Outlook Handbook (<https://www.bls.gov/ooh/>)

Browse the Occupational Outlook Handbook published by the Bureau of Labor Statistics to view state and area employment and wage statistics. You can also identify and compare similar occupations based on your interests.

Career One Stop Videos (<https://www.careeronestop.org/>)

View videos that provide career details and information on wages, employment trends, skills needed, and more for any occupation. Sponsored by the U.S. Department of Labor.

Focus 2 Career Assessment (<https://careers.dasa.ncsu.edu/explore-careers/career-assessments/>) (NC State student email address required) This career, major and education planning system is available to current NC State students to learn about how your values, interests, competencies, and personality fit into the NC State majors and your future career. An NC State email address is required to create an account. Make an appointment with your career counselor (<https://careers.dasa.ncsu.edu/about/hours-appointments/>) to discuss the results.

Focus 2 Apply Assessment (<https://www.focus2career.com/Portal/Register.cfm?SID=1929>) (Available to prospective students)

A career assessment tool designed to support prospective students in exploring and choosing the right major and career path based on your unique personality, interests, skills and values. Get started with Focus 2 Apply and see how it can guide your journey at NC State.

National Association of Environmental Professionals (<http://www.naep.org/>)