

Natural Resources (BS): Soil, Water and Land Use Concentration

The Bachelor of Science in *Natural Resources* degree with a concentration in *Soil, Water, and Land Use* encompasses the study of soil, water, air, minerals, flora, fauna and people. In this degree, students acquire a solid foundation in resource management with a focus on soil properties and surface and groundwater hydrology. Graduates will use their understanding of earth's systems to help policy makers, government agencies, and private land managers make environmentally responsible decisions related to soil, water, and land use.

Contact Person

Undergraduate Programs Office
Crop & Soil Sciences Department
2234 Williams Hall
Campus Box 7620
919-515-5820
cropsoil-undergraduate-office@ncsu.edu

Plan Requirements

Code	Title	Hours
Orientation		
ALS 103	First-year Success in Agriculture and Life Sciences	1
or ALS 303	Transfer Success in Agriculture and Life Sciences	
Communication/Advanced Writing		
COM 110	Public Speaking	3
or COM 112	Interpersonal Communication	
Select one of the following Advanced Writing courses:		3
AEE 311	Communication Methods and Media	4
ENG 331	Communication for Engineering and Technology	
ENG 332	Communication for Business and Management	
ENG 333	Communication for Science and Research	
Mathematics & Natural Sciences		
MA 131	Calculus for Life and Management Sciences A	3
MA 231	Calculus for Life and Management Sciences B	3
ST 311	Introduction to Statistics	3
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
AEC 360	Ecology	4
MEA 101 & MEA 110	Geology I: Physical and Geology I Laboratory	4
PY 131	Conceptual Physics	4
Required Courses within Major		
ARE 201	Introduction to Agricultural & Resource Economics	3
CSSC 290	Professional Development in Crop & Soil Sciences	1
NR 300	Natural Resource Measurements	4
SSC 200 & SSC 201	Soil Science and Soil Science Laboratory ¹	4

SSC 341	Soil Fertility and Nutrient Management	3
SSC 342	Soil and Plant Nutrient Analysis	1
SSC 452	Soil Classification	4
SSC 461	Soil Physical Properties and Plant Growth	3
CSSC 490	Senior Seminar in Crop Science and Soil Science	1

Concentration Electives

Foundation Elective (select one):		3
ES 150	Water and the Environment	3
FW 221	Conservation of Natural Resources	
SSC 185	Land and Life	
Advanced Chemistry Elective (select one):		3
CH 201 & CH 202	Chemistry - A Quantitative Science and Quantitative Chemistry Laboratory	6
CH 220 & CH 222	Introductory Organic Chemistry and Organic Chemistry I Lab	
SSC 442	Soil and Environmental Biogeochemistry	
Economics, Management & Policy Electives (p. 2)		6
Experiential Learning (select one):		3
CSSC 492	Professional Internship Experience in Crop and Soil Sciences	3
CSSC 493	Research Experience in Crop and Soil Sciences	

Geospatial Technologies Elective (p. 2)	3
Land Use Electives (p. 2)	6
Plant Science Electives (p. 2)	6
Water, Wetlands & Ecology Electives (p. 2)	6

GEP Courses

ENG 101	Academic Writing and Research ¹	4
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		6
GEP Social Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/)		3
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)		4
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)	4
--------------------------------	---

Total Hours	120
--------------------	------------

¹ A grade of C- or higher is required.

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

Economics, Management & Policy Electives

Code	Title	Hours
AEC 380	Water Resources: Global Issues in Ecology, Policy, Management, and Advocacy	3
ARE 215	Small Business Accounting	3
ARE 306	Agricultural Law	3
ARE 309	Environmental Law & Economic Policy	3
ARE 312	Agribusiness Marketing	3
ARE 332	Human Resource Management for Agribusiness	3
ARE 336	Introduction to Resource and Environmental Economics	3
CE 478	Energy and Climate	3
CS 418	Introduction to Regulatory Science in Agriculture	3
CS 428	Advanced Regulatory Science in Agriculture	3
NR 406	Conservation of Biological Diversity	3
NR 460	Renewable Natural Resource Management and Policy	3
PS 201	American Politics and Government	3
PS 202	State and Local Government	3
PS 320	U.S. Environmental Law and Politics	3
SSC 455	Soils, Environmental Quality and Global Challenges	3

Geospatial Technologies Electives

Code	Title	Hours
BAE 325	Introductory Geomatics	3
FOR 353	GIS and Remote Sensing for Environmental Analysis and Assessment	3
GIS 280	Introduction to GIS	3
GIS 512	Introduction to Environmental Remote Sensing	3
SSC 440/540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 545		3

Land Use Electives

Code	Title	Hours
MEA 300	Environmental Geology	4
MEA 481	Geomorphology: Earth's Dynamic Surface	3
NR 400/500	Natural Resource Management	4
NR 484	Environmental Impact Assessment	4
NR 510	Military Land Sustainability	3
SSC 410	Soil Judging for Land Evaluation	1
SSC 421		3
SSC 427	Biological Approaches to Sustainable Soil Systems	3
SSC 455	Soils, Environmental Quality and Global Challenges	3
SSC 462	Soil-Crop Management Systems	3

Plant Science Electives

Code	Title	Hours
CS 213	Crop Science	3
CS 230	Introduction to Agroecology	3
CS 251	Production of Forage Crops	3

PB 200	Plant Life	4
FOR 252	Introduction to Forest Science	4
FOR 339		4
PB 220	Local Flora	3
PB 321	Introduction to Whole Plant Physiology	3
PB 421	Plant Physiology	3

Water, Wetlands & Ecology Electives

Code	Title	Hours
AEC 400	Applied Ecology	3
AEC 419	Freshwater Ecology	4
BAET 323	Water Management	3
FOR 260	Forest Ecology	4
NR/FOR 420	Watershed and Wetlands Hydrology	4
NR 421/521	Wetland Science and Management	3
SSC 332	Environmental Soil Microbiology	3
SSC 470/570	Wetland Soils	3

Semester Sequence

This is a sample.

First Year

Fall Semester		Hours
ALS 103 or ALS 303	First-year Success in Agriculture and Life Sciences or Transfer Success in Agriculture and Life Sciences	1
BIO 181	Introductory Biology: Ecology, Evolution, and Biodiversity	4
ENG 101	Academic Writing and Research	4
MA 131	Calculus for Life and Management Sciences A	3
Foundation Elective (p. 1)		3
CSSC 290	Professional Development in Crop & Soil Sciences	1
Hours		16

Spring Semester

CH 101	Chemistry - A Molecular Science	3
CH 102	General Chemistry Laboratory	1
MA 231	Calculus for Life and Management Sciences B	3
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)		3
AEC 360	Ecology	4
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
Hours		15

Second Year

Fall Semester

ARE 201	Introduction to Agricultural & Resource Economics	3
---------	---	---

GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)	1
SSC 200 Soil Science	3
SSC 201 Soil Science Laboratory	1
ST 311 Introduction to Statistics	3
Plant Science Elective (p. 2)	3
COM 110 Public Speaking or COM 112 or Interpersonal Communication	3
Hours	17
Spring Semester	
MEA 101 Geology I: Physical	3
MEA 110 Geology I Laboratory	1
PY 131 Conceptual Physics	4
SSC 341 Soil Fertility and Nutrient Management	3
Economics, Management and Policy Elective (p. 2)	3
GEP Interdisciplinary Perspectives (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-interdisciplinary-perspectives/)	2
Hours	16
Third Year	
Fall Semester	
SSC 342 Soil and Plant Nutrient Analysis	1
SSC 461 Soil Physical Properties and Plant Growth	3
Advanced Chemistry Elective (p. 1)	3
Land Use Elective (p. 2)	3
Economics, Management and Policy Elective (p. 2)	3
Hours	13
Spring Semester	
NR 300 Natural Resource Measurements	4
SSC 452 Soil Classification	4
Geospatial Technologies Elective (p. 2)	3
Water, Wetlands, and Ecology Elective (p. 2)	3
Hours	14
Fourth Year	
Fall Semester	
Experiential Learning Elective (p. 1)	3
Select one of the following:	3
ENG 331 Communication for Engineering and Technology	
ENG 332 Communication for Business and Management	
ENG 333 Communication for Science and Research	
GEP Humanities (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-humanities/)	3
GEP US Diversity, Equity, and Inclusion (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-usdei/)	3
GEP Social Sciences (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-social-sciences/)	3
Hours	15
Spring Semester	
Free Elective	4
CSSC 490 Senior Seminar in Crop Science and Soil Science	1

Land Use Elective (p. 2)	3
Water, Wetlands, and Ecology Elective (p. 2)	3
Plant Science Elective (p. 2)	3
Hours	14
Total Hours	120

Career Opportunities

Career Titles

- Climate Change Policy Analysts
- Conservation Scientist
- Conservationist
- Ecologist
- Environmental Engineer
- Environmental Planner
- Environmental Research Analyst
- Environmental Scientist and Specialist
- Extension Agent
- Fish and Game Warden
- Forest and Conservation Technician
- Forest and Conservation Workers
- Forester
- Forestry and Conservation Science Professor
- Hydrologist
- Landfill Inspectors
- Natural Resources Management and Policy
- Nutrient Management/ Waste Management Specialist
- Park Naturalist
- Precision Agriculture Specialist
- Range Manager
- Restoration Specialist
- Soil Conservationist
- Soil Scientist
- Wind Energy Operations Managers
- Wind Energy Project Managers
- Wildlife Control Agent

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.