Forest Management (BS): Ecology Concentration

The forest management, ecology concentration, trains professionals who will work as researchers, resource managers, and practitioners in varied agencies and non-governmental firms or organizations. Not focused on commodity production, this program provides more depth in scientific examination of forest communities. Subjects upon which forest management depends include botany, chemistry, ecology, economics, entomology, forest measurements, hydrology, mapping, mathematics, plant physiology, soil science, and statistics.

Both concentrations in the forest management program include a nine-week summer practicum between the second and third years of coursework. The purpose of the practicum is to study forest measurement and management skills in the field during concentrated hands-on experiences. Seven weeks of this residential practicum occurs at George Watts Hill Forest north of Durham, North Carolina.

The Society of American Foresters accredits the North Carolina State forest management program.

Contact

For more information examine our website (https://cnr.ncsu.edu/fer/) or contact one of the following:

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North Carolina State University
Raleigh, North Carolina 27695-8008

Plan Requirements

First Year		Hours
ENV 101	Exploring the Environment	2
ENV 100	Student Success in Environmental First Year	1
PB 200 or BIO 181	Plant Life or Introductory Biology: Ecology, Evolution, and Biodiversity	4
MA 114	Introduction to Finite Mathematics with Applications	3
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4
ST 311	Introduction to Statistics	3
FOR 150	Critical Thinking and Data Analysis [1]	2
Acad Writing Research (p. 2) [1]		4
	Hours	**23**
Second Year		
Chemistry or Physics Elective (p. 2)		4
FOR 172	Forest System Mapping and Mensuration I [1]	2
FOR 339	[1]	4
ST 312	Introduction to Statistics II	3
Economics Elective (p. 2)		3
FOR 260	Forest Ecology [1]	4
FOR 250	Professional Development II: Communications in Natural Resources [1]	1
Soil Science & Lab (p. 2)		4
MA 121 or MA 131	Elements of Calculus or Calculus for Life and Management Sciences A	3
Technical Electives (p. 2)		3
	Hours	**31**
Summer		
FOR 204	Silviculture [1]	2
FOR 261	Forest Communities	2
FOR 264	Forest Wildlife [1]	1
FOR 265	Fire Management [1]	1
FOR 273	Forest System Mapping and Mensuration II [1]	3
	Hours	**9**
Third Year		
FOR 303	Silvics and Forest Tree Physiology [1]	3
FOR 374	Forest Measurement, Modeling, and Inventory [1]	3
PB 220	Local Flora	3
NR 301	Practicum for Professional Development I	1
Advanced Communication Elective (p. 7)		3
Spatial Technology Elective (p. 7)		3
FOR 350	Professional Development III: Ethical Dilemmas in Natural Resource Management [1]	1
FOR 304	Theory of Silviculture [1]	4
Technical Electives (p. 2)		4
	Hours	**25**
Fourth Year		
FW 404	Wildlife Habitat Management	3
NR 460	Renewable Natural Resource Management and Policy [1]	3
FOR 430	Forest Health and Protection [1]	3
Technical Electives (p. 2)		4
Capstone Elective (p. 7)		4
Technical Electives (p. 2)		3
Technical Electives (p. 2)		4
	Hours	**24**
	Total Hours	**112**

[1] A grade of C- or better is required.

Code	Title	Hours
GEP Courses		
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/)	5
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/) Foreign (verify requirement)	
Total Hours	**16**

Acad Writing Research

Code	Title	Hours
Acad Writing Research		
ENG 101	Academic Writing and Research	4
FLE 101	Academic Writing and Research	4
Transfer Sequence		
ENG 202	Disciplinary Perspectives in Writing	3
ENG 1GEP		3

Chemistry or Physics Electives

Code	Title	Hours
CH 201	Chemistry - A Quantitative Science	3
CH 202	Quantitative Chemistry Laboratory	1
CH 220	Introductory Organic Chemistry	3
CH 221	Organic Chemistry I	3
CH 222	Organic Chemistry I Lab	1
PY 131	Conceptual Physics	4
PY 211	College Physics I	4

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
NR 219	Natural Resource Markets	3

Soil and Science Labs

Code	Title	Hours
FOR 472	Forest Soils	4
NR 460	Renewable Natural Resource Management and Policy	3
NR 560	Renewable Natural Resource Management and Policy	3
SSC 200	Soil Science	3
SSC 201	Soil Science Laboratory	1

Technical Electives

Code	Title	Hours
FOR/FW/NR Technical Electives		
AEC 420	Introduction to Fisheries Science	3
AEC 423	Introduction to Fisheries Sciences Laboratory	1
ENT 402	Forest Entomology	3
FOR 204	Silviculture	2
FOR 248	Forest History, Technology and Society	3
FOR 250	Professional Development II: Communications in Natural Resources	1
FOR 252	Introduction to Forest Science	3
FOR 260	Forest Ecology	4
FOR 261	Forest Communities	2
FOR 264	Forest Wildlife	1
FOR 265	Fire Management	1
FOR 273	Forest System Mapping and Mensuration II	3
FOR 293	Independent Study in Forest Management	1-6
FOR 294	Independent Study in Forest Management	1-6
FOR 295	Special Topics in Forestry	1-6
FOR 303	Silvics and Forest Tree Physiology	3
FOR 304	Theory of Silviculture	4
FOR 318	Forest Pathology	3
FOR 319	Forest Economics	3
FOR 330	North Carolina Forests	3
FOR 334	Operations Research Applications in Natural Resources	1
FOR 339		4
FOR 350	Professional Development III: Ethical Dilemmas in Natural Resource Management	1
FOR 353	GIS and Remote Sensing for Environmental Analysis and Assessment	3
FOR 374	Forest Measurement, Modeling, and Inventory	3
FOR 402	Forest Entomology	3
FOR 405	Forest Management	4
FOR 406	Forest Inventory, Analysis and Planning	4
FOR 408	Hardwood Management: Natural Forest Silviculture	3
FOR 411	Forest Genetics	3
FOR 414	World Forestry	3
FOR 415	World Forestry Study Tour	1
FOR 420	Watershed and Wetlands Hydrology	4
FOR 422	Consulting Forestry	3
FOR 430	Forest Health and Protection	3
FOR 434	Forest Operations and Analysis	3
FOR 472	Forest Soils	4
FOR 491	Special Topics in Forestry and Related Natural Resources	1-4
FOR 493	Independent Study in Forest Management	1-6
FOR 494	Independent Study in Forest Management	1-6
FOR 505	Forest Management	4

FOR 508	Hardwood Management: Natural Forest Silviculture	3
FOR 520	Watershed and Wetlands Hydrology	4
FOR 522	Consulting Forestry	3
FOR 534	Forest Operations and Analysis	3
FW 221	Conservation of Natural Resources	3
FW 293	Independent Study in Fisheries, Wildlife, and Conservation Biology	1-6
FW 294	Independent Study in Fisheries, Wildlife, and Conservation Biology	1-6
FW 311	Piedmont Wildlife Ecology and Management	3
FW 312	Fisheries Techniques and Management	1
FW 313	Mountain Wildlife Ecology and Management	1
FW 314	Coastal Ecology and Management	1
FW 333	Conservation Biology in Practice	3
FW 353	Wildlife Management	3
FW 373	Vertebrate Natural History	3
FW 403	Urban Wildlife Management	3
FW 404	Wildlife Habitat Management	3
FW 405	Tropical Wildlife Ecology	3
FW 411	Human Dimensions of Wildlife and Fisheries	3
FW 415	Professional Development in Fisheries, Wildlife, and Conservation Biology	1
FW 444	Mammalogy	3
FW 445	Human Dimensions of Conservation Biology in the Bahamas	3
FW 453	Principles of Wildlife Science	4
FW 460	International Wildlife Management and Conservation	3
FW 465	African Ecology and Conservation	4
FW 492	External Learning Experience	1-6
FW 493	Independent Study in Fisheries, Wildlife, and Conservation Biology	1-6
FW 494	Independent Study in Fisheries, Wildlife, and Conservation Biology	1-6
FW 495	Special Topics in Fisheries and Wildlife Science	1-3
FW 511	Human Dimensions of Wildlife and Fisheries	3
FW 544	Mammalogy	3
FW 560	International Wildlife Management and Conservation	3
FW 565	African Ecology and Conservation	4
IDS 303	Humans and the Environment	3
NR 219	Natural Resource Markets	3
NR 293	Independent Study in Natural Resources	1-6
NR 294	Independent Study in Natural Resources	1-6
NR 295	Special Topics in Natural Resources	1-3
NR 300	Natural Resource Measurements	4
NR 301	Practicum for Professional Development I	1
NR 303	Humans and the Environment	3
NR 350	International Sustainable Resource Use	4
NR 360	Internship Experience	3
NR 400	Natural Resource Management	4
NR 406	Conservation of Biological Diversity	3
NR 420	Watershed and Wetlands Hydrology	4
NR 421	Wetland Science and Management	3
NR 460	Renewable Natural Resource Management and Policy	3
NR 484	Environmental Impact Assessment	4
NR 491	Special Topics in Forestry and Related Natural Resources	1-4
NR 493	Independent Study in Natural Resources	1-6
NR 494	Independent Study in Natural Resources	1-6
NR 500	Natural Resource Management	4
NR 520	Watershed and Wetlands Hydrology	4
NR 521	Wetland Science and Management	3
NR 560	Renewable Natural Resource Management and Policy	3
PP 318	Forest Pathology	3
SMT 202	Anatomy and Properties of Renewable Materials	3
Technical Electives-Other		
ACC 200	Introduction to Managerial Accounting	3
ACC 210	Concepts of Financial Reporting	3
ACC 220	Introduction to Managerial Accounting	3
ACC 230	Individual Income Taxation	3
ACC 280	Survey of Financial and Managerial Accounting	3
ACC 295	Special Topics in Accounting	1-6
ACC 310	Intermediate Financial Accounting I	3
ACC 311	Intermediate Financial Accounting II	3
ACC 330	An Introduction To Income Taxation	3
ACC 340	Accounting Information Systems	3
ACC 411	Business Valuation	3
ACC 420	Cost Accounting for Effective Management	3
ACC 440	Enterprise Resource Planning Systems: Implementation, Risk, and Analytics	3
ACC 450	Auditing and Assurance Services	3
ACC 451	Internal Auditing	3
ACC 460	Governmental and Nonprofit Accounting	3
ACC 495	Special Topics in Accounting	1-6
ACC 498	Independent Study in Accounting	1-6
ACC 499	Internship in ACC	1-6
AEC 360	Ecology	4
AEE 208	Agricultural Biotechnology: Issues and Implications	3
BAET 323	Water Management	3
ANS 208	Agricultural Biotechnology: Issues and Implications	3
ANS 215	Agricultural Genetics	3
ARE 201	Introduction to Agricultural & Resource Economics	3
ARE 201A	Introduction to Agricultural & Resource Economics	3
ARE 215	Small Business Accounting	3
ARE 260	Marketing and Risk Management in the Pork Industry	1
ARE 270	Principles of Agribusiness Entrepreneurship	3
ARE 295	Special Topics in Agricultural & Resource Economics (200 Level)	1-6
ARE 301	Intermediate Microeconomics	3
ARE 303	Farm Management	3
ARE 304	Agribusiness Management	3
ARE 306	Agricultural Law	3

ARE 309	Environmental Law & Economic Policy	3
ARE 311	Agricultural Markets	3
ARE 312	Agribusiness Marketing	3
ARE 321	Agricultural Financial Management	3
ARE 323	Agribusiness Finance	3
ARE 332	Human Resource Management for Agribusiness	3
ARE 336	Introduction to Resource and Environmental Economics	3
ARE 345	Global Agribusiness Management	3
ARE 370	Agribusiness New Venture Development	3
ARE 395	Special Topics in Agricultural and Resource Economics (300 level)	1-6
ARE 404	Advanced Agribusiness Management	3
ARE 412	Advanced Agribusiness Marketing	3
ARE 413	Applied Agribusiness Marketing	3
ARE 415	Introduction to Commodity Futures Markets	3
ARE 420	Taxation in Agriculture, Production, and Agribusiness	3
ARE 425	Contracts and Organizations in Agriculture	3
ARE 433	U.S. Agricultural Policy	3
ARE 444	Ethics in Agribusiness	3
ARE 448	International Agricultural Trade	3
ARE 455	Agribusiness Analytics	3
ARE 470	Agribusiness Entrepreneurship Clinical Skills Development	3
ARE 475	Food Policy	3
ARE 490	Career Seminar in Agriculture & Resource Economics	1
ARE 492	External Learning Experience	1-6
ARE 493	Special Problems/Research Exploration	1-6
ARE 494	Agribusiness Study Abroad	1-6
ARE 495	Special Topics in Agricultural and Resource Economics	1-6
BAE 435	Precision Agriculture Technology	3
BAE 473	Introduction to Hydrologic and Water Quality Modeling	3
BAE 535	Precision Agriculture Technology	3
BAE 573	Introduction to Hydrologic and Water Quality Modeling	3
BIO 330	Evolutionary Biology	3
BIO 414	Cell Biology	3
BIT 476	Applied Bioinformatics	2
BIT 481	Plant Tissue Culture and Transformation	2
BUS 350	Economics and Business Statistics	3
CS 410	Community Food Systems	3
CS 470	Advanced Turfgrass Pest Management	2
CS 480	Sustainable Food Production (capstone)	1
CSC 416	Introduction to Combinatorics	3
CSC 427	Introduction to Numerical Analysis I	3
CSC 428	Introduction to Numerical Analysis II	3
CSC 442	Introduction to Data Science	3
CSSC 490	Senior Seminar in Crop Science and Soil Science	1
EC 201	Principles of Microeconomics	3
EC 202	Principles of Macroeconomics	3
EC 205	Fundamentals of Economics	3
EC 301	Intermediate Microeconomics	3
EC 302	Intermediate Macroeconomics	3
EC 305	A Closer Look at Capitalism	3
EC 336	Introduction to Resource and Environmental Economics	3
EC 348	Introduction to International Economics	3
EC 351	Econometrics I	3
EC 404	Money, Financial Markets, and the Economy	3
EC 410	Public Finance	3
EC 413	Industrial Organization	3
EC 431	Labor Economics	3
EC 437	Health Economics	3
EC 449	International Finance	3
EC 451	Econometrics II	3
EC 468	Game Theory	3
EC 474	Economics of Financial Institutions and Markets	3
EC 480		3
EC 490	Research Seminar in Economics	3
EC 495	Special Topics in Economics	1-6
EC 498	Independent Study in Economics	1-6
ECE 488	Systems Biology Modeling of Plant Regulation	3
ECE 588	Systems Biology Modeling of Plant Regulation	3
ENT 201	Insects and People	3
ENT 203	An Introduction to the Honey Bee and Beekeeping	3
ENT 207	Insects and Human Disease	3
ENT 212	Basic Entomology	1
ENT 305	Introduction to Forensic Entomology	3
ENT 401	Honey Bee Biology and Management	3
ENT 402	Forest Entomology	3
ENT 425	General Entomology	3
ENT 470	Advanced Turfgrass Pest Management	2
ENT 492	External Learning Experience	1-6
ENT 493	Special Problems in Entomology	1-6
ENT 495	Special Topics in Entomology	1-3
ET 201	Environmental Technology Laboratory I	1
ET 202	Environmental Technology Laboratory II	1
ET 203	Pollution Prevention	1
ET 220	Solar Photovoltaics Assessment	3
ET 255	Hydro, Wind, and Bioenergy Assessment	3
ET 262	Renewable Energy Adoption: Barriers and Incentives	3
ET 293	Independent Study in Environmental Technology & Management	1-6
ET 294	Independent Study in Environmental Technology & Management	1-6
ET 295	Special Topics in Environmental Technology & Management	1-6
ET 301	Environmental Technology Laboratory III	1
ET 302	Environmental Technology Laboratory IV	1
ET 303	Laboratory Safety Systems and Management	1
ET 310	Environmental Monitoring and Analysis	3

ET 320	Fundamentals of Air Pollution	3
ET 330	Environmental Technology Practicum	3
ET 401	Environmental Technology Laboratory V	1
ET 455	Adaptive Management and Governance	3
ET 460	Practice of Environmental Technology	3
ET 493	Independent Study in Environmental Technology & Management	1-6
ET 494	Independent Study in Environmental Technology & Management	1-6
ET 495	Special Topics in Environmental Technology & Management	1-6
FOR 318	Forest Pathology	3
FOR 402	Forest Entomology	3
FS 462	Postharvest Physiology	3
FS 562	Postharvest Physiology	3
GIS 205	Spatial Thinking with GIS	3
GIS 280	Introduction to GIS	3
GIS 295	Special Topics in Geospatial Information Science	1-4
GIS 510	Fundamentals of Geospatial Information Science and Technology	3
GPH 404	Epidemiology and Statistics in Global Public Health	3
HS 200	Home Horticulture	3
HS 201	The World of Horticulture: Principles and Practices	3
HS 202	Home Plant Identification	3
HS 203	Home Plant Propagation	3
HS 204	Home Landscape Maintenance	3
HS 205	Home Food Production	3
HS 215	Agricultural Genetics	3
HS 242	Landscape Design Introduction	3
HS 250	Home Landscape Design: Creating Garden Spaces	3
HS 252	Landscape Design Graphic Communication	2
HS 272	Landscape Design/Build	6
HS 280	Hands-On-Horticulture	3
HS 290	Horticulture: Careers and Opportunities	1
HS 301	Plant Propagation	4
HS 302	Gardening with Herbaceous Perennials	3
HS 303	Ornamental Plant Identification I	3
HS 304	Ornamental Plant Identification II	3
HS 357	Landscape Design Grading and Drainage	4
HS 400	Residential Landscaping	6
HS 410	Community Food Systems	3
HS 411	Nursery Management	3
HS 416	Landscape Planting Design	4
HS 418	Landscape Design Digital Media Graphics	3
HS 420	Green Infrastructure	3
HS 421	Temperate-Zone Tree Fruits: Physiology and Culture	3
HS 422	Small Fruit Production	3
HS 423		3
HS 428	Soil Management Principles for Sustainable Agriculture	1
HS 431	Vegetable Production	4
HS 432	Introduction to Permaculture	3
HS 433	Public Garden Administration	3
HS 440	Greenhouse Management	3
HS 442	Floriculture Crop Production	3
HS 451	Plant Nutrition	3
HS 462	Postharvest Physiology	3
HS 471	Landscape Ecosystem Management	4
HS 475		3
HS 476	Crop Physiology and Production in Controlled Environments	3
HS 480	Sustainable Food Production (capstone)	1
HS 491	Sustainable Agriculture Entrepreneurship Study Abroad	3
HS 492	Horticulture Internship	1-3
HS 493	Research Experience in Horticultural Science	1-3
HS 494	Teaching Experience in Horticultural Science	1-3
HS 495	Experimental Courses in Horticultural Science	1-6
HS 516	Landscape Planting Design	4
HS 520	Green Infrastructure	3
HS 521	Temperate-Zone Tree Fruits: Physiology and Culture	3
HS 523		3
HS 532	Introduction to Permaculture	3
HS 533	Public Garden Administration	3
HS 551	Plant Nutrition	3
HS 562	Postharvest Physiology	3
HS 576	Crop Physiology and Production in Controlled Environments	3
LOG 335	Symbolic Logic	3
MA 205		3
MA 225	Foundations of Advanced Mathematics	3
MA 231	Calculus for Life and Management Sciences B	3
MA 241	Calculus II	4
MA 242	Calculus III	4
MA 302	Numerical Applications to Differential Equations	1
MA 303	Linear Analysis	3
MA 305	Introductory Linear Algebra and Matrices	3
MA 315	Mathematics Methods in Atmospheric Sciences	4
MA 325	Introduction to Applied Mathematics	3
MA 331	Differential Equations for the Life Sciences	3
MA 335	Symbolic Logic	3
MA 341	Applied Differential Equations I	3
MA 351	Introduction to Discrete Mathematical Models	3
MA 401	Applied Differential Equations II	3
MA 402	Mathematics of Scientific Computing	3
MA 403	Introduction to Modern Algebra	3
MA 405	Introduction to Linear Algebra	3
MA 407	Introduction to Modern Algebra for Mathematics Majors	3
MA 408	Foundations of Euclidean Geometry	3
MA 410	Theory of Numbers	3
MA 412	Long-Term Actuarial Models	3

MA 413	Short-Term Actuarial Models	3
MA 416	Introduction to Combinatorics	3
MA 421	Introduction to Probability	3
MA 425	Mathematical Analysis I	3
MA 426	Mathematical Analysis II	3
MA 427	Introduction to Numerical Analysis I	3
MA 428	Introduction to Numerical Analysis II	3
MA 430	Mathematical Models in the Physical Sciences	3
MA 432	Mathematical Models in Life Sciences	3
MA 437	Applications of Algebra	3
MA 440		3
MA 444	Problem Solving Strategies for Competitions	1
MA 450	Methods of Applied Mathematics I	3
MA 451	Methods of Applied Mathematics II	3
MA 491	Reading in Honors Mathematics	1-6
MA 493	Special Topics in Mathematics	1-6
MA 494	Major Paper in Mathematics	1
MA 499	Independent Research in Mathematics	1-6
MEA 315	Mathematics Methods in Atmospheric Sciences	4
MEA 320	Fundamentals of Air Pollution	3
PB 200	Plant Life	4
PB 205	Our Green World	3
PB 208	Agricultural Biotechnology: Issues and Implications	3
PB 213	Plants and Civilization	3
PB 215	Medicinal Plants	3
PB 219	Plants in Folklore, Myth, and religion	3
PB 220	Local Flora	3
PB 250	Plant Biology	4
PB 277	Space Biology	3
PB 295	Special Topics in Botany	1-4
PB 321	Introduction to Whole Plant Physiology	3
PB 325	Culinary Botany	3
PB 345	Economic Botany	3
PB 346	Economic Botany Lab	1
PB 360	Ecology	4
PB 400	Plant Diversity and Evolution	4
PB 403	Systematic Botany	4
PB 413	Plant Anatomy	2
PB 421	Plant Physiology	3
PB 445	Paleobotany	4
PB 464	Rare Plants of North Carolina	3
PB 480	Introduction to Plant Biotechnology	3
PB 481	Plant Tissue Culture and Transformation	2
PB 488	Systems Biology Modeling of Plant Regulation	3
PB 492	External Learning Experience	1-6
PB 493	Plant Biology Supervised Undergraduate Research Experience	1-6
PB 495	Special Topics in Plant Biology	1-6
PB 503	Systematic Botany	4
PB 513	Plant Anatomy	2
PB 545	Paleobotany	4
PB 564	Rare Plants of North Carolina	3
PB 580	Introduction to Plant Biotechnology	3
PB 588	Systems Biology Modeling of Plant Regulation	3
PP 222	Kingdom of Fungi	3
PP 232	Big Data in Your Pocket: Call it a Smartphone	3
PP 241	The Worm's Tale: Parasites In Our Midst	3
PP 315	Principles of Plant Pathology	4
PP 318	Forest Pathology	3
PP 470	Advanced Turfgrass Pest Management	2
PP 492	External Learning Experience	1-6
PP 493	Special Problems in Plant Pathology	1-6
PP 495	Special Topics in Plant Pathology	1-3
PSY 240	Introduction to Behavioral Research I	3
PSY 241	Introduction to Behavioral Research I Lab	1
PSY 242	Introduction to Behavioral Research II	3
PSY 243	Introduction to Behavioral Research II Lab	2
SMT 200	Introduction to Sustainable Materials and Technology	3
SMT 201	Sustainable Materials for Green Housing	2
SMT 202	Anatomy and Properties of Renewable Materials	3
SMT 203	Physical Properties of Sustainable Materials	4
SMT 206	Wood Manufacturing Site Visits	1
SMT 210	Sustainable Materials Internship	1
SMT 232	Recycling to Create a Sustainable Environment	2
SMT 240	Introduction to Wood Products Industries	2
SMT 293	Independent Study in Sustainable Materials & Technology	1-6
SMT 294	Independent Study in Sustainable Materials & Technology	1-6
SMT 295	Special Topics in Sustainable Materials and Technology	1-3
SMT 301	Chemistry of Sustainable Materials	3
SMT 302	Processing of Biomaterials	4
SMT 308	Wood Processing	4
SMT 310	Introduction to Industrial Ecology	3
SMT 320	Industrial Chemical Pollutants	2
SMT 330	Project Management for Sustainability	3
SMT 346	Sustainable Materials Business Marketing	3
SMT 441	Mechanical Properties of Sustainable Materials	4
SMT 444	Sustainable Composites and Biopolymers	3
SMT 450	Sustainable Business and Innovation	2
SMT 483	Capstone in Sustainable Materials and Technology	3
SMT 493	Independent Study in Sustainable Materials & Technology	1-6
SMT 494	Independent Study in Sustainable Materials & Technology	1-6
SSC 200	Soil Science	3
SSC 201	Soil Science Laboratory	1
SSC 332	Environmental Soil Microbiology	3
SSC 341	Soil Fertility and Nutrient Management	3
SSC 342	Soil and Plant Nutrient Analysis	1
SSC 410	Soil Judging for Land Evaluation	1
SSC 421		3
SSC 427	Biological Approaches to Sustainable Soil Systems	3

SSC 428	Soil Management Principles for Sustainable Agriculture	1
SSC 440	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 442	Soil and Environmental Biogeochemistry	3
SSC 452	Soil Classification	4
SSC 455	Soils, Environmental Quality and Global Challenges	3
SSC 461	Soil Physical Properties and Plant Growth	3
SSC 462	Soil-Crop Management Systems	3
SSC 470	Wetland Soils	3
SSC 473	Introduction to Hydrologic and Water Quality Modeling	3
SSC 540	Geographic Information Systems (GIS) in Soil Science and Agriculture	3
SSC 570	Wetland Soils	3
SSC 573	Introduction to Hydrologic and Water Quality Modeling	3
ST 305		4
ST 307	Introduction to Statistical Programming- SAS	1
ST 308	Introduction to Statistical Programming - R	1
ST 311	Introduction to Statistics	3
ST 312	Introduction to Statistics II	3
ST 350	Economics and Business Statistics	3
ST 370	Probability and Statistics for Engineers	3
ST 371	Introduction to Probability and Distribution Theory	3
ST 372	Introduction to Statistical Inference and Regression	3
ST 380		3
ST 401	Experiences in Data Analysis	4
ST 404	Epidemiology and Statistics in Global Public Health	3
ST 405	Applied Nonparametric Statistics	3
ST 412	Long-Term Actuarial Models	3
ST 413	Short-Term Actuarial Models	3
ST 421	Introduction to Mathematical Statistics I	3
ST 422	Introduction to Mathematical Statistics II	3
ST 430	Introduction to Regression Analysis	3
ST 431	Introduction to Experimental Design	3
ST 432	Introduction to Survey Sampling	3
ST 433	Applied Spatial Statistics	3
ST 434	Applied Time Series	3
ST 435	Statistical Methods for Quality and Productivity Improvement	3
ST 437	Applied Multivariate and Longitudinal Data Analysis	3
ST 440	Applied Bayesian Analysis	3
ST 442	Introduction to Data Science	3
ST 445	Introduction to Statistical Computing and Data Management	3
ST 446	Intermediate SAS Programming with Applications	3
ST 491	Statistics in Practice	3
ST 495	Special Topics in Statistics	1-6
ST 497	Professional Experience in Statistics	1-3
ST 498	Independent Study In Statistics	1-6
ST 499	Research Experience in Statistics	1-3
ST 505	Applied Nonparametric Statistics	3
ST 533	Applied Spatial Statistics	3
ST 534	Applied Time Series	3
ST 535	Statistical Methods for Quality and Productivity Improvement	3
ST 537	Applied Multivariate and Longitudinal Data Analysis	3
ST 540	Applied Bayesian Analysis	3

Advanced Communication Electives

Code	Title	Hours
COM 289	Science Communication and Public Engagement	3
ENG 331	Communication for Engineering and Technology	3
ENG 332	Communication for Business and Management	3
ENG 333	Communication for Science and Research	3

Spatial Technology Electives

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

Capstone Electives

Code	Title	Hours
ES 400	Analysis of Environmental Issues	3
FOR 406	Forest Inventory, Analysis and Planning	4
NR 400	Natural Resource Management	4
NR 406	Conservation of Biological Diversity	3
NR 500	Natural Resource Management	4

Semester Sequence

This is a sample.

First Year		
Fall Semester		**Hours**
ENV 101	Exploring the Environment	2
MA 114	Introduction to Finite Mathematics with Applications	3
ENV 100	Student Success in Environmental First Year	1
PB 200 or BIO 181	Plant Life or Introductory Biology: Ecology, Evolution, and Biodiversity	4
GEP Requirement (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3

GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
	Hours	**14**
Spring Semester		
CH 101 & CH 102	Chemistry - A Molecular Science and General Chemistry Laboratory	4
ENG 101	Academic Writing and Research [1]	4
FOR 150	Critical Thinking and Data Analysis [1]	2
ST 311	Introduction to Statistics	3
GEP Health and Exercise Studies (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/gep-health-exercise-studies/)		1
GEP Requirement (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		2
	Hours	**16**
Second Year		
Fall Semester		
Chemistry or Physics Elective (p. 2)		4
FOR 172	Forest System Mapping and Mensuration I [1]	2
FOR 401	Dendrology [1]	4
Technical Elective (p. 2)		3
ST 312	Introduction to Statistics II	3
	Hours	**16**
Spring Semester		
Economics Elective (p. 2)		3
FOR 250	Professional Development II: Communications in Natural Resources [1]	1
FOR 260	Forest Ecology [1]	4
SSC 200 & SSC 201	Soil Science and Soil Science Laboratory	4
MA 121 or MA 131	Elements of Calculus or Calculus for Life and Management Sciences A	3
	Hours	**15**
Summer		
FOR 204	Silviculture [1]	2
FOR 261	Forest Communities [1]	2
FOR 264	Forest Wildlife [1]	1
FOR 265	Fire Management [1]	1
FOR 273	Forest System Mapping and Mensuration II [1]	3
	Hours	**9**
Third Year		
Fall Semester		
FOR 303	Silvics and Forest Tree Physiology [1]	3
PB 220	Local Flora	3
Technical Elective (p. 2)		4
NR 301	Practicum for Professional Development I	1
FOR 374	Forest Measurement, Modeling, and Inventory [1]	3
	Hours	**14**
Spring Semester		
Advanced Communication Elective (p. 7)		3
FOR 304	Theory of Silviculture [1]	4
FOR 350	Professional Development III: Ethical Dilemmas in Natural Resource Management [1]	1
Spatial Technology Elective (p. 7)		3
GEP Requirement (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3
	Hours	**14**
Fourth Year		
Fall Semester		
FW 404	Wildlife Habitat Management	3
FOR 430	Forest Health and Protection [1]	3
NR 460	Renewable Natural Resource Management and Policy [1]	3
GEP Requirement (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3
Technical Elective (p. 2)		4
	Hours	**16**
Spring Semester		
Capstone Elective (p. 7)		4
Technical Electives (p. 2)		7
GEP Requirement (http://catalog.ncsu.edu/undergraduate/gep-category-requirements/)		3
	Hours	**14**
	Total Hours	**128**

[1] A grade of C- or better required.

Career Opportunities

Graduates in Forest Management are in high demand by state and federal land management agencies, forest products companies growing wood as a raw material, investment firms and insurance companies with land ownership portfolios, state forestry and agriculture extension services, the Peace Corps, environmental and wetland consulting firms, wood procurement companies, nursery and landscape management firms, and environmental organizations. After several years of experience, many graduates start their own businesses in forestry and land management consulting. Some graduates continue their education in graduate school to specialize in a wide variety of forestry and related programs.

Career Titles

- Conservation Scientist
- Forest and Conservation Technician
- Forest Fire Inspectors and Prevention Specialist
- Forester
- Park Naturalist
- Range Manager
- Soil Conservationist

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.

Forestry and Environmental Resources Job Board (https://cnr.ncsu.edu/jobs/forestry/?major=Natural%20Resources)
Society of American Foresters (https://www.eforester.org//)
National Association of Environmental Professionals (https://www.naep.org/)