

COLLEGE OF NATURAL RESOURCES AND ENVIRONMENT
Department of Forest Resources and Environmental Conservation
Bachelor of Science in Forest Resources and Environmental Conservation
Major: Environmental Resource Management

For students graduating in calendar year 2022 and for student date of entry under UG Catalog 2020-2021

Minimum credit hours required for graduation is 120. *Prerequisites or enrollment restrictions may apply to some courses. Consult the undergraduate course catalog or the time table of classes.

Degree Core Requirements (21 credits)

- ___ FREC 2004 Forest Ecosystems (3 credits) **or** FREC 3314 Forest Ecology and Silvics* (3 credits)
- ___ FREC 2214 Introduction to Land and Field Measurements* (3 credits)
- ___ FREC 2314 Forest Biology and Dendrology* (2 credits)
- ___ FREC 2324 Dendrology Laboratory (1 credit)
- ___ FREC 2614 Human-Environment Systems* (3 credits)
- ___ FREC 4014 (NR 4014) Natural Resources Economics* (3 credits)
- ___ FREC 4114 Information Technologies for Natural Resources Management* (3 credits)
- ___ FREC 4434 Natural Resource Policy* (3 credits)

Major Requirements (36 credits)

- ___ BIOL 1115 Principles of Biology Lab* (1 credit)
- ___ BIOL 1116 Principles of Biology Lab* (1 credit)
- ___ CHEM 1035 General Chemistry* (3 credits)
- ___ CHEM 1045 General Chemistry Lab* (1 credit)
- ___ CSES 3134 (ENSC 3134) Soils in the Landscape* (3 credits)
- ___ FIW 2114 Principles of Fish and Wildlife Management (3 credits)
- ___ FREC 2414 Field Experience in Forest Resources and Environmental Conservation (2 credits)
- ___ FREC 3364 Environmental Silviculture* (3 credits) (*Pathways 6 Design*)
- ___ FREC 4354 Forest Soil and Watershed Management* (3 credits)
- ___ FREC 4374 Forested Wetlands* (3 credits)
- ___ FREC 4464 (AAEC 4464/WATR 4464) Water Resources Policy and Economics* (3 credits)
- ___ GEOS 1024 Earth Resources, Soc, & Env **or** GEOS 1004 Introduction to Earth Science (3 credits)
- ___ GEOS 1124 Earth Res, Society & Env Lab **or** GEOS 1104 Intro to Earth Sciences Lab (1 credit)
- ___ GEOS 3014 Environmental Geosciences* (3 credits)

Geospatial Analysis Elective (3 credits – take one)

- ___ FREC 4214 Forest Photogrammetry and Spatial Data Processing* (3 credits)
- ___ GEOG 4354 (GEOS 4354) Introduction to Remote Sensing (3 credits)

Required Restricted Electives (15 to 16 credits – see accompanying lists)

- ___ Global Environmental Issues Restricted Elective (3 credits)
- ___ Law Restricted Elective (3 credits)
- ___ Public Relations Restricted Elective (3 credits)
- ___ Urban Environments Restricted Elective (3 credits)
- ___ Water Restricted Elective (3 or 4 credits)

Pathways to General Education Requirements (45 - 47 credits)

Pathways Concept 1: Discourse (9 credits)

- ___ COMM 1015 Communication Skills **or** ENGL 1105 First-Year Writing (3 credits)
- ___ COMM 1016 Communication Skills **or** ENGL 1106 First-Year Writing (3 credits)
- ___ Pathways Concept 1 Advanced course: _____ (3 credits)

Pathways Concept 2: Critical Thinking in the Humanities (6 credits)

- ___ FREC 2554 (LAR 2554/NR 2554) Leadership for Global Sustainability (3 credits)
- ___ Pathways Concept 2 course: _____ (3 credits)

Pathways Concept 3: Reasoning in the Social Sciences (6 credits)

- ___ AEAC 1005 Economics of the Food & Fiber System **or** ECON 2005 Principles of Economics (3 credits)
- ___ Pathways Concept 3 course: _____ (3 credits)

Pathways Concept 4: Reasoning in the Natural Sciences (6 credits)

- ___ BIOL 1105 Principles of Biology (3 credits)
- ___ BIOL 1106 Principles of Biology (3 credits)

Pathways Concept 5: Quantitative and Computational Thinking (9 - 11 credits)

- ___ MATH 1025 Elementary Calculus **or** MATH 1225 Calculus of a Single Variable (3 or 4 credits)
- ___ MATH 1026 Elementary Calculus **or** MATH 1226 Calculus of a Single Variable (3 or 4 credits)
- ___ STAT 3615 Biological Statistics* (3 credits)

Pathways Concept 6: Critique and Practice in Design and the Arts (6 credits)

- ___ Pathways Concept 6 Arts course: _____ (3 credits)
- ___ Pathways Concept 6 Design course: fulfilled by:
 - ___ FREC 3364 Environmental Silviculture* (3 credits)

Pathways Concept 7: Critical Analysis of Identity and Equity in the United States (3 credits)

- ___ Pathways Concept 7 course: _____ (3 credits)¹

Free Electives (additional credit hours to total at least 120, estimated 6 credits)²

¹A course taken to satisfy another area of Pathways that is also listed within Concept 7 will satisfy the Concept 7 requirement simultaneously

² Free elective estimations are calculated utilizing available overlap between major requirements and Pathways requirements.

Restricted Electives (15 to 16 credits – see lists below)

Global Environmental Issues Restricted Electives (Choose 3 credits)

AAEC	3204	International Agricultural Development and Trade* (<i>Pathways 3</i>)	3
FREC	2124	Forests, Society and Climate (<i>Pathways 3 or 4</i>)	3
FREC	2784	(SBIO 2784) Global Forest Sustainability	3
FREC	3604	Climate Science*	3
GEOG	3104	Environmental Problems, Population and Development (<i>Pathways 3</i>)	3
GEOG	4204	Geography of Resources*	3
GEOG	4764	(SOC 4764/UAP 4764) International Development	3
UAP	3344	(PSCI 3344) Global Environmental Issues: Interdisciplinary Perspectives*	3
UAP	4214	(GEOG 4214, WGS 4214) Gender, Environment, and International Development*	3

Law Restricted Electives (Choose 3 credits)

AAEC	3314	Environmental Law	3
AAEC	3604	Agricultural Law	3
FIN	3054	Legal and Ethical Environment of Business*	3
UAP	4344	Law of Critical Environmental Areas	3
UAP	4754	Legal Foundations of Planning*	3

Public Relations Restricted Electives (Choose 3 credits)

ENGL	4804	Grant Proposals and Reports*	3
FREC	3524	Environmental Interpretation* (<i>Pathways 1 Advance</i>)	3
HUM	3204	(RLCL 3204) Multicultural Communication (<i>Pathways 3</i>)	3
PR	2044	Principles of Public Relations (<i>Pathways 3</i>)	3
PSCI	3244	(JMC 3244) Political Communication*	3
SPIA	2554	Collaborative Policy and Planning (<i>Pathways 3 and 7</i>)	3

Urban Environments Restricted Electives (Choose 3 credits)

FREC	2134	(HORT 2134) Plants and Greenspaces in Urban Communities (<i>Pathways 4</i>)	3
FREC	3354	(HORT 3354) Trees in the Built Environment*	3
FREC	4454	Urban and Community Forestry* (<i>Pathways 1 Advance</i>)	3
GEOG	3244	The U.S. City*	3
UAP	2014	Urbanization and Development	3
UAP	3354	Introduction to Environmental Policy and Planning	3
UAP	4374	Land Use and Environment*	3

Water Restricted Electives (Choose 3 or 4 credits)

BIOL	4004	Freshwater Ecology*	4
BIOL	4354	(ENT 4354) Aquatic Entomology*	4
FIW	4534	Ecology and Management of Wetland Systems*	3
FIW	4614	Fish Ecology*	3
FREC	3104	(WATR 3104) Principles of Watershed Hydrology* ³	3
FREC	3754	(WATR 3754) Watersheds and Water Quality Monitoring*	3
FREC	4784	Wetland Hydrology and Biogeochemistry*	3

IMPORTANT NOTES ON THE FOLLOWING PAGE

³Students interested in pursuing hydrology positions in the federal government should note the US Office of Personnel Management Hydrology Qualification Standards, outlined on the notes page of this checksheet

ENVIRONMENTAL RESOURCE MANAGEMENT NOTES

1. **Satisfactory Progress:** By the end of the semester in which the student has attempted 60 hours (including transfer, advanced placement, advanced standing, and credit by examination), “satisfactory progress” towards a B.S. degree in Forest Resources and Environmental Conservation will include the following minimum criteria:
 - Having an in-major and overall grade point average of at least 2.0
 - Passing at least 24 semester credits that apply to Pathways General Education requirements
 - Passing the following courses or their equivalents: BIOL 1105, 1106, 1115, and 1116; CHEM 1035 and MATH 1026.
2. **Foreign Language Requirement:** A sequence of two (2) foreign language courses is required for graduation unless two (2) high school credits of the same foreign language or six (6) transfer credit hours of foreign language have been earned. These credits do not count toward graduation. See catalog section on “Graduation Requirements.”
3. **Policy on Student Exchanges:** Studying overseas or at another U.S. university is a wonderful opportunity to enhance your education. However, planning for an exchange should begin at least 9 months prior to leaving. This will allow time to determine what substitutions, if any, will be allowed and to arrange your schedule at Virginia Tech to ensure that all requirements for graduation are met.
4. **In-major grade point average computation:** Includes all courses designated as FIW, FREC, GEOG, NR, SBIO, GEOS, and WATR.
5. An in-major and overall GPA of at least 2.0 is required for graduation.
6. In accordance with university guidelines, courses satisfying degree core requirements may not be double-counted to satisfy other areas of a degree (e.g. Pathways requirements).
7. *Prerequisites: Some of the listed courses have prerequisites and some courses must be taken in sequence to satisfy prerequisites. Be sure to consult with the University Catalog or check with your advisor.
8. **For students interested in pursuing hydrology positions in the federal government, please note:**

US Office of Personnel Management: Hydrology Qualification Standards:

Basic Requirements:

Degree: physical or natural science, or engineering that included at least 30 semester hours in any combination of courses in hydrology, the physical sciences, geophysics, chemistry, engineering science, soils, mathematics, aquatic biology, atmospheric science, meteorology, geology, oceanography, or the management or conservation of water resources. The course work must have included at least 6 [credit hours] in calculus (including both differential and integral calculus, e.g., MATH 1025 and 1026), and at least 6 [credit hours] in physics (e.g., PHYS 2205 and 2206).

The Watershed Management minor will facilitate completion of additional water-related coursework that may be beneficial for those seeking federal hydrology positions. For full information, consult your advisor.