

College of Natural Resources and Environment Minor in Watershed Management

For student date of entry under UG Catalog 2023-2024

This interdisciplinary minor is a cross-college program among five colleges (11 departments) and the Virginia Water Resources Research Center (VWRRC) which serves as the program host.

Name: _____ Student ID#: _____

A minimum of 20 credit hours to include:

A. Required Core (5 credits):

___ FREC 4354 Forest Soil and Watershed Management (pre: CSES 3114 or FREC 2004 or ENSC 3114 or GEOS 3614 or CSES 3134 or ENSC 3134; 3 credits) or UAP 4374 Land Use and Environment: Planning and Policy (pre: junior standing; 3 credits)

___ ALS/WATR 4614 Watershed Assessment, Management & Policy (pre: Pre: Two 4000 level courses in environmental/natural resource science, management, engineering, and/or policy in BSE, CEE, FOR, FREC, GEOL, LAR, CSES, ENT, BIOL, GEOG, AAEC, UAP or equivalent; 2 credits)

B. Additional Courses (15 credits):

1. Watershed Hydrology (choose 1 course, 3 credits)

___ BSE 3324 Small Watershed Hydrology (pre: PHYS 2305)

___ BSE 4224: Field Methods in Hydrology (co: BSE 3324 or CEE 3314 or FREC/WATR 3104)

___ CEE 4304 Hydrology (pre: CEE 3304)

___ CEE 4314 Groundwater Resources (pre: CEE 3304)

___ CEE 4324 Open Channel Flow (pre: CEE 3314)

___ FREC/WATR 3104 Principles of Watershed Hydrology (pre: MATH 1226 or 2015, junior standing)

___ GEOS 4804 Groundwater Hydrology (pre: (MATH 1226 or MATH 2024), (PHYS 2205 or PHYS 2305))

___ LAR 3154 Watershed Sensitive Site Design and Construction (pre: LAR 2164)

2. Watershed Water Quality (choose 1 course, 3 credits)

___ BSE 3334 Nonpoint Source Assessment & Control (pre: BSE 3324)

___ BSE 4304 Nonpoint Source Pollution Modeling and Management (pre: BSE 3334)

___ CSES 4644 Land-based Systems for Waste Treatment

___ ENSC/CSES 4314 Water Quality (pre: MATH 1026 or MATH 1226, (BIOL 1105 or BIOL 1106), (CHEM 1035 or CHEM 1036)

___ FREC/WATR 3754 Watersheds & Water Quality (pre: BIOL 1106, CHEM 1035, (FREC 2004 or FREC 2114 or FREC 3314 or BIOL 2804 or ENSC 3604))

3. Watershed Ecology (choose 1 course, 3 credits)

- BIOL 4004 Freshwater Ecology (pre: BIOL 2804 or BIOL 2804H) (4 credits)
- BIOL/CSES/ENSC 4164 Environmental Microbiology (pre: BIOL 2604)
- BIOL/ENT 4354 Aquatic Entomology (pre: (BIOL 1005, 1006), (BIOL 1015, 1016) or (BIOL 1105, 1106, 1115, 1116)) (4 credits)
- CSES/ENSC 4444 Managed Ecosystems, Ecosystem Services, and Sustainability (pre: CSES 3114 or CSES 3134, junior standing)
- FREC 4374 Forested Wetlands (pre: FREC 4354 or CSES 3114 or ENSC 3114 or GEOS 3614 or CSES 3134 or ENSC 3134)
- FIW 4614 Fish Ecology (pre: BIOL 1106)

4. Watershed Geospatial Information Systems (choose 1 course, 3 credits)

- BSE 4344 Geographic Information Systems for Engineers (pre: BSE 3324 or CEE 3314 or FREC/WATR 3104)
- FREC 4114 Information Technologies for Natural Resources Management (Pre: FREC 2214 or GEOG 2314)
- FREC 4214 Forest Photogrammetry and Spatial Data Processing (pre: senior standing)
- FREC/WATR 4244 Hydroinformatics (pre: FREC/WATR 3104)
- GEOG 2084 Principles of Geographic Information Systems
- GEOG/GEOS 4354 Introduction to Remote Sensing

5. Watershed Law, Policy, and Planning (choose 1 course, 3 credits)

- AAEC 3314 Environmental Law
- AAEC 3324 Environmental and Sustainable Development Economics (pre: AAAEC 1005 or AAEC 1006 or ECON 2005)
- AAEC 4344 Sustainable Development Economics (pre: AAEC 3004 or AAEC 3324 or ECON 4014)
- FREC/WATR 4464 Water Resources Policy and Economics (pre: AAEC 1005 or ECON 2005)
- GEOG/WATR 2004 Water, Environment, and Society
- LAR 3044 Land Analysis and Site Planning
- UAP 4184 Community Involvement (pre: senior standing)
- UAP 4344 Law of Critical Environmental Areas

Notes:

Courses for the Watershed Management minor and the Water: Resources, Policy, and Management major overlap significantly. Therefore, students may not pursue this major and minor concurrently.

Minimum GPA requirement of 2.0 overall for courses taken towards the minor.

Prerequisites: Some courses in the requirements listed above may have prerequisites. Be sure to consult the University Course Catalog or check with your advisor. Students must plan to satisfy course prerequisites outside of the 20 credits required toward the minor.

For more information or to declare the minor, consult with an academic adviser in The Advising Center in 138 Cheatham or the program coordinator, Dr. Kevin McGuire in the Water Resources Research Center in 210 Cheatham Hall. If students are requesting course substitutions, the request forms can be received in the CNRE Advising Center and should be completed in consultation with Dr. Kevin McGuire. Approval will be contingent upon the support of the watershed management minor oversight committee.

Updated: 9/1/2021