

## College of Natural Resources and Environment Minor in Watershed Management

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

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):**

- \_\_\_ UAP 4374 Land Use and Environment: Planning and Policy (3 credits)
- \_\_\_ ALS/WATR 4614 Watershed Assessment, Management & Policy (2 credits)

**B. Additional Courses (15 credits):**

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

- \_\_\_ BSE 3324 Small Watershed Hydrology (co: CEE 3304 or CHE 3114 or ESM 3234 or ESM 3024 or ME 3404)
- \_\_\_ BSE 4224: Field Methods in Hydrology (co: BSE 3324 or CEE 3314 or FREC/WATR 3104)
- \_\_\_ CEE 4304 Hydrology (pre: 3304 with grade of C- or better)
- \_\_\_ CEE 4314 Groundwater Resources (pre: 3304 with grade of C- or better)
- \_\_\_ CEE 4324 Open Channel Flow (pre: 3314)
- \_\_\_ FREC/WATR 3104 Principles of Watershed Hydrology (pre: MATH 1226 or 2015, junior standing)
- \_\_\_ GEOS 4804 Groundwater Hydrology (pre: PHYS 2205 or PHYS 2305, MATH 1206)
- \_\_\_ LAR 3154 Watershed Sensitive Site Design and Construction (pre: 2164)

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

- \_\_\_ BSE 3334 Nonpoint Source Assessment & Control (pre: 3324)
- \_\_\_ BSE 4304 Nonpoint Source Pollution Modeling and Management (pre: 3334)
- \_\_\_ CSES 4644 Land-based Systems for Waste Treatment
- \_\_\_ ENSC/CSES 4314 Water Quality
- \_\_\_ 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))
- \_\_\_ FREC 4354 Forest Soil and Watershed Management (pre: CSES 3114 or ENSC 3114 or GEOS 3614 or CSES 3134 or ENSC 3134)

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

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

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

- BSE 4344 Geographic Information Systems for Engineers (pre: senior standing; 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)
- 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: 1005 or 1006 or ECON 2005)
- AAEC 4344 Sustainable Development Economics (pre: 3004 or 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 (pre: 1004)
- UAP 4184 Community Involvement and Public Participation (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: 8/9/2019