Professional Master's Degree in Wildlife and Fisheries Conservation: Watershed Science and Management.

Integrated Watershed Management is an inter-disciplinary area of study that is designed to provide professional training in watershed science and management. The program is designed to develop understanding of watershed processes and their interrelationships at a landscape level. The student will gain understanding of the watershed system and its relationship to natural resource and economic issues. Students will gain insights into how various components like land quality, hydrology, terrestrial and aquatic ecosystems, socioeconomic processes, pollutant transfer, institutions, communities, and economic growth interact at a watershed scale. The student will be trained in scientific concepts, assessment methods, analytical tools, watershed policies and practices, and techniques to address problems facing watershed communities. Students will gain experience in understanding watersheds through local, regional, national, and international perspectives. An internship with federal, state, or local watershed programs along with the academic requirement will provide necessary training for employment with private, NGO, and government agencies involved in watershed programs. (Concentration Advisor: Dr. Timothy O. Randhir)

A. Prerequisites

Candidates for this program will be admitted on the basis of their academic training and professional experiences. At a minimum, candidates are expected to have:

1) Bachelor's degree in
   a) A natural resources field or environmental sciences, or
   b) Any field with a minor in natural resources, or environmental policy, or social sciences associated with economic and environmental issues or
   c) Any field with a strong mathematical or statistical background in physical and biological and social sciences or
   d) Any field with a multidisciplinary focus on natural resources and planning at a landscape scale or
   e) Any field with at least two years of appropriate experience working as a natural resource professional

B. Requirements

1) A minimum of 36 credits is required, 12 of which must be at the 600-level or above
2) A six-credit degree internship approved by the student's advisor and other committee members (see below)
3) A publishable-quality professional paper presenting the results of the degree project
4) Two seminar's registration in WFCON graduate seminars on Research Methods and Communicating Science, including presentation in Communicating Science related to the student's degree project/internship.
5) Knowledge in at least one area of each "core" subject area is required for completion of a masters degree in WFCON, and

6) A general Master's examination by a committee composed of three persons, including major advisor; two of these persons must have WFCON graduate faculty status (one of which must be a university employee).

C. Curriculum

1) Core Courses (12 credits)

   a. EnvSci 597R Watershed Science and Management
   b. FOREST 528 Forest and Wetland Hydrology
   c. WFCON 592G GIS in Forestry, Fisheries and Wildlife
   d. WFCON 597B Ecosystem Management
      or WFCON 697L Landscape Ecology

2) Elective Courses (≥ 16 credits)

   a) Science (≥ 6 credits)
      Physical (≥ 3 credits)
      CEE560 Hydrology
      CEE661 Subsurface Pollution
      776 Contaminated Soil and Groundwater
      GEO587 Hydrogeology
      GEO573 Environmental Geophysics
      PLSOIL 597 Groundwater Science and Technology
      and
      (i) Ecological (≥ 3 credits)
          W&FCON 563 Wetlands Wildlife Ecology and Management
          W&FCON 768 Advanced Wetland Ecology
          WFCON 777 Advanced Systems Ecology

   b) Management and Policy (≥10 credits)

      (i) Assessment and Modeling (≥3 credits)

      CEE 577 Surface Water Quality Modeling
      WFCON 577 Introduction to Ecosystem Modeling
      CEE 572 Environmental Engineering Analysis I
      FOREST 697A Multivariate Statistics for Natural Resources
      ENV HL 562 Air Quality Assessment

      and

      (ii) Economics and Policy (≥3 credits)

      ENVDES 595 Environmental Law and Resource Management
      RES EC 720 Environmental and Natural Resource Economics
      RES EC 721 Advanced Natural Resource Economics
      ENVDES 553 Resource Policy and Planning
REG PL 643 Economic Development Issues in Planning
POLSCI 784 Environmental Policy
REG PL 641 Water Resources Planning
and
(iii) Special topics (≥ 3 credits)
Urban:
GEOG 666 The Water's Edge
ENVDES 577 Urban Policies
REG PL 574 City Planning
Group process:
POLSCI 697A Conflict Resolution
PSYCH 664 Group Dynamics
POLSCI 620 Public Administration
Other:
WFCON 780 International Conservation
GEO 592C SEM-Coastal Resource Management

3) Internship / Project (6 credits)
WFCON 698 Practicum

4) Seminars (2 credits)
WFCON 600- or 700- graduate seminars on Research Methods and Communicating Science

D. Internship / Project

Each student in the program not already professionally employed in a watershed position is required to complete at least a 3-month long professional internship. There are numerous internship opportunities with the MA Watershed Initiative of the Executive Office of Environmental Affairs (EOEA), MA Watershed Coalition, U.S. EPA, Metropolitan District Commission, USGS, Nonprofit Organizations, NRCS, Town Planning Boards, DEM, DEP, and several other agencies.

The student will develop a publishable report on the watershed project undertaken during the internship. The student will present the report to an examination committee of three professors.

E. Matriculation and Financial Aid

This program should take a full-time student three to four semesters. Some exceptionally well-prepared students may be able to transfer in up to 6 credits of previous work, and finish the program in three semesters, including summer internship. Part-time students may take up to 3 years or more to complete the program. Funding opportunities are limited, and most students should be financially able to complete the program without relying on research and teaching assistantships.