MS in Environmental Sciences and Engineering: Environmental Policy Analysis

What is the Program?

Solutions to the most challenging environmental problems lie at the intersection of science, engineering, policy, planning and business. Whether we consider global climate change or provision of safe drinking water or state plans to reduce ozone, the goals of environmental protection will be reached only by teams of people with expertise in the science underlying the issue, engineering methods for technological change, and tools of policy analysis and design and planning, as well as the ability to marshal resources required to implement solutions. Responding to the need for professionals with interdisciplinary skills , the Department of Environmental Sciences and Engineering (DESE) offers a two-year masters program with a focus on environmental science and policy analysis, leading to an MS degree in Environmental Sciences and Engineering with a concurrent Graduate Minor Certificate in Public Policy Analysis or other related program options in City and Regional Planning or the Kenan-Flagler Business School.

The program is especially suited to students seeking careers that apply advanced methods from environmental sciences and engineering in the assessment and selection of strategies for the prevention, control and/or mitigation of environmental impacts from societal activities. The heart of this MS program is a year-long practicum in which each student works in the research program of a science, engineering or policy faculty member, and brings that research to a team-based project.

What are the Requirements?

Students in environmental policy analysis must fulfill the minimum 30 credit hour course requirements of the Department, 15 of which must be in courses offered or cross-listed by the Department including the required departmental course in Unifying Concepts (ENVR 104, 3 credits).

The Human Studies Division of the EPA is located on campus, with EPA policy offices nearby in the Research Triangle Park

In lieu of a formal Master's thesis, students in this program complete a year-long, 6-credit Practicum in Environmental Policy during their second year (ENVR 206), supplemented by an individual Masters Technical Report developed through research with an assigned faculty advisor. In addition to fulfilling the Department's course requirements, students must complete a formal minor in the Department of Public Policy, which consists of prerequisites in basic statistics and intermediate microeconomics plus four of the following five courses:

PLCY 205 - Introduction to Public Policy Analysis (required)
PLCY/ENVR 185 - American Environmental Policy
PLCY/ENVR 186 - Environmental Policy Instruments
PLCY/ENVR 175 - Environmental Risk Assessment
PLCY 232/ENVR 289 - Public Investment Theory

All these courses except PLCY 205 are also cross-listed in DESE. Students take the majority of these Public Policy core courses during their first year in order to be prepared to participate in the practicum during their second year. Altogether, the required courses for this degree include ENVR 104 (3 credit hours), the Minor in Public Policy (12 credit hours), and the ENVR 206 Practicum in Environmental Policy (6 credit hours), totaling 24 credits. Students must supplement these requirements with science and engineering electives appropriate to their individual research. It is recommended that these include at least three courses in the substantive science or engineering area in which the student will conduct research for the Masters Technical Report. In addition to their academic advisor in Environmental Policy Analysis, each student is assigned a Research Advisor by the instructors of ENVR 206. In conducting this research, ENVR 206 replaces ENVR 392 (Masters Technical Report) or ENVR 393 (Masters Thesis) during the two semesters of the Practicum.

North Carolina provides a "living laboratory" for many of the team projects

The Year-long Practicum

DESE began with a focus on sanitary engineering, and provision of safe drinking water remains an area of world-class expertise in the department

During their second year, students are required to register for a year-long, group "practicum" course, ENVR 206. The topic of this practicum changes from year to year, but is focused on an environmental issue for which there is significant scientific and engineering research within DESE and other participating environmental departments (Geological Sciences, Marine Sciences, Geography, etc), significant policy and planning expertise in other departments (Public Policy, City and Regional Planning, Business) and for which an external client has been identified. The team-based project focuses on a major environmental issue in North Carolina, the nation or the world, with the topic set by a team of faculty and outside clients (such as the Environmental Protection Agency, North Carolina Department of Environment and Natural Resources, water utilities or others). Through these experiences, students gain specialized skills in scientific and engineering research, applying the tools of policy analysis; and the ability to function effectively in interdisciplinary teams.

DESE faculty develop and apply many of the models used by agencies to control air pollution

Students work with participating faculty to analyze and synthesize information, including scientific and engineering information about an environmental policy problem for that client. The group's task includes investigating an environmental problem, designing policy alternatives to address it, assessing the impacts of those policies on key environmental and health indicators, evaluating the strengths and weaknesses of alternative policies, and providing policy recommendations to the client. In addition to core substantive knowledge and analytical skills, , students develop skills in group organization and presentations, as well as practical experience in responding to a client's needs and deadlines. The final product is a team report, with each student contributing a separate technical appendix constituting their Masters Technical Report.

For more information:

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919-966-7676 (phone)
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Sample Curriculum

First Year, Fall Semester

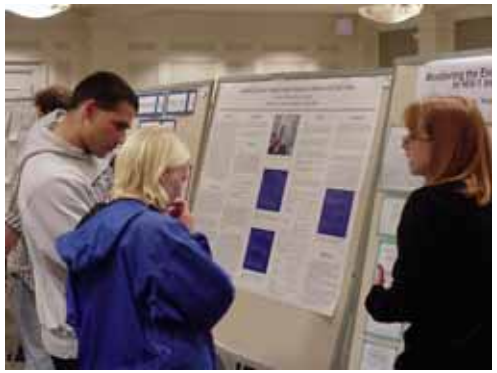
PLCY 205- Introduction to Public Policy
PLAN 210A/B- Microeconomics
ENVR 104 - Unifying Concepts
ENVR XXX - Science/Engineering Elective

First Year, Spring Semester

PLCY/ENVR 175 - Environmental Risk Assessment OR
PLCY 232/ENVR 289 - Public Investment Theory
PLCY/ENVR 186 - Envr. Policy Instruments
ENVR XXX- Science/Engineering Elective
ENVR XXX- Science/Engineering Elective

Second Year, Fall Semester

ENVR 206A- Practicum in Environmental Policy
PLCY/ENVR 185 - American Environmental Policy
ENVR XXX - Science/Engineering Elective
BIOS 145 - Biostatistics (or equivalent)

Second Year, Spring Semester

ENVR 206B - Practicum in Environmental Policy
ENVR XXX - Science/Engineering Elective
Elective in any participating department