M.S. in Environmental Science and Policy

Area of Emphasis

One of the primary goals of the Environmental Science and Policy (ES&P) graduate program is to prepare technically competent and creative individuals for positions in the public or private sectors. Individuals with such career objectives will focus on environmental science course work in the emphases of Ecosystems Studies or Environmental Technology and Analysis. Another objective of the ES&P graduate program is to prepare highly skilled and imaginative individuals for management and policy-making positions in government, nonprofit organizations and the private sector. Individuals with such career objectives will focus on environmental policy course work in the emphasis of Environmental Policy and Administration. Students will be prepared to deal with a variety of environmental problems and to pursue further graduate work in similar or related areas. A fourth option is to develop a “personal program of study” more fitting to the career interest of the student. In addition to the general core requirements described above, students will select a program of study from one of the areas of emphasis described below.

Areas of Emphasis and Requirements

Area of emphases and credit loads are described in detail below (credits are unduplicated by the program core). Note that some undergraduate courses are cross-listed as graduate courses and require only graduate status to enroll. It is strongly recommended that a student speak with the professor assigned to the course prior to enrolling to ensure that the student is adequately prepared to succeed in the course. Personal programs of study must conform to Environmental Science and Policy program guidelines and be approved in advance by the student’s graduate committee, the Environmental Science and Policy program chair, and the Associate Vice Chancellor for Graduate Studies. These programs must include the entire 18-credit program core requirements, at least one quantitative course ENV S&P 755 and include a minimum of 34 total credits. It is possible, even necessary depending on area requirements, that students will include one or two four-credit statistics courses in their academic program. In those cases, only seven credits would be needed in one semester which could be satisfied by ENV S&P 715 or ENV S&P 795, or an independent study or internship. If a regular course is selected, the academic program would include a total of 36 credits.

Students must complete requirements in one of the following areas of emphasis:

- Ecosystems Studies
- Environmental Policy and Administration
- Environmental Technology and Analysis
- Personal Program of Study

Ecosystems Studies

Students who select the Ecosystems Studies emphasis may study general features of ecosystems such as nutrient regeneration, productivity, or trophic relationships. They may also focus on specific questions related to endangered species, predation and competition. Natural, managed, and disturbed ecosystems are examined in classroom and field activities. Studies on aquatic systems take advantage of the University’s location on Green Bay, participation in the University of Wisconsin Sea Grant Program, and the on-campus Cofrin Center for Biodiversity. The University’s proximity to large areas of northern forests and the Door County Peninsula provides convenient locations for the study of diverse ecosystems. The Ecosystems Studies area of emphasis prepares students to:

- design and conduct scientific investigations;
- collect, evaluate, and interpret data;
- make responsible decisions to implement appropriate technologies and strategies to solve environmental problems; and
- effectively communicate the results of environmental studies to other scientists, decision makers and the general public.

Graduates typically work as scientists, environmental specialists, or project managers with industry, commercial laboratories, engineering firms, or government agencies, where their work involves analysis, research, consulting, compliance, or enforcement. Students who pursue the Ecosystems Studies area of emphasis are expected to have completed biology courses beyond introductory courses, typically the equivalent to a minor or major in biology (taken elsewhere or prior to entrance). These courses should include an ecology course.

Ecosystems Studies

Emphasis Prerequisites

Students who pursue the Ecosystems Studies area of emphasis are expected to have completed biology courses beyond introductory courses, typically the equivalent to a minor or major in biology (taken elsewhere or prior to entrance). These courses should include an ecology course.

Code	Title	Credits
General Core Requirements		**9**
ENV S&P 701	Perspectives in Environmental Science and Policy	
Choose one of the following repeatable courses(2 credits)		

ENV S&P 702	Stable Isotopes in the Environment	
or ENV S&P 715	Seminar in Environmental Science and Policy	
or ENV S&P 795	Special Topics	
Environmental Science		
ENV S&P 740	Ecology and Management of Ecosystems	
or ENV S&P 767	Environmental Technology and Analysis	
Public Policy		
ECON 713	Environmental Economics and Sustainability	
or ENV S&P 731	Freshwater and Marine Policy & Law	
or ENV S&P 732	Wildlife Law and Policy	
or ENV S&P 752	Environmental Policy and Administration	
Required Quantitative Course		**4**
ENV S&P 755	Environmental Data Analysis	
Choose one of the following required ecology courses:		**3**
BIOLOGY 669	Conservation Biology	
ENV S&P 740	Ecology and Management of Ecosystems	
ENV S&P 743	Ecology and Analysis of Communities and Landscapes	
Additional Courses - complete 9 credits		**9**
Choose any combination from the courses listed here or above.		
Biology:		
BIOLOGY 510	Plant Biodiversity	
BIOLOGY 511	Plant Physiology	
BIOLOGY 512	Mycology	
BIOLOGY 520	Field Botany	
BIOLOGY 522	Environmental Microbiology	
BIOLOGY 542	Ornithology	
BIOLOGY 543	Mammalogy	
BIOLOGY 555	Entomology	
BIOLOGY 557	Marine Biology	
BIOLOGY 565	Aquatic Invertebrates	
BIOLOGY 601	Fish and Wildlife Population Dynamics	
BIOLOGY 602	Advanced Microbiology	
BIOLOGY 649	Wetland Ecology	
Environmental Science:		
ENV SCI 520	The Soil Environment	
ENV SCI 530	Hydrology	
ENV SCI 601	Stream Ecology	
ENV SCI 603	Limnology	
GEOSCI 670	Glacial Geology & Landscapes	
Environmental Policy and Planning:		
ECON 713	Environmental Economics and Sustainability	
ENV S&P 752	Environmental Policy and Administration	
EPP 579	Natural Resource Policy, Law, and Administration	
POL SCI 578	Environmental Law	
POL SCI 580	Global Environmental Politics and Policy	
PUB ADM 522	Environmental Planning	
Math and Statistics:		
MATH 529	Applied Regression Analysis	
MATH 630	Design of Experiments	
Seminar and Special Topics:		
ENV S&P 715	Seminar in Environmental Science and Policy	
ENV S&P 795	Special Topics	

ENV S&P 702	Stable Isotopes in the Environment	
Completion Track - Select one of the following (Thesis, Internship, or Course Based):		**6-12**
Thesis: (6 credits)		
ENV S&P 799	Thesis	
Internship: (9 credits)		
ENV S&P 763 & ENV S&P 797	Capstone in Environmental Science and Policy and Internship	
Course Based: (12 credits)		
ENV S&P 763	Capstone in Environmental Science and Policy	
ENV S&P 715	Seminar in Environmental Science and Policy	
or ENV S&P 795	Special Topics	
ENV S&P 740	Ecology and Management of Ecosystems	
or ENV S&P 743	Ecology and Analysis of Communities and Landscapes	
or ENV S&P 767	Environmental Technology and Analysis	
3-5 additional elective credits		
Total Credits		**31-37**

Environmental Policy and Administration

Students who select the Environmental Policy and Administration emphasis may study the characteristics and operation of government institutions; organizational policy, design and evaluation; and substantive policies in regulation, environmental protection, science and technology, and energy and natural resources. Courses emphasize environmental problem analysis and planning, policy analysis and formulation, environmental law and implementation, program evaluation, statistical analysis and the application of social science research methods to environmental issues. Studies benefit from interaction with the Center for Public Affairs and the Cofrin Center for Biodiversity.

The Environmental Policy and Administration area of emphasis prepares students to:

- identify and analyze policy-relevant problems of major importance;
- collect, assess, and interpret policy-relevant data;
- design, evaluate, and implement strategies and programs for addressing such problems; and
- effectively communicate the results of policy analyses and evaluations to diverse audiences, including environmental scientists, policy makers, and the general public.

Graduates typically enter governmental agencies at the national, state or local level, or nonprofit organizations, where their work involves policy analysis, planning, or administration. Some prefer positions in legislative bodies, environmental organizations, or industry where administrative or analytical work is combined with politics, public relations, education or advocacy.

Emphasis Prerequisites

Students who pursue Environmental Policy and Administration come from a variety of undergraduate backgrounds such as economics, engineering, environmental planning, environmental policy, political science, public administration, sociology, or more traditional science disciplines. The appropriate undergraduate course preparation is dictated by the prerequisites for the courses to be included in a program of study and the thesis topic area. It would normally be expected that students would have the equivalent of one year of undergraduate course work in political science, public administration, or economics.

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General Core Requirements		**9**
ENV S&P 701	Perspectives in Environmental Science and Policy	
Choose one of the following repeatable courses (2 credits)		
ENV S&P 702	Stable Isotopes in the Environment	
or ENV S&P 715	Seminar in Environmental Science and Policy	
or ENV S&P 795	Special Topics	
Environmental Science		
ENV S&P 740	Ecology and Management of Ecosystems	
or ENV S&P 767	Environmental Technology and Analysis	
Public Policy		
ECON 713	Environmental Economics and Sustainability	
or ENV S&P 731	Freshwater and Marine Policy & Law	

or ENV S&P 732	Wildlife Law and Policy	
or ENV S&P 752	Environmental Policy and Administration	
Required Courses - complete 6 credits:		**6**
ECON 713	Environmental Economics and Sustainability	
ENV S&P 752	Environmental Policy and Administration	
Administrative Organizations and Processes - complete 3 credits:		**3**
EPP 578	Environmental Law	
EPP 579	Natural Resource Policy, Law, and Administration	
POL SCI 610	Intergovernmental Relations	
PUB ADM 514	Administrative Law	
Public Policy - choose 3 credits:		**3**
ECON 713	Environmental Economics and Sustainability	
EPP 579	Natural Resource Policy, Law, and Administration	
POL SCI 516	Congress: Politics and Policy	
POL SCI 578	Environmental Law	
POL SCI 580	Global Environmental Politics and Policy	
PUB ADM 506	Regulatory Policy and Administration	
PUB ADM 522	Environmental Planning	
Additional Courses		**4**
Select any combination from the courses listed here or above.		
Research Methods:		
ENV S&P 755	Environmental Data Analysis	
MATH 630	Design of Experiments	
Environmental Science		
ENV S&P 724	Hazardous and Toxic Materials	
ENV S&P 740	Ecology and Management of Ecosystems	
ENV S&P 743	Ecology and Analysis of Communities and Landscapes	
ENV S&P 767	Environmental Technology and Analysis	
ENV SCI 505	Environmental Fate and Transport	
ENV SCI 518	Pollution Control	
ENV SCI 523	Pollution Prevention	
ENV SCI 660	Resource Management Strategy	
ENV SCI 633	Ground Water: Resources and Regulations	
Environmental Planning and Geographic Information Systems:		
EPP 650	Advanced Geographic Information Systems	
Seminar and Special Topics:		
ENV S&P 715	Seminar in Environmental Science and Policy	
ENV S&P 795	Special Topics	
Completion Track (Thesis, Internship, or 12 additional elective credits):		**6-12**
Thesis: (6 credits)		
ENV S&P 799	Thesis	
Internship: (9 credits)		
ENV S&P 763 & ENV S&P 797	Capstone in Environmental Science and Policy and Internship	
Course Based: (12 credits)		
ENV S&P 763	Capstone in Environmental Science and Policy	
ENV S&P 715	Seminar in Environmental Science and Policy	
or ENV S&P 795	Special Topics	
ENV S&P 740	Ecology and Management of Ecosystems	
or ENV S&P 743	Ecology and Analysis of Communities and Landscapes	
or ENV S&P 767	Environmental Technology and Analysis	

3-5 additional elective credits	
Total Credits	**31-37**

Environmental Technology and Analysis

Students who select the Environmental Technology and Analysis emphasis may study concepts of: environmental modeling and remediation; municipal, industrial, and agricultural waste transformation, utilization and disposal; alternative energy systems and energy efficiency; or chemical, biological and geological aspects of ground or surface water systems. Students may be involved with evaluating alternative technologies and strategies for effective planning and policy implementation for the future. Principles and techniques of quantitative and qualitative analysis are applied to problems of supply, distribution, and utilization of natural resources and to the optimization of treatment and management costs in the context of public agencies, consulting firms and industries.

The Environmental Technology and Analysis area of emphasis prepares students to:

- design and conduct scientific investigations;
- collect, evaluate, and interpret data;
- make responsible decisions to implement appropriate technologies and strategies to solve environmental problems; and
- effectively communicate the results of environmental studies to other scientists, decision makers and the general public.

Graduates typically work as scientists, environmental specialists, or project managers with industry, commercial laboratories, engineering firms, or government agencies, where their work involves analysis, research, consulting, compliance, or enforcement.

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General Core Requirements		**9**
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Choose one of the following repeatable courses (2 credits)		
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Environmental Science		
ENV S&P 740	Ecology and Management of Ecosystems	
or ENV S&P 767	Environmental Technology and Analysis	
Public Policy		
ECON 713	Environmental Economics and Sustainability	
or ENV S&P 731	Freshwater and Marine Policy & Law	
or ENV S&P 732	Wildlife Law and Policy	
or ENV S&P 752	Environmental Policy and Administration	
Required Quantitative Course:		**4**
ENV S&P 755	Environmental Data Analysis	
Additional Courses - 12 credits		**12**
Choose any combination of the following courses listed below:		
Chemistry		
CHEM 520	Thermodynamics and Kinetics	
CHEM 522	Therymodynamics and Kinetics Laboratory	
CHEM 530	Biochemistry	
CHEM 531	Biochemistry Laboratory	
CHEM 602	Advanced Organic Chemistry	
CHEM 603	Advanced Organic Chemistry Laboratory	
CHEM 613	Instrumental Analysis	
Environmental Science:		
BIOLOGY 522	Environmental Microbiology	
ENV SCI 505	Environmental Fate and Transport	
ENV SCI 518	Pollution Control	
ENV SCI 520	The Soil Environment	
ENV SCI 523	Pollution Prevention	
ENV SCI 530	Hydrology	

ENV SCI 535	Water and Waste Water Treatment	
ENV SCI 615	Solar and Alternate Energy Systems	
ENV SCI 660	Resource Management Strategy	
ENV SCI 633	Ground Water: Resources and Regulations	
ENV SCI 664	Atmospheric Pollution and Abatement	
ENV S&P 724	Hazardous and Toxic Materials	
ENV S&P 740	Ecology and Management of Ecosystems	
ENV S&P 767	Environmental Technology and Analysis	
GEOSCI 621	Geoscience Field Trip	
GEOSCI 632	Hydrogeology	
GEOSCI 670	Glacial Geology & Landscapes	
Environmental Policy and Planning:		
ECON 713	Environmental Economics and Sustainability	
ENV S&P 752	Environmental Policy and Administration	
EPP 551	Water Resources Policy and Management	
EPP 579	Natural Resource Policy, Law, and Administration	
POL SCI 578	Environmental Law	
POL SCI 580	Global Environmental Politics and Policy	
Math and Statistics		
MATH 529	Applied Regression Analysis	
MATH 630	Design of Experiments	
Seminar and Special Topics:		
ENV S&P 715	Seminar in Environmental Science and Policy	
ENV S&P 795	Special Topics	
ENV S&P 702	Stable Isotopes in the Environment	
Completion Track (Thesis, Internship, or 12 additional elective credits):		**6-12**
Thesis: (6 credits)		
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ENV S&P 740	Ecology and Management of Ecosystems	
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or ENV S&P 767	Environmental Technology and Analysis	
3-5 additional elective credits		
Total Credits		**31-37**

Personal Program of Study

Personal programs of study must conform to Environmental Science and Policy program guidelines and be approved in advance by the student's graduate committee, the Environmental Science and Policy program chair, and the Associate Vice Chancellor for Graduate Studies and Research. These programs must include the entire 18-credit program core requirements, at least one quantitative course ENV S&P 755 (http://catalog.uwgb.edu/search/?P=ENV S&P 755) and include a minimum of 34 total credits.

It is possible, even necessary depending on area requirements, that students will include one or two four-credit statistics courses in their academic program. In those cases, only seven credits would be needed in one semester which could be satisfied by ENV S&P 715 (http://catalog.uwgb.edu/search/?P=ENV S&P 715) or ENV S&P 795 (http://catalog.uwgb.edu/search/?P=ENV S&P 795), or an independent study or internship. If a regular course is selected, the academic program would include a total of 36 credits.

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Public Policy		
ECON 713	Environmental Economics and Sustainability	
or ENV S&P 731	Freshwater and Marine Policy & Law	
or ENV S&P 732	Wildlife Law and Policy	
or ENV S&P 752	Environmental Policy and Administration	
Required:		**3**
ENV S&P 755	Environmental Data Analysis	
Pre-approved individual courses: [1]		**13**
Personal programs of study must conform to Environmental Science and Policy program guidelines and be approved in advance by the student's graduate committee, the Environmental Science and Policy program chair, and the Associate Vice Chancellor for Graduate Studies and Research.		
Completion Track (Thesis, Internship, or 12 additional elective credits):		**6-12**
Thesis: (6 credits)		
ENV S&P 799	Thesis	
Internship: (9 credits)		
ENV S&P 763 & ENV S&P 797	Capstone in Environmental Science and Policy and Internship	
Course Based: (12 credits)		
ENV S&P 763	Capstone in Environmental Science and Policy	
ENV S&P 715	Seminar in Environmental Science and Policy	
or ENV S&P 795	Special Topics	
ENV S&P 740	Ecology and Management of Ecosystems	
or ENV S&P 743	Ecology and Analysis of Communities and Landscapes	
or ENV S&P 767	Environmental Technology and Analysis	
3-5 additional elective credits		
Total Credits		**31-37**

1 If ENV S&P 755 is completed, only 12 additional credits of pre-approved coursework is required.