

# Master of Science in Environmental Science and Policy

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## Program Overview

The University of Wisconsin-Green Bay's Environmental Science and Policy (ES&P) program provides outstanding professional training for students with interest in the scientific and/or public policy aspects of today's environmental challenges. The curriculum prepares graduates for positions in scientific, technical, and administrative organizations and agencies. The program's core focuses on the identification and analysis of environmental issues, and on developing innovative interdisciplinary approaches and solutions to problems. Students pursuing the M.S. should first seek to select one of three Degree Options that best matches their current needs and future professional ambitions: **Thesis, Internship, or Course-Based.**

The ES&P program also offers four Areas of Emphasis within each Degree Option: **Ecosystems Studies, Environmental Technology and Analysis, Environmental Policy and Administration, and a Personal Program of Study.** While all Areas of Emphasis seek to integrate the sciences with policy and administration, students choose to specialize in one area depending on career interests. Each emphasis has a practical orientation that engages the student in real-world problems and issues, emphasizing skill sets necessary for solving critical environmental challenges. Although one emphasis option is the Personal Program of Study, our M.S. degree allows for and encourages students to design their own program around a core of required courses, regardless of their Area of Emphasis.

Our Master of Science degree fits the needs of both part-time and full-time students, and may be completed following either a thesis or non-thesis (Internship or Course-Based) degree plan. Most graduate courses in the program are offered at other times convenient for working individuals. Also, students benefit from the mix of perspectives and experiences held by the various participants in a course: Full-time students gain from the practical knowledge of working professionals, who are in turn challenged by the current theoretical knowledge of those with recent undergraduate degrees. Students like our small class sizes and the close association with faculty. Full-time students with all prerequisites often complete the program in two years, while part-time students usually take three to five.

Our program features faculty who are widely published in the professional literature, active in externally funded research, and committed to excellence in teaching. The faculty associated with the program firmly believe that environmental policy must be based on good science, but also that environmental science is ineffective unless it can be translated into sound policy decisions. The UW-Green Bay Environmental Science and Policy Graduate Program is closely connected with national, state, and local agencies, providing students with opportunities to become engaged with, and contribute to, meaningful scientific research and policy formulation. Indeed, many graduates of the program are now professionals in these agencies. The University offers modern and well-equipped facilities that support research and study in the areas of environmental science and policy. Office and laboratory computers throughout campus enable access to advanced geographic information system (GIS), statistical, and modeling software.

Field sites available for research include five University-managed natural areas, and a permanent UW-Green Bay forest research site in northern Wisconsin (Wabikon Forest Dynamics Plot), which is managed by the U.S. Forest Service as part of the Smithsonian Institution's Global Earth Observatory Network. UW-Green Bay researchers have established successful ongoing collaborations with regional governmental agencies and conservation organizations, including the U.S. Fish and Wildlife Service, U.S. Forest Service, U.S. National Park Service, U.S. Environmental Protection Agency, Wisconsin Department of Natural Resources, U.S. Department of Agriculture, U.S. Geological Survey, The Nature Conservancy, and NEW Water (formerly Green Bay Metropolitan Sewerage District), as well as local governments and regional businesses and industries.

The UW-Green Bay Cofrin Library collection is strong in all areas of environmental studies, but particularly so in environmental policy and administration. The library provides easy access to many pertinent journals for ES&P students, and interlibrary loans are readily accessible from the broader UW System when sources are not available locally.

## Switching Between Thesis, Internship and Course-Based Options

Students wishing to switch between Thesis, Internship, and Course-Based Options must amend their GR forms accordingly and, pending committee approval, can apply earned credits interchangeably toward degree completion. However, all course substitutions are subject to the approval of the Graduate Committee, Environmental Science & Policy (ES&P) Graduate Program Chair, Associate Provost for Academic Affairs, and Director of Graduate Studies. All other requirements must meet the specifications highlighted above under the "Thesis-Option", "Internship-Option" or "Course-Based Option" catalog sections.

## Integrated Bachelor/Master Program

Credits earned from undergraduate courses cannot be directly applied toward the graduate degree. However, the UW-Green Bay Integrated Bachelor/Master Program in Environmental Science and Policy provides a mechanism for exceptional students to begin working on their Master's Degree during their last year of completing their Bachelor's degree in either Environmental Science or Environmental Policy and Planning. The goal of the Integrated Program is to encourage high performing students in the above undergraduate programs to continue their graduate studies at UW-Green Bay. Undergraduate students are encouraged to discuss the Integrated Program with the Environmental Science & Policy Program Chair (or other program advisors) before achieving senior status.

## Admission Process and Requirements

Students wishing to enter the Environmental Science and Policy (ES&P) graduate program may apply at any time. However, applications are reviewed by the Admissions Committee once in the fall and once in the spring semester only. Priorities for research and teaching assistantships are given to students who apply by October 1 (for enrollment the following spring semester), and March 1 (for fall semester enrollment). All students are encouraged to gain a better understanding of the culture and educational environment at UW-Green Bay by visiting the campus. Graduate School staff can help arrange meetings with potential advisors, attend a graduate class, meet with other graduate students, and tour our facilities.

### **Minimum admission requirements for the UW-Green Bay Environmental Science & Policy Master's Degree Program:**

- A baccalaureate degree from an accredited institution.
- A 3.0 GPA (on a 4.0 scale) for the final two years of study.
- Completion of an undergraduate introductory statistics course, or equivalent.
- Two letters of recommendation:
  - *Preferred:* One letter from a faculty advisor, and one from an employer.
  - *Alternate option:* Two letters from faculty advisors.
- A 200-300 word Statement of Interest in the program. In a cover letter, applicants may describe their qualifications, scientific interests, research experiences, and potential faculty advisors (if seeking the Thesis Option)
- Selection of desired Degree Option (Thesis, Internship, or Course-Based)
  - Students interested in the Thesis Option need to speak with and identify in the Statement of Interest an advisor willing to supervise the thesis at *the time of application*.
  - Students interested in the Internship and Course-Based Options must contact the Chair of the ES&P Graduate Program regarding internship opportunities, expectations, and program details *at the time of application*.
- Graduate Record Examination scores are **NOT** required for application to the Environmental Science and Policy Graduate Program.
- As a proof of English proficiency, international students are required to submit a minimum TOEFL iBT score of 79, or a minimum IELTS score of 6.0 overall band (from a test date within two years). TOEFL scores must be submitted electronically via ETS. IELTS scores can be submitted electronically or by paper

Note that each Area of Emphasis (Ecosystems Studies, Environmental Technology and Analysis, Public Policy and Administration, and the Personal Program of Study) requires different skills and preparation. Therefore, prerequisite courses appropriate to the Area of Emphasis are required for admission.

Each applicant's prior academic background is evaluated by the program's Admissions Committee. Applicants who do not meet the minimum requirements may be admitted if their academic record and letters of reference indicate potential for successful completion of the program. However, these students will likely be admitted on a "provisional" basis, and could have additional requirements as part of their academic plan in order to compensate for missing course or program prerequisites. Individuals with a bachelor's degree who wish to enroll in graduate courses without pursuing a degree may enroll as special students. Undergraduate students currently enrolled in UWGB Environmental Science & Policy programs may earn undergraduate and graduate credit concurrently (see the Integrated Program below).

The Thesis Option is designed for students who wish to pursue advanced research opportunities in the broad realm of environmental science and policy or related disciplines. This option should be considered by students whose career goals will ultimately require formal and dedicated research training from a hypothesis-driven framework. Students will consult with their Major Advisor and Thesis Committee to determine a specific Area of Emphasis once the Thesis Option has been selected. Note students are initially admitted to the Environmental Science & Policy (ES&P) Program under the Course-Based Degree Option unless an advisor from the ES&P graduate faculty has agreed to supervise the student's thesis. Students are encouraged to contact the ES&P Program Chair to assist in this process. Internship and Course-Based Option students may switch to the Thesis Option if a project develops through on-campus interactions and an ES&P graduate faculty member agrees to advise that student.

## Thesis Option (31 total credits)

All Thesis Option students accepted into the Environmental Science and Policy program are required to successfully complete the following set of core courses. Those who lack appropriate prerequisites may need to take additional courses to strengthen their background before taking a core class. Electives counting toward the degree are selected from the student's Area of Emphasis for a minimum of 16 credits. Selected elective courses must be unduplicated from the program's Core Requirements, and are in addition to thesis credits (see Registration for Thesis Credit below). Thesis students should enroll for a minimum of six thesis credits (ENV S&P 799) that coincide with major research activities, including writing and thesis defense preparation.

## General Core Requirements (9 credits)

All students matriculated into the Environmental Science and Policy program are required to successfully complete the following set of required core courses (9 credits).

Code	Title	Credits
<b>General Core Courses</b>		<b>1</b>
ENV S&P 701	Perspectives in Environmental Science and Policy	
<b>Choose one of the following repeatable courses (2 credits)</b>		<b>2</b>
ENV S&P 715 or ENV S&P 795	Seminar in Ecology and Evolution Special Topics	
<b>Environmental Science</b>		<b>3</b>
ENV S&P 740 or ENV S&P 767	Ecology and Management of Ecosystems Environmental Technology and Analysis	
<b>Public Policy</b>		<b>3</b>
ENV S&P 713 or ENV S&P 752	Environmental & Natural Resource Economics Environmental Policy and Administration	
Total Credits		<b>9</b>
<b>Code</b>		<b>Credits</b>
<b>Thesis/Research Credits</b>		<b>6</b>
ENV S&P 799	Thesis	

## Completion of an Elective Area of Emphasis:

- Ecosystems Studies (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/ecosys>)
- Environmental Policy and Administration (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/pol-adm>)
- Environmental Technology and Analysis (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/envtech>)
- Personal Program of Study (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/personal>)

## TOTAL CREDITS = 31

### Selection of the Thesis Committee

Thesis Option students should select a Thesis Committee as early as possible (i.e., during the first or second semester). The Committee is responsible for supervising the student's program of study and should: 1) guide the student in selection of elective courses, 2) determine whether the student has developed and implemented a research project with the necessary rigor, and 3) make certain that the student's project is consistent with the degree and interdisciplinary context of the subject area. Thesis Committees must have at least three members, with at least two faculty from accredited universities, and where the Major Advisor is an ES&P graduate faculty member. Committee members from outside an accredited university should have a PhD or M.S. with significant work experience. Any exception to these guidelines must be approved by the ES&P Program Chair. If, during the student's course of study, he or she wishes to change committee members or advisors, the student must explain why the change is necessary or desirable. If the change is acceptable to both outgoing and incoming Committee members, the student must notify the Office of Graduate Studies in writing.

### Thesis Proposal

Thesis Option students are expected to develop a thesis proposal with the committee's assistance. The thesis proposal is a formal document that provides an overview of the planned study. It must include an explanation of the research problem, issue, or situation to be addressed, its relevance or application, and the methods and resources that will be used in completing the project. On or before the successful completion of twenty-one credits of course work, the student prepares the proposal, using the *Guidelines for Preparing the Proposal* provided by the Office of Graduate Studies. A copy of the *Guidelines* and *Approval of Thesis or Project Proposal* (GR-2 Form) are available on the Office of Graduate Studies website [www.uwgb.edu/graduate](http://www.uwgb.edu/graduate). The thesis proposal must be successfully defended to the graduate committee in both oral and written formats. Once approved, a copy of the approved proposal and the signed GR-2 Form are sent to the Associate Provost for Academic Affairs/Director of Graduate Studies for final approval and inclusion in the student's official file. Approval of the thesis proposal places the student into candidacy for the degree.

### Registration for Thesis Credit

Thesis Option students must take a minimum of 6 thesis credits in addition to the program core and electives. Students may only register for thesis credits with an approved proposal on file. Enrollment for thesis credits may be for one to six credits per term and may be spread over several terms as appropriate. *A student must be registered for a minimum of one thesis credit or the thesis continuation course (ES&P 693) during the term in which a thesis defense is scheduled.*

## Thesis Defense

The thesis defense is an open event attended by the candidate's graduate committee and other interested individuals. The defense helps the committee to judge whether the student has adequately understood and seriously attempted to solve a significant problem. To schedule the thesis defense, the student must file the *Request for Thesis Defense/Project Presentation* (GR-3 Form) with the Office of Graduate Studies at least one week in advance of the proposed date. Prior to the thesis defense, the Office of Graduate Studies will provide *Approval of Thesis Defense or Project Presentation* (GR-4 Form) to the major professor. After a satisfactory defense, the major professor and committee members sign the form and return it to the Office of Graduate Studies. A dissenting signature must be accompanied by an explanation from the dissenting member. A candidate is considered to have passed his or her thesis defense only after all issues have been resolved and the completed GR-4 Form is returned to the Office of Graduate Studies.

## Thesis Document Preparation

The thesis is a formal document and must be prepared to conform to UW-Green Bay library requirements and graduate program standards. In preparing the thesis document, students should carefully follow the *Style and Format Requirements for the Master of Science Thesis*. Copies of the guidelines and a copy of the completed *Approval of Thesis or Project Proposal* (GR-2 Form) are mailed to students along with notice of proposal approval. It is the student's responsibility to prepare and present the final document in an acceptable format. Several writers' guides and style manuals are available for guidance.

## Thesis Document Deposition

1. Upon satisfactory completion of the thesis defense, the candidate is required to supply the Office of Graduate Studies with one bound copy of his or her thesis. A digital copy will also be archived in the Cofrin Library and posted to the library website. A properly formatted title page and one signed Grant of Permission and Copyright form is required for archiving purposes.
2. The Office of Graduate Studies will review the thesis for style and formatting. The Director of Graduate Studies will sign the title page or return the document for further revisions.
3. When the thesis is approved, the Office of Graduate Studies will arrange for the manuscript to be printed and bound. The candidate is responsible for thesis printing, binding and shipping costs. These fees must be paid (by check or cash) to the Office of Graduate Studies prior to binding. If the candidate wishes, additional bound copies can be ordered at the same per copy cost.
4. Diplomas are not awarded until all degree requirements are met. This includes certification by the Director of Graduate Studies that the thesis conforms to all UW-Green Bay library requirements, that the graduate program standard thesis defense has taken place and that the candidate has paid his or her thesis related fees.
5. Upon satisfactory complete of the thesis defense, the major professor files the Approval of Thesis Defense or Project Presentation (GR-4 Form) with the Office of Graduate Studies. The student then has 20 calendar days after the last day of final exams to submit their final thesis/project document to the Office of Graduate Studies and 42 calendar days after the last day of final exams for all other graduation requirements to be completed and verified.

## Review of Steps Toward the Degree

- The candidate is admitted to the ES&P graduate program.
- The student submits an Official Declaration of Master's Degree (GR-1 Form) to the Office of Graduate Studies no later than the end of the semester in which the first six graduate credits are completed. This confirms the student's area of emphasis in the program, their intention to pursue a thesis program plan, and pairs a student with a major professor/thesis adviser. Thesis students should begin to develop a thesis committee and thesis proposal in collaboration with their major professor.
- On or before the successful completion of twenty-one credits of course work, the student completes a thesis proposal. The proposal is reviewed by the thesis committee and, if approved, submitted to the Office of Graduate Studies, by the major professor, using the Approval of Thesis or Project Proposal (GR-2 Form).
- The student may then register for thesis credit (ENV S&P 799) and work on the thesis project.
- When the project and thesis document is nearly complete, the student schedules the thesis defense by completing the Request for Thesis Defense/Project Presentation (GR-3 Form). For graduation in the fall and spring semesters, the thesis defense must be held before the last day of final exams in a given semester.
- The student files an Application for Graduation with the Registrar's Office through the Student Information System (SIS) prior to November 1 for fall semester graduates, and April 1 for spring and summer semester graduates.
- The scheduled thesis defense takes place. Upon satisfactory completion of the thesis defense, the major professor files the Approval of Thesis Defense or Project Presentation (GR-4 Form) with the Office of Graduate Studies. The student then has 20 calendar days after the last day of final exams to submit their final thesis/project document to the Office of Graduate Studies and 42 calendar days after the last day of final exams for all other graduation requirements to be completed and verified. The final format of the thesis report is reviewed through the Office of Graduate Studies. Student submits to the Office of Graduate Studies the required number of thesis copies for final approval and deposition in University library.
- Degree is awarded and graduate receives diploma.

The Internship-Based Option M.S. is designed for students whose career goals require postgraduate education and conceptual training in environmental science and policy and related fields, but not formal research experience or training. The Internship Option is appropriate for students seeking applied experience in the field or laboratory, generally outside of the university setting. Examples of students that should consider this option include

those seeking to blend environmental science and policy with sustainable business applications, outreach and education, policy development and environmental regulation, promotion of clinical environmental health and regulation of environmental contaminants, environmental consulting, invasive species management, ecosystem restoration or landscape design.

Internship Option graduate students are expected to locate, pursue and complete an internship in a setting most aligned with their future career goals. The internship must incorporate a significant independent project to complement coursework. Examples of hosts for internship-based projects include local business, federal agencies (Fish and Wildlife Service, Geological Survey) or non-profit organizations. Internship Option students are encouraged to explore various internship opportunities, internship partners, and expected project outcomes with the ES&P Graduate Program Chair.

## Internship Option (34 total credits)

Internship Option students accepted into the Environmental Science and Policy program are required to successfully complete the following set of core courses. Those who lack appropriate prerequisites may need to take additional courses to strengthen their background before taking a core class. Electives counting toward the degree can be selected from the selected area of emphasis (e.g., Ecosystem Studies, Environmental Technology and Analysis) for a minimum of 16 credits. Selected elective courses must be unduplicated from the program's Core Requirements and in addition to internship credits. Internship Option students should enroll for a minimum of 6 internship credits that coincide with internship activities. Successful completion of the internship, committee approval of achieved internship objectives and outcomes, and a successful public oral defense of the internship experience will result in the awarding of the Master's of Science degree.

## General Core Requirements (9 credits)

All students matriculated into the Environmental Science and Policy program are required to successfully complete the following set of required core courses (9 credits).

Code	Title	Credits
<b>General Core Courses</b>		
ENV S&P 701	Perspectives in Environmental Science and Policy	1
<b>Choose one of the following repeatable courses (2 credits)</b>		
ENV S&P 715 or ENV S&P 795	Seminar in Ecology and Evolution Special Topics	2
<b>Environmental Science</b>		
ENV S&P 740 or ENV S&P 767	Ecology and Management of Ecosystems Environmental Technology and Analysis	3
<b>Public Policy</b>		
ENV S&P 713 or ENV S&P 752	Environmental & Natural Resource Economics Environmental Policy and Administration	3
Total Credits		9

Code	Title	Credits
<b>Internship Option</b>		
ENV S&P 797	Internship	9
ENV S&P 763	Capstone in Environmental Science and Policy	

## Completion of an Elective Area of Emphasis:

- Ecosystems Studies (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/ecosys>)
- Environmental Policy and Administration (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/pol-adm>)
- Environmental Technology and Analysis (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/envtech>)
- Personal Program of Study (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/personal>)

## TOTAL CREDITS = 34

## Selection of the Internship Committee

Environmental Science and Policy Internship Option students should select a committee during the first or second semester. The internship committee is responsible for supervising the student's program of study and should: 1) guide the student in selection of courses, 2) determine whether the student has selected or completed an internship with the appropriate rigor, and 3) make certain that the student's internship is consistent with the degree and

confronts the interdisciplinary dimensions of the subject area. The Internship Option committee is expected to consist of three individuals: the main internship supervisor (external or internal to UWGB), one member of the ES&P graduate faculty, and the Chair of the ES&P Graduate Program.

## Internship Proposal

Internship-Based Option students are expected to develop a proposal with the committee's assistance. The internship proposal is a formal document that provides an overview of the planned project. It must include an explanation of the problem, issue, or situation to be addressed, its relevance or application, and the methods and resources that will be used in completing the project. On or before the successful completion of twenty-one credits of course work, the student prepares the proposal, using the *Guidelines for Preparing the Proposal* provided by the Office of Graduate Studies. A copy of the *Guidelines* and *Approval of Thesis or Project Proposal* (GR-2 Form) are available on the Office of Graduate Studies website [www.uwgb.edu/graduate](http://www.uwgb.edu/graduate). The internship proposal must be successfully defended to the graduate committee in both oral and written formats. Once approved, a copy of the approved proposal and the signed GR-2 Form are sent to the Associate Provost for Academic Affairs/Director of Graduate Studies for final approval and inclusion in the student's official file. Approval of the thesis proposal places the student into candidacy for the degree.

## Registration for Internship Credit

Internship Option students must take a minimum of six internship credits in addition to the program core and electives. Students may only register for internship credits with an approved project proposal on file. Ideally, the duration of an internship should be part-time (10-20 hours per week) for a full academic calendar year or full time (30-40 hours per week) during a single summer semester. Enrollment for internship credits should not exceed three credits per semester during the regular academic year or six credits for a summer long internship.

## Internship Project Defense

Successful completion of the Internship Option M.S. involves two essential requirements. First, the student must satisfactorily complete a public-presentation of the internship project to be attended by the candidate's graduate committee and other interested individuals. The defense permits the committee to ascertain whether the student has adequately processed course requirements and has meaningfully achieved the goals of the project-based internship. To schedule the internship defense, the student must file the *Request for Thesis Defense/Project Presentation* (GR-3 Form) with the Office of Graduate Studies at least one week in advance of the proposed date. The internship project defense should be scheduled during one of the academic terms unless other specific arrangements are acceptable to all parties. Prior to the defense, the Office of Graduate Studies will provide *Approval of Thesis Defense or Project Presentation* (GR-4 Form) to the major professor. Second, students must complete a final report to be reviewed by the committee before the defense. After a satisfactory defense of both oral and written materials, the major professor and committee members sign the form and return it to the Office of Graduate Studies. A dissenting signature must be accompanied by an explanation from the dissenting member. A candidate is considered to have passed his or her thesis defense only after all issues have been resolved and the completed GR-4 Form is returned to the Office of Graduate Studies.

## Internship Document Preparation

The internship project (i.e., technical report, website, multimedia tool, public outreach and educational documents, data analysis, etc.) should be converted into a formal document that conforms with UW-Green Bay library requirements and graduate program standards. In preparing the internship project document, students should attempt to follow the *Style and Format Requirements for the Master's of Science Thesis*. Copies of the guidelines and a copy of the completed *Approval of Thesis or Project Proposal* (GR-2 Form) are mailed to students along with notice of proposal approval. The student is responsible for working with the Office of Graduate Studies to prepare and present the final document in an acceptable format. Several writers' guides and style manuals are commercially available. Students should also carefully follow the guidelines provided by the internship committee.

## Internship Document Deposition

1. Upon satisfactory completion of the internship project defense, the candidate is required to supply two copies of his or her internship document, including two copies of any audio/visual components and one additional copy of a title page and abstract, to the Office of Graduate Studies. After the major professor signs the approved document, the Director of Graduate Studies reviews and signs the internship document or returns it for further revision. Two copies of the final document are forwarded with a binding fee (\$12 per copy, but subject to change), collected from the student, to the UW-Green Bay library as a permanent record of the student's scholarly or creative activity. If the candidate wishes, additional copies provided by the student may be bound at the same per copy fee, payable to UW-Green Bay.
2. Diplomas are not awarded until all degree requirements are met. This includes certification by the Director of Graduate Studies that the successfully defended internship document conforms to all UW-Green Bay library requirements and graduate program standards.. Upon satisfactory completion of the thesis defense, the major professor files the *Approval of Thesis Defense or Project Presentation* (GR-4 Form) with the Office of Graduate Studies. The student then has 20 calendar days after the last day of final exams to submit their final thesis/project document to the Office of Graduate Studies and 42 calendar days after the last day of final exams for all other graduation requirements to be completed and verified.
3. The final format of the internship report is reviewed through the Office of Graduate Studies. The student submits to the Office of Graduate Studies the required number of thesis copies for final approval and deposition in University library.
4. Degree is awarded and graduate receives diploma.

## Review of Steps Toward the Degree

- The candidate is admitted to the ES&P graduate program.
- The student submits an Official Declaration of Master's Degree (GR-1 Form) to the Office of Graduate Studies no later than the end of the semester in which the first six graduate credits are completed. This confirms the student's area of emphasis and their intention to pursue the internship option.
- Internship option students should begin to identify potential internship or project opportunities.
- Once an internship project has been identified, students should begin formulating their official internship project proposal, culminating in the submission of the Approval of Thesis or Project Proposal (GR-2) Form to the Office of Graduate Studies.
- During the semester(s) in which the internship and project are completed, students should enroll for a minimum of 6 credits of ENV S&P 797 Internship (3 credits per regular semester or 6 credits for a summer long internship).
- Over the course of the internship, students should prepare and finalize their project outcomes and documents, and develop an oral presentation/defense delivered to the committee and public.
- Degree requirements are fulfilled with submission of an Approval of Thesis Defense or Project Presentation (GR-4 Form) to the Office of Graduate Studies. The student then has 42 calendar days after the last day of final exams to 1) submit their Approval of Thesis Defense or Project Presentation (GR-4 Form) to the Office of Graduate Studies and 2) complete and verify all other graduation requirements.
- The student files an Application for Graduation with the Registrar's Office through the Student Information System (SIS) prior to November 1 for fall semester graduates, and April 1 for spring and summer semester graduates. Upon completion of this step, the degree is awarded and graduate receives diploma.

The Course-Based Option is designed to be the most flexible pathway towards earning the Environmental Science and Policy Master's Degree. This option is particularly appropriate for professionals who are already employed in primary or secondary education (e.g., high school biology) or applied environmental science or public policy fields. A Master's degree obtained via the Course-Based Option will be particularly valuable for individuals interested in teaching opportunities at the community college level; development of advanced skills in environmental consulting, geographic information technology, environmental data analysis, etc.; and a deeper understanding of environmental policy and policy implementation. Course-Based Option students may further wish to build a more competitive foundation for pursuing related careers in business sustainability, ecological restoration and various medical fields.

## Course-Based Option (37 total credits)

Course-Based students must fulfill the following core requirements. Electives counting toward the degree may be selected from any area of emphasis for a minimum of 17 credits. Course-Based students may also seek to further personalize their degree in the areas of education, business, engineering or mathematics. Thus, Course-Based students may substitute a maximum of 6 elective credits (i.e., two 3 credit classes) from other University of Wisconsin – Green Bay campus programs. Elective course substitutions must be approved by the ES&P Graduate Chair and the courses cannot be duplicated from the program's Core Requirement. There is no formal defense or written exam required to earn the Master's of Science degree under this option. However, Course-Based students are encouraged to seek elective credits through independent research or internship opportunities with graduate faculty.

## General Core Requirements (9 credits)

All students matriculated into the Environmental Science and Policy program are required to successfully complete the following set of required core courses (9 credits).

Code	Title	Credits
<b>General Core Courses</b>		<b>1</b>
ENV S&P 701	Perspectives in Environmental Science and Policy	
<b>Choose one of the following repeatable courses (2 credits)</b>		<b>2</b>
ENV S&P 715 or ENV S&P 795	Seminar in Ecology and Evolution Special Topics	
<b>Environmental Science</b>		<b>3</b>
ENV S&P 740 or ENV S&P 767	Ecology and Management of Ecosystems Environmental Technology and Analysis	
<b>Public Policy</b>		<b>3</b>
ENV S&P 713 or ENV S&P 752	Environmental & Natural Resource Economics Environmental Policy and Administration	
Total Credits		9

## Course-Based Requirements (28 credits)

Code	Title	Credits
<b>Required Core:</b>		<b>3</b>
ENV S&P 763	Capstone in Environmental Science and Policy	
<b>One additional seminar credit:</b>		<b>1</b>
ENV S&P 715	Seminar in Ecology and Evolution	
ENV S&P 795	Special Topics	
<b>One of the following quantitative courses:</b>		<b>4</b>
ENV S&P 755	Environmental Data Analysis	
or ENV S&P 760	Social Research Methods	
<b>One additional environmental science course (not already used in the core):</b>		<b>3</b>
ENV S&P 740	Ecology and Management of Ecosystems	
ENV S&P 743	Landscape Ecology	
ENV S&P 767	Environmental Technology and Analysis	
<b>Elective requirements:</b>		<b>17</b>
<b>Choose at least 17 credits from any of the program emphases</b>		
Total Credits		28

Students pursuing the Course-Based Option are not required to form a committee of advisors. However, Course-Based Option students are encouraged to speak with the ES&P Graduate Chair (or any other member of the ES&P graduate faculty) for development of the course-based program.

## Review of Steps Toward the Degree

- The candidate is admitted to the ES&P graduate program.
- The student submits an Official Declaration of Master's Degree (GR-1 Form) to the Office of Graduate Studies no later than the end of the semester in which the first six graduate credits are completed. This confirms the student intention to pursue the Course-Based Option and alerts the ES&P Graduate Chair of this decision.
- The Course-Based student completes 37 credit hours, 9 credits from the program core and 28 elective credits from any area of emphasis.
- The student registers to graduate and the degree is awarded and graduate receives diploma.

One of the primary goals of the Environmental Science and Policy (ES&P) graduate program is to prepare technically competent and creative individuals for advanced professional positions in the public or private sectors. Individuals pursuing such career objectives will focus on 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 this or related areas. An additional option is to develop a "personal program of study" fitting to the specific career interests 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 Provost for Academic Affairs and Director of Graduate Studies.

- Ecosystems Studies (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/ecosys>)
- Environmental Policy and Administration (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/pol-adm>)
- Environmental Technology and Analysis (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/envtech>)
- Personal Program of Study (<http://catalog.uwgb.edu/archive/2019-2020/graduate/graduate-programs/environmental-science-policy-ms/emphasis/personal>)

## Faculty

**Chen, Franklin**, Associate Professor, Natural and Applied Sciences (Chemistry). B.A. (1970) National Taiwan University (Taiwan); Ph.D. (1977) Princeton University.



*Fields of interest:* organic contaminant remediation; rock erosion effects (tidal wave and bubble implosion effects on rock surfaces); mesoporous materials with gas phase contaminant adsorption properties; polymeric electrolytes with potential industrial applications; sonochemistry that may enhance catalytic ability.

**Currier, Ryan**, Assistant Professor, Natural and Applied Sciences (Geoscience). B.S. Geoscience, Michigan State University; M.A. and Ph.D. Magma Dynamics, Johns Hopkins University.

*Fields of interest:* transport phenomena of magma; magmatic ore formation; Antarctic geology.

**Davis, Gregory J.**, Professor, Natural and Applied Sciences (Mathematics). B.S. (1981) UW-Green Bay; M.A. (1985), Ph.D. (1987) Northwestern.

*Fields of interest:* dynamical systems; mathematical modeling of biological and physical systems; cliff swallow-house sparrow species dynamics.

**Dornbush, Mathew**, Associate Professor, Natural and Applied Sciences (Biology). B.A. (1998) Augustana College; M.S. (2001), Ph.D. (2005) Iowa State University.

*Fields of interest:* soil ecology; plant-soil microbial interactions; soil microbial ecology; ecosystem carbon cycling; plant ecology; invasive species; restoration ecology.

**Draney, Michael L.**, Professor, Natural and Applied Sciences (Biology). B.S. (1989) New Mexico State University; M.S. (1992), Ph.D. (1997) Univ. of Georgia.

*Fields of interest:* inventory, monitoring and assessment techniques for terrestrial and wetland invertebrates, taxonomy, and conservation of spiders and ground-dwelling arthropods.

**Fermanich, Kevin J.**, Professor, Natural and Applied Sciences (Geoscience). B.S. (1985) UW-Stevens Point; M.S. (1988), Ph.D. (1995) UW-Madison.

*Fields of interest:* nonpoint pollution; soil management; watershed management, groundwater, contaminant fate and transport; vadose zone processes; community environmental monitoring.

**Forsythe, Patrick S.**, Assistant Professor, Natural and Applied Sciences (Biology). B.S. (2000), M.S. (2003) Eastern Illinois University, Ph.D. (2010) Michigan State University.

*Fields of interest:* fisheries biology and ecology with emphasis on ecosystems of the Great Lakes region; mating systems and early life history dynamics of fishes; behavioral ecology and species interactions; population/community ecology; landscape ecology; conservation biology; dynamic evolutionary processes that lead to adaptation.

**Grubisha, Lisa C.**, Assistant Professor, Natural and Applied Sciences (Biology). B.S. (1988) University of Wisconsin-Milwaukee, M.S. (1998) Oregon State University, Ph.D. (2005) University of California-Berkeley.

*Fields of interest:* Fungal ecology and evolution, Microbial diversity and function, Conservation Biology, Population Genetics, Phylogenetics.

**Helpap, David**, Assistant Professor, Public and Environmental Affairs (Political Science). B.S. (2006) Political Science, University of Wisconsin-Green Bay; M.A. (2008), Ph.D. (2012) Political Science, University of Wisconsin-Milwaukee.

*Fields of interest:* state and local government; urban politics; brownfield redevelopment; public management and budgeting; public policy

**Howe, Robert W.**, Barbara Hauxhurst Cofrin Professor, Natural and Applied Sciences (Biology); Director, Cofrin Center for Biodiversity. B.S. (1974) Notre Dame; M.S. (1977), Ph.D. (1981) UW-Madison.

*Fields of interest:* terrestrial ecology and conservation biology; ecological indicators; bird population dynamics; population monitoring; landscape ecology; conservation design residential development; disease ecology; black bear ecology; evolutionary ecology.

**Intemann, Jeremy J.**, Associate Professor, Natural and Applied Sciences (Chemistry). B.S. (2006) University of Northern Iowa, Ph.D. (2012) Iowa State University.

*Fields of interest:* synthesis of conjugated polymers and small molecules for use in organic electronics.

**Katers, John F.**, Professor, Natural and Applied Sciences (Engineering). B.S. (1991), M.S. (1993) UW-Green Bay; Ph.D. (1996) Marquette.

*Fields of interest:* waste management; recycling, pollution prevention, renewable energy, water and waste water treatment.

**Luczaj, John**, Associate Professor, Natural and Applied Sciences (Geoscience). B.S. (1993) University of Wisconsin-Oshkosh; M.S. (1995) University of Kansas; Ph.D. (2000) Johns Hopkins University.

*Fields of interest:* fluid inclusion in minerals; water-rock interaction in sedimentary rock; groundwater contamination; karst geology and hydrogeology; stratigraphy of Paleozoic sedimentary rocks.

**Mahfuz, Mohammad Upal**, Assistant Professor, Natural and Applied Sciences (Engineering Technology). B.S. (2002) Bangladesh University of Engineering and Technology (BUET), Bangladesh, M.S. (2008) University of Calgary, Canada, M.Engg. (2005) Asian Institute of Technology, Thailand, Ph.D. (2014) University of Ottawa, Canada.

*Fields of interest:* nano scale communication systems, wireless communication and positioning systems, emerging and sustainable technologies.

**Malysheva, Tetyana**, Assistant Professor, Natural and Applied Sciences (Math). B.S., M.S. Computer Sciences, National Technical University of Ukraine "KPI", Ph.D., M.A. Mathematics, University of Oklahoma; Ph.D. Physical and Mathematical Sciences - Computational Mathematics, Institute of Mathematics of the National Academy of Sciences of Ukraine.

*Fields of interest:* theory and applications of partial differential equations, numerical analysis, control of distributed parameter systems, continuum mechanics, inverse problems.

**Meyer, Steven J.**, Associate Professor, Natural and Applied Sciences (Geoscience). B.S. (1983) Northern Illinois; M.S. (1986), Ph.D. (1990) University of Nebraska.

*Fields of interest:* climate change; the effects of climate change on natural resources; climate related decision making; long-range climate outlooks and their uses; science education.

**Olson Hunt, Megan J.**, Assistant Professor, Natural and Applied Sciences (Statistics). B.A., B.S.T. (2007) Winona State University, Ph.D. (2014) University of Pittsburgh.

*Fields of interest:* Theoretical issues in missing data, applied environmental and neurological data analyses, teaching all levels of statistics.

**Phoenix, Laurel**, Associate Professor, Public and Environmental Affairs (Planning). B.S. (1992), M.S. (1994) Colorado at Boulder; Ph.D. (2001) SUNY College of Environmental Science and Forestry.

*Fields of interest:* water resources management; drinking water quality; anti-environmentalism; water and waste water infrastructure; rural environmental planning.

**Stoll, John R.**, Professor, Public and Environmental Affairs (Economics). B.S. (1973) UW-Green Bay; M.S. (1977), Ph.D. (1980) Kentucky.

*Fields of interest:* natural resource and environmental economics; quantitative methods; nonmarket valuation methodology; economics of recreation and leisure; cost-benefit analysis, regional economics, fisheries economics, value of nonconsumptive resource usage.

**Terry, Patricia A.**, Professor, Natural and Applied Sciences (Engineering). B.S. (1989), M.S. (1991) Texas-Austin; Ph.D. (1995) University of Colorado-Boulder.

*Fields of interest:* general water remediation; environmental separations; ion exchange processes; removal of heavy metals, chromates, phosphates, and nitrates from water.

**Weinschenk, Aaron C.**, Assistant Professor, Public and Environmental Affairs. B.A., B.S. (2007) University of Wisconsin-Green Bay, M.A. (2009), Ph.D. (2013) University of Wisconsin-Milwaukee,

*Fields of interest:* American Government and Politics; Political Behavior; Campaigns and Elections; Political Psychology; Voting Behavior; Political Participation; Statistics; Research Design and Methodology.

**Wheat, Elizabeth**, Assistant Professor, Public and Environmental Affairs (Political Science). B.A. (2002) Psychology, Alma College; M.P.A. (2004) Comparative Environmental Policy, Indiana University; Ph.D. (2013) Political Science, Western Michigan University.

*Fields of interest:* environmental law, environmental justice, civil rights, wildlife smuggling, international organizations.

**Wolf, Amy**, Associate Professor, Natural and Applied Sciences (Ecology). B.S. (1989), M.S. (1993) UW-Green Bay; Ph.D. (1998) University of California-Davis.

*Fields of interest:* conservation biology, plant-animal interactions, restoration ecology, plant population ecology, ornithology; pollination ecology of rare plants, butterfly conservation and monitoring, population genetics of rare plants, invasive wetland plants, conservation of native bees.

**Zorn, Michael E.**, Professor, Natural and Applied Sciences (Chemistry). B.S. (1993) UW-Green Bay; Ph.D. (1997) UW-Madison.

*Fields of interest:* development of photocatalytic and catalytic methods for degradation of environmentally relevant compounds; development of enhancement of experimental methods (including sensors) for the analysis of environmental samples.

## **Emeriti Faculty**

**Day, Harold Jack**, Professor, Natural and Applied Sciences (Engineering). B.S. (1952), M.S. (1953), Ph.D. (1963) UW-Madison.

*Fields of interest:* water resources, fluid mechanics, hydrology and related applications of engineering to society and technology; regional water quality and associated land management and flood plain management; resource management.

**Harris, Hallet J.**, Professor, Natural and Applied Sciences (Biology). B.A. (1961) Coe College; M.S. (1965), Ph.D. (1966) Iowa State.

*Fields of interest:* animal and wetland ecology; management of coastal areas; wildlife management; ecological risk assessment.

**Kraft, Michael E.**, Herbert Fisk Johnson Professor, Public and Environmental Affairs (Political Science). B.A. (1966) UC-Riverside; M.A. (1967), Ph.D. (1973) Yale.

*Fields of interest:* American politics and government; public policy analysis; Congress; environmental policy and politics in the U.S.; sustainable communities; politics of nuclear waste disposal; business and environmental policy; environmental information disclosure.

**Moran, Joseph M.**, Professor, Natural and Applied Sciences (Earth Science). B.A. (1965), M.S. (1967) Boston College; Ph.D. (1972) UW-Madison.

*Fields of interest:* nature of climatic change, air pollution meteorology; applications of paleoclimatic reconstruction techniques to Glacial-age evidence; environmental implications of current climatic changes; quaternary climatology; geology.

**Niedzwiedz, William R.**, Professor, Public and Environmental Affairs (Geography). B.S. (1969), M.S. (1972) Massachusetts; Ph.D. (1981) Virginia Polytechnic.

*Fields of interest:* geographic information systems; aerial photo interpretation; coastal management; conservation design of landscapes; environmental impact.

**Sager, Paul E.**, Professor, Natural and Applied Sciences (Biology). B.S. (1959) Michigan; M.S. (1963), Ph.D. (1967) UW-Madison.

*Fields of interest:* ecology of aquatic communities including nutrient studies in the phytoplankton of freshwater lakes; eutrophication of lakes; ecological effects of nutrient enrichment and water quality deterioration; limnology.

**Scheberle, Denise L.**, Professor, Public and Environmental Affairs (Political Science). B.S. (1982), M.P.A. (1984) University of Wyoming; Ph.D. (1991) Colorado State University.

*Fields of interest:* environmental policy and law; policy implementation and formation; federal-state relationships in environmental programs; public administration; intergovernmental relations; public policy.

**Stieglitz, Ronald D.**, Professor, Natural and Applied Sciences (Earth Science-Geology). B.S. (1963) UW-Milwaukee; M.S. (1967), Ph.D. (1970) Illinois.

*Fields of interest:* environmental geology; stratigraphic analysis; sedimentary geology; applications of geology to land use problems; ground water resources.

**Wenger, Robert B.**, Professor, Natural and Applied Sciences (Mathematics). B.S. (1958) Eastern Mennonite; M.A. (1962) Pennsylvania State; Ph.D. (1969) Pittsburgh.

*Fields of interest:* application of mathematical models to environmental problems such as solid waste management and water quality management; ecosystem risk assessment and graph-theoretic approaches to the study of ecosystem stressors.

## Adjunct Faculty

**Katz, Chris**, Adjunct Assistant Professor, (Veterinary Medicine). B.S. (1977), D.V.M. (1981) Iowa State.

*Fields of interest:* Black Bear research, wildlife and exotic pet medicine, wildlife anesthetization for research.

**Medland, Vicki**, Associate Director, Cofrin Center for Biodiversity (Biology). B.S. (1984) UW-Madison; M.S. (1989) New Mexico State University; Ph.D. (1997) University of Georgia.

*Fields of interest:* wetland ecology, evolutionary and behavioral ecology of aquatic invertebrate and zooplankton.

**Reed, Tara**, Adjunct Associate Professor, Natural and Applied Sciences (Biology). B.A. (1980) Whitworth; M.S. (1995) Oregon State; Ph.D. (1999) UW-Madison.

*Fields of interest:* impacts of anthropogenic activities and exotic invasions on aquatic ecosystem; changes in the Green Bay ecosystem following zebra mussel invasion; evaluating the changes in macroinvertebrate community structure downstream following dam removal.

**Robertson, Dale**, Adjunct Associate Professor, U.S. Geological Survey (Hydrology). B.S. (1981) St. Norbert College; M.S. (1984), Ph.D. (1989) UW-Madison.

*Fields of interest:* physical limnology; water-quality modeling; influence of environmental factors, watershed management strategies, and in-lake management alternatives on the water quality rivers and lakes; ice as climatic indicators; effects of artificial destratification; regional loading estimates; meteorological and lake physical measurements; air-water interactions.

**Robinson, Patrick**, Co-Director & Environmental Studies Specialist, UWEX Environmental Resources Center; Affiliate Cofrin Center for Biodiversity. B.S. (1994), M.S. (1996) UW-Green Bay; Ph.D. (2011) UW-Madison

*Fields of interest:* fresh water estuaries, wetlands, integration of social science into ecological research and management.