



**THE MASTER OF SCIENCE IN
ENVIRONMENTAL SCIENCE AND POLICY**

AT
PLYMOUTH STATE UNIVERSITY

Policy and Guideline Handbook for Students and Faculty

September 2006

Introduction

The purpose of this handbook is to outline the requirements for the Master of Science Degree in Environmental Science and Policy in the Center for the Environment at Plymouth State University. It provides guidance to students and faculty in the graduate program, as well as others who may have an interest in the program. It supplements, in some instances replaces, the information in the Plymouth State University Graduate Catalog when the information pertaining to thesis-based MS degrees is different from that pertaining to other graduate degrees at PSU. Students may find additional general information about PSU in the undergraduate student handbook: <http://www.plymouth.edu/stulife/handbook/handbook.html>.

The Master of Science graduate degree in *Environmental Science and Policy* (henceforth ES&P) is designed to prepare future scientists and resource managers with interdisciplinary competence for career opportunities in industry, government, non-profits, and academia. The program focuses on interrelated chemical, physical, biological, and socio-cultural topics that drive environmental research, policy, and management. The coursework and applied research will train students to better meet the needs of future employers. Representatives of future employers will be involved in the program as advisors, instructors, funders, and as student committee members, and will thus provide regular feedback to the program. The applied, practical nature of the program sets it apart from many similar graduate programs.

Students should consider that their time in the MS in ES&P is part of their professional career, perhaps their first professional ‘job’. Treating the graduate experience as a job will raise your level of performance in the program, and will lead to letters of recommendation from those with whom you interact in the program.

Students are responsible for knowing and meeting the requirements of Plymouth University and the Master of Science in Environmental Science and Policy Program. While the Graduate Committee and especially your major professor are committed to assisting you, it is your responsibility to see that all necessary forms are properly executed and filed in the Office of Graduate Studies.

The program encourages customization of each student’s program of study to meet the needs and interests of the student. The requirements set forth in this document represent *minimums*, and students are encouraged to design programs that best meet their professional aspirations. Individual students’ courses of study are developed by the student and graduate committee, and intended to be customized to meet the needs of each student.

The Structure of the MS in Environmental Science and Policy Program

Program Objectives: The overarching goal of the ES&P degree is to offer a practical interdisciplinary applied-research program to prepare future scientists and resource managers for emerging career opportunities in industry, government, planning commissions, non-profits, and academia. Contributing objectives to the overarching goal are to:

- 1) Emphasize team science to mimic real world employment;
- 2) Involve practicing natural resource professionals to enhance real world experience, provide contacts for future employment, and encourage feedback on the program;

- 3) Build partnerships to enhance interactions between PSU and collaborators, and to increase research opportunities in the region;
- 4) Find opportunities to develop environmental demonstration projects with local communities, offering students the chance to contribute to regional environmental projects;
- 5) Enhance recruitment and opportunities for women and other underrepresented groups in science; and
- 6) Provide experience in science translation, outreach and public education for all students. A fundamental skill needed in scientists is the ability to speak to all audiences in order to convey policy and socially relevant knowledge.

Overview of the ES&P program

The program is intended to be highly flexible to meet the needs of individual students.

- For full-time students, there is only one required course, the Science Colloquium Series. Part-time students have no required courses although they are urged to take the Colloquium at least one semester.
- Students design a program of study with at least one course in each of four categories: *social science, communications, terrestrial science, and aquatic science* to develop multidisciplinary, policy oriented ways of approaching environmental issues.
- Students take at least one course (up to four) at our partner site, the Humboldt Field Research station in Maine. These are week-long intensive field immersion courses which always garner rave reviews from attendees.
- Students have a field component or project in their programs of study, and the work is an important part of the graduate experience.
- Six thesis credits or three project credits (non-thesis option) are included in the program of study.
- A public outreach component to students' coursework or thesis is strongly encouraged, and is often a deliverable in the grant paying the student stipend of funded students.

Department: The MS in ES&P is offered by the Center for Environment. The Center is a collaborative effort between several PSU academic departments, government agencies, and regional nonprofit organizations. The Center for the Environment was established in 2004 with the mission to serve a diverse research, education, and public engagement role by addressing the science, policies, culture, and economics of the natural environment in northern New England. The goals of the Center and the MS in ES&P program are in support of the PSU role as a regional university.

Program Coordinator Betsy Ayotte of the Center for the Environment serves as a resource and primary point of contact for graduate students in the program to aid with administrative issues. Outreach & Development Coordinator June Hammond Rowan (jhammondrowan@plymouth.edu) also assists students with programmatic issues, and coordinates outreach work with the students as well. The Graduate Coordinator is Mary Ann McGarry.

Courses: A catalog of PSU science courses is available online through the College of Graduate Studies web site (list URL). Course schedules are also available online.

The course catalog offered at PSU is augmented by summer courses at the Humboldt Field Research Institute in Steuben, Maine (HFRI), <http://www.eaglehill.us/>. These week-long, intensive field courses are taught by a diverse and revolving international faculty. We encourage students to take at least one HFRI course each summer, with the minimum being one course during the program (2 credits).

Up to eight pass-fail graduate credits may count toward the 30 credit total to graduate in ES&P. A maximum of 12 credits of graduate coursework may be taken prior to admission into the ES&P program.

Schedule: Full-time thesis graduate students are encouraged to arrive at PSU in the summer, to get a jump-start on thesis research, participate in the field research of other students, and have the opportunity to complete their programs within two academic years or less. Part-time students set their own schedule depending on personal needs. Most graduate courses are offered one day per week in the late afternoon or early evening, to minimize the disruptions to the work schedules of part-time students, and to facilitate field research for both students and faculty.

For motivated experienced professionals with at least three years of work experience, a 1+ year advanced non-thesis program is available. A 4+1 graduate program is planned, in which undergraduates enrolled in an environmental major can begin a thesis in their junior or senior year and earn a graduate degree with one additional year of research and study.

Admission Standards and Criteria: Admission requirements are based on those set by the College of Graduate Studies: typically a bachelor's degree with a 3.0 or higher grade point average in the academic major, positive recommendations from three references, a well-written statement of professional goals documenting interest, and a current resume. Recent scores from the GRE are submitted with the application to provide guidance to the advisor and committee about the student's strengths. The GRE scores are advisory to the acceptance process, and may be waived for those students with several years of professional experience.

Students may be accepted to PSU prior to enlisting a major advisor to guide them in their graduate career at PSU. However, a student is not fully admitted into ES&P until they have a confirmed major professor as advisor. Dialog with a prospective advisor should include developing a thesis idea before enrollment, and exploring funding opportunities if needed. In most cases, prospective graduate students correspond with faculty members prior to acceptance into the program and arrange a visit to the campus. The student should seek a major advisor with similar interests. The major professor serves as the student's primary advisor in developing a program of coursework, in selecting, developing and completing a thesis, and in other academic matters.

The Role of the Major Faculty Advisor: *To obtain full admission to the ES&P program students need a major advisor who will be their primary contact and mentor in the program.* The selection of the major advisor should be made by the student based primarily on common professional interests and personality compatibility. The major advisor will:

- Find funding opportunities to support the student, as needed,
- Participate in the design of the students' academic program.

- Advise the student on the professional responsibilities associated with the position of a graduate student whose course of study is supported by the University and the Center for the Environment,
- Ensure the student is making adequate progress in the ES&P program and is aware of the steps necessary to complete the program in a successful and timely manner,
- Ensure that the other committee members have reasonable expectations for the student's program of study and thesis, and that all members contribute meaningfully to the student's program at PSU,
- Advise the student in their effort to identify and organize a thesis project, including writing a thesis pre-proposal, and thesis to be developed from the pre-proposal,
- Advise the student in the course of their thesis research and edit and otherwise provide guidance for the production of a professional thesis of publishable quality,
- Advise the student on career matters.

Adjunct faculty can serve as a student's major *research* advisor with permission from the Director of the Center for the Environment. In this instance, a regular PSU faculty member will serve as the student's *academic* advisor.

The Graduate Committee: The graduate committee is a group of three to five faculty members (including adjunct faculty) and working professionals with expertise relevant to students' career goals, program of study, and thesis project. The committee works with the student to design and approve a student's program in accordance with University and departmental requirements. The committee must include at least two regular PSU faculty or adjunct PSU faculty members. Students are encouraged to seek disciplinary diversity to support the thesis project in the make-up of their committee, for example including scientists and social scientists is appropriate. The inclusion of working environmental professionals on student committees is encouraged for the development of career interests and future employment contacts.

Full-time students should have their committee approved by the graduate coordinator during the first semester or early in the second semester of their program, and part-time students should have their committee approved before earning more than 12 course credits in the ES&P program at Plymouth. Typically students approach several faculty members in their first semester to discuss their interests and goals in the program, eventually asking two or more people (plus the major advisor) to become members of the committee.

The student, in consultation with the committee, will decide on a program of study (see appendix or Center for the Environment website) appropriate for the career plans of the student, and on a topic and scope of the thesis.

For full-time students the thesis project and the program of study should be adequately developed by the mid-point of the second semester of enrollment and formally approved through the submission of the appropriate paperwork (program of study and thesis abstract and timeline) by the end of the second semester. Part-time students should develop a program of study before earning more than 18 credits in the ES&P program. The graduate coordinator is invited to all committee meetings, to ensure from the beginning that the program of study will meet the requirements of the program and that all ES&P students have generally consistent programs and scopes of work for thesis research.

Evaluating Student Progress: Students enrolled in the program will be supervised by their graduate committee, and their major advisor will provide frequent guidance and evaluation of their progress. The student is encouraged to have committee meetings at least once per semester. The full committee is required to meet with the student to agree on the program of study and to approve their thesis or project, and must also be present at the student's thesis defense or project report. More regular committee meetings are encouraged, as these contacts provide the opportunities for academic and career counseling.

Responsibilities and Duties of the Student: Admission to the ES&P program involves the student in regionally important research to address environmental issues. All ES&P students are expected to demonstrate the highest standards of professional ethics and responsibilities. Effective performance of these responsibilities not only provides important learning and professional socialization experiences, but also provides a basis for faculty to provide positive letters of recommendation for students seeking employment or applying for admission to other graduate programs. Students should consider their graduate career at PSU to be a career job. Continued funding for students is contingent on the highest levels of professional performance.

The student role in this professional relationship brings opportunities and responsibilities:

- The student role is a professional role, sometimes described as “junior faculty.”
- Representing PSU and the Center for the Environment is an important part of students' responsibilities and their networking for future employment. Dress and communicate in a professional manner when engaging in these interactions, including when communicating electronically. Please prepare for meetings beforehand by reviewing relevant information and take copious notes during meetings to record important information and make a good impression.
- Show initiative in your course of study and your thesis project. A graduate education is highly dependent on students' initiative and drive to challenge themselves, and the most important variable in the quality of education students obtain is the attitude and drive of the student.
- Be proactive in determining your financial aid and assistantship status.
- Continuation of funding is reviewed annually. Continued funding will be contingent on satisfactory progress on a grant awarded to PSU, and part of a student thesis. The progress of graduate students is an essential component of success of the program and funding. *Satisfactory progress* means:
 - On the first day of class of each semester, the student does not have more than 1 incomplete in non-thesis courses.
 - The student has maintained a minimum grade point average of 3.0.
 - The student is taking a minimum of 6 credits per semester until coursework is completed (not applicable to part-time students or a full-time student's final semester).
 - The students' selection of the graduate committee and the design of their program of study are completed within established time frames.

CFE will try to support full time student's attendance at one or more professional conferences at which the student plans to present a paper or poster, most likely on thesis or project related work. This is a good opportunity to receive professional feedback while in progress. Additional

support may be available through grants and other opportunities. Students should work with their advisors to determine appropriate conferences.

The thesis and project process: Students complete and satisfactorily defend a thesis (or project) for which up to 6 credits may be earned. When enrolling for thesis credits, the faculty advisor is the instructor for these credits. The thesis constitutes an original contribution to a field of knowledge, to solving a specific environmental problem, or to an outreach/service project with a regional partner. They may be based either upon the student's own research or on a treatment and presentation of known subject matter from a new point of view. Prior to initiating substantial work on a thesis or project students develop the ideas and approach in a pre-proposal to be reviewed and approved by the advisor and full committee.

- A program of study is developed to support thesis work in accordance with program guidelines.
- Full-time students will present their thesis proposal or project plan at a meeting of their graduate committee and in the colloquium class in the student's second semester. Part-time students should engage in this activity as early in their program as possible, and before the completion of more than 20 credits of coursework in the ES&P program. Copies of the proposal or plan should be given to graduate committee members no later than one week prior to the date of the proposal hearing.
- The structure of theses, proposals, and project reports are outlined in a separate document. Check with the ES&P graduate coordinator.
- The student chairs all committee meetings, including preparing and distributing an agenda and any other materials, including but not limited to, a draft program of study, a thesis pre-proposal, data or results for discussion, or sections of a thesis.. At the conclusion of the proposal presentation the graduate committee will provide constructive comments and advice for improving the project, as well as the approval necessary for the student to proceed, which is determined by a majority vote.
- The completed thesis or project is presented at a formal defense seminar when the document describing the work has been reviewed by members of the students' graduate committee and determined to be sufficiently complete to merit presentation of the project. A final oral examination will be conducted by the candidate's advisory graduate committee after the completion of the thesis defense. This examination will be largely focused on the thesis or project, but may include questions concerning the general fields of study relevant to the student's work. The defense is open to the public, and should be publicly announced by the student at least one week prior to its occurrence. The examination period is open to anyone with at least a master's degree. Copies of the full and essential complete draft should be given to members of the committee no later than one week prior to the date of the defense.
- At the conclusion of the examination the committee will vote. Majority vote will prevail. Any recommended revisions will be accomplished under the direction of the chair of the graduate committee. Upon completion of the thesis or project report the student is strongly urged to prepare a journal manuscript or public report to disseminate the results of the research.

Sequential Outline of Program: Below is a guideline to help students understand the typical progression for full-time students through the MS in Environmental Science and Policy. Part-

time students will modify the timeline and guidelines in consultation with their major advisor and the Program Coordinator, depending on individual circumstances.

First semester:

- a) enroll in classes as early as possible (under-enrolled classes may be canceled), including the required Science Colloquium Series;
- b) be proactive in determining your financial aid and assistantship status with your major advisor;
- c) discuss thesis project (if a thesis student) with your major advisor, and begin literature search;
- d) begin to fill out the Program of Study with your course selections and committee membership and meet with your committee and the Program Coordinator before the end of the semester to discuss your preliminary plan.

Second semester:

- a) continue to take courses (including the Science Colloquium Series), and register for at least one course at Humboldt Field Research Institute;
- b) complete a draft of the Program of Study and meet with your committee and Program Coordinator for approval;
- c) begin work on a thesis proposal (if a thesis student), and present an overview of your research plans late in the semester;
- d) begin research data collection.

Third semester:

- a) continue to take classes, including thesis credits and the Science Colloquium Series;
- b) determine your financial aid and assistantship status with your major advisor;
- c) begin transforming your thesis proposal into the thesis using data as collected; work with advisor and the writing center as necessary to refine thesis drafts;
- d) meet with committee and Program Coordinator.

Fourth semester:

- a) register for graduate thesis credits and complete other courses as necessary;
- b) complete research data collection and draft of the thesis early in the semester;
- c) continue to write and obtain feedback from advisor and writing center www.plymouth.edu/graduate/gwa;
- d) submit thesis draft to entire committee when approved by major advisor;
- e) defend thesis.

Part-time students are allowed a flexible timeline based on their needs, but should generally follow the sequence outlined above. Part-time students will develop a program of study in the first year after matriculation, with the intent to set a schedule that encourages them to remain focused upon completing the program in a reasonable period.

Interdisciplinary Program Collaborations: The master's degree programs in Education (M.Ed) Teaching (MAT), Science Education (MSE), Applied Meteorological Science (AMS) and Environmental Science and Policy (ES&P) share a common thread in natural science. Courses developed for ES&P will be of interest to students in the other programs, and ES&P students are encouraged to consider using graduate course credit to take courses in other programs.