

Department of Earth and Environmental Sciences, Wesleyan University
GRADUATE STUDENT HANDBOOK
Revised March 2017

OVERVIEW

The Department of Earth and Environmental Sciences offers a program leading to the degree of master of arts in earth and environmental sciences. This program is designed for students who desire further training prior to initiation of a doctoral program at another university or for whom the master's degree will be the terminal degree. Graduate students are offered a unique opportunity for accelerated and personal instruction in a small department setting with strengths in geology, volcanology, ocean sciences, planetary science, and environmental science. All admitted students are offered a full tuition waiver, stipend, and benefits for this two-year program.

For guidelines specific to the BA/MA Program, please see "The BA/MA Program" at the end of this document.

RESEARCH

Conducting original research is an important component of graduate studies. Upon arrival, students are expected to discuss their research interests with the E&ES faculty. Students should identify a project and advisor in the course of their first semester so that they can start their research as soon as possible. Students must realize that they will spend much of their time on the chosen research project, so they should ensure that the topic indeed represents their interests.

Areas of faculty specialization (also check faculty webpages)

- Barry Chernoff: Systematics and biogeography of freshwater fishes of Latin America; morphological evolution; conservation of aquatic ecosystems.
- Martha S. Gilmore: Planetary geomorphology; remote sensing of Mars, Venus, southwest U. S., and Long Island Sound.
- James Greenwood: Cosmochemistry, sulfur and oxygen isotopic systematics of chondrites and martian meteorites, Mars analogue studies in St. Lucia.
- Tim Ku: Aqueous geochemistry; isotope geochemistry; the biogeochemistry of marine and terrestrial sediments of the tropics (Panama, St. Lucia) and North America.
- Suzanne O'Connell: Sedimentology; marine geology, paleoceanography/climate change, continental margin sedimentology in the North Atlantic and Southern Oceans.
- Peter Patton: Fluvial geomorphology in the western U.S. Hydrology.
- Phil Resor: Structural geology and crustal deformation, Geographic Information Systems (GIS)

- Dana Royer: Paleontology; terrestrial paleoclimatology and paleoecology, paleobotany, carbon cycle, plant physiology.
- Ellen Thomas: Paleontology; paleoceanography and micropaleontology of deep ocean basins, coastal salt marshes and marginal basins in the northeastern U. S.
- Joop C. Varekamp: Geochemistry; volcanic and geothermal fluids, volcanology, volcanic petrology, pollution geochemistry, Long Island Sound studies.

MA or BA/MA students in the Natural Sciences and Mathematics may elect a course of study resulting in the Planetary Science Concentration. Details may be found here: <http://www.wesleyan.edu/planetary/Graduate.html>.

FUNDING

Upon admission, graduate students are typically offered one 9 month and one 12 month stipend. The terms of the teaching stipend require that the student devote ~10 hours per week on departmental responsibilities, such as driving the departmental vans, assisting in laboratory maintenance or teaching assistantships. Teaching assistants are assigned specific duties by their supervising faculty. Duties may include the supervision of laboratories, assisting the faculty in lecture preparation, providing help sessions and grading.

Instructional holidays and University breaks apply to academic course meetings, not necessarily to research. Be aware that the faculty uses much of these breaks to perform research as they have other commitments during the academic year. As a student's research often involves close collaboration with the faculty, graduate students will commonly devote university breaks to research. Students' vacations should be planned with the faculty advisor to ensure continuity of research.

Graduate students are expected to fully participate in the scholarly activities in the department, including teaching opportunities, attending departmental seminars, and presenting their own work to the Wesleyan and scientific communities.

PRACTICAL INFORMATION

Graduate Office. Each student has access to the shared graduate student office (SC 307). A telephone is available there for local calls. Some students may have their desk in one of the laboratories, depending on their research topic.

Laboratories and Equipment. Graduate students are expected to share responsibility for the upkeep, safety and security of departmental laboratories and equipment.

Department Office. Each student will have a mailbox in the departmental office and a Wesleyan e-mail account. Use of office supplies, copying etc., will be at advisor's discretion.

REQUIREMENTS FOR THE MASTER OF ARTS DEGREE

Coursework

Students who possess the equivalent of a Wesleyan E&ES BA degree are required to take six upper-level course credits (of which at least four must be in E&ES) and two MA thesis research credits (E&ES591 and 592). In addition, students are required to take three years (six semesters) of courses from a minimum of two of the following disciplines: mathematics, chemistry, physics, and biology. Students who do not possess the equivalent of a Wesleyan E&ES BA degree must complete or have completed 11 upper-level courses in the sciences or mathematics, and at least five of these must be E&ES courses. All students are expected to enroll in E&ES 557, Advanced Research Seminars in Earth and Environmental Sciences, each semester it is offered. A student's thesis committee will decide the required coursework for the M.A.

All full-time graduate students are expected to complete all courses with a grade of B- or better. Failure to achieve these minimal expectations may incur dismissal from the program.

Thesis Proposal

Upon admission to the program, the student will meet with the E&ES Graduate Program committee to discuss the general requirements and goals of graduate study. Students should select an advisor, thesis topic, and thesis committee by the end of the first semester. After students have made a choice of faculty advisor and thesis committee, they must, in cooperation with the advisor, write a 1-2 page thesis proposal, in which they provide an outline of the proposed research. The thesis committee will read the proposal, and discuss it with the student before acceptance of the research project.

Meetings with the Thesis Committee

At the beginning of each semester, and at the beginning of the summer, each graduate student will be asked to prepare a written summary (2-3 pages) of his or her progress and accomplishments and meet with their thesis committee. This summary will be reviewed by the thesis committee and used to discuss and evaluate the student's progress; failure to make adequate progress can be grounds for dismissal from the program. The discussion of the committee will be summarized by the student's advisor and relayed to the student in writing. Typical topics of discussion by the committee include:

1. Review of objectives and status of research and plans for future work.

2. Review of performance in course work taken. Outline of courses planned for the future, and their relationship to research and career goals.
3. Review of other accomplishments (i.e., department assistance, teaching).
4. General progress and comfort in the program.

In addition to a written statement of progress, the student is required during the 3rd semester to deliver an oral presentation about their research to the department (typically as part of EES 557). The purpose of this exercise is to give the student an opportunity to organize and present their work in a semi-formal setting and receive direct feedback.

An ideal timeline of student responsibilities is:

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| Beginning of 1st semester | Orientation meeting with E&ES graduate program committee |
| Beginning of 2nd semester <i>(BA/MA last semester senior year)</i> | Identification of and meeting with advisor and thesis committee. Submission of thesis proposal |
| End of 2nd semester/Beginning of summer | Written statement of progress/ meeting with thesis committee |
| End of Summer/Beginning of 3rd semester | Written statement of progress/ meeting with thesis committee |
| Early 3rd semester <i>(BA/MA first semester MA year)</i> | Oral presentation of results to date |
| Beginning of 4th semester <i>(BA/MA last semester MA year)</i> | Written statement of progress/ meeting with thesis committee |
| End of program | Thesis and Defense |

Qualifying Exam

Competence in general knowledge about the earth and environmental sciences will be assessed by a written examination taken after the end of the second semester. The thesis advisor, in concert with the E&ES faculty, will construct several questions. The student will then have three days to answer these questions. The student can use any written source for guidance (“open-book” format), and each answer should not exceed one page (single-spaced). The committee and any

interested E&ES faculty will then meet with the student to have a 30-minute conversation about the questions and answers. Based on the outcome of the exam, the committee may suggest coursework or independent study on particular topics.

Thesis and Defense

Competence in research will be assessed by a written thesis and an oral presentation of research results before the faculty. The format of the written work is to be discussed and agreed upon with the student's advisor and committee.

The advisor and thesis committee in consultation with the student will agree upon the schedule of the defense. All members of the thesis committee must have read and must approve, in writing, a complete thesis before a defense can be scheduled. Practically, this requires that a thesis draft, already vetted by the advisor, be made available to the remainder of the thesis committee at least one month before any proposed defense date. Once the committee has agreed that the thesis is ready to defend, the form for scheduling the defense can be obtained from the E&ES department.

The student is responsible for following all University requirements for the format and scheduling of the thesis; for details, refer to the Office of Graduate Student Services.

There are three readers on a thesis, including the thesis advisor. The thesis advisor gives the research grade; the two readers determine the quality of work with an emphasis on the thesis as a written document. One reader from outside Wesleyan University or from another department within Wesleyan University is allowed. The defense is attended by the readers plus other members of the E&ES faculty.

The oral defense typically consists of:

- A 30-minute presentation of the research results by the student.
- A 30-minute question and answer period about the thesis.

Directly after the defense the faculty meets to decide whether to award the Master of Arts degree.

THE BA/MA PROGRAM

Wesleyan offers a BA/MA program for exceptional Wesleyan students. The E&ES Department requirements for the BA/MA degree are the same as those of the MA degree outlined above, however please note the expectations for BA/MA students in the timeline.

For details about the BA/MA program see: <http://www.wesleyan.edu/grad/degree-programs/ba-ma.html>.