

# Geoscience, PhD

A PhD in geoscience is designed to bring students to the forefront of a specialized area of geoscience for future employment in higher education or in industry or government research.

## Learning Outcomes

Graduates will demonstrate the ability to:

- develop broad knowledge in the field of geoscience and identify important research problems through the development of subject matter expertise;
- develop a research framework including testable hypotheses, and conduct original independent research that contributes new knowledge to the field of study;
- effectively communicate research findings in both written and oral formats;
- conduct all aspects of research and teaching with the highest ethical standards; and
- be prepared for career options in academia, industry, government, or other relevant fields.

## Requirements

The Doctor of Philosophy program in geoscience requires a minimum of 72 s.h. of graduate credit. The PhD requires a dissertation, which has the approximate research content of three published papers. Throughout their graduate study, PhD students must maintain a grade-point average (GPA) of at least 3.00 in all coursework required for their degree and in all graduate-level geoscience coursework. Students whose GPA drops below 3.00 are placed on academic probation.

Students usually enter the program with established fields of interest and a research advisor already selected. Under exceptional circumstances, a student may be admitted to the PhD program without an established field of interest.

Entering students must consult with a research advisor or the department's director of graduate study before they enroll in courses. By the first month of their second semester of doctoral study, all students must select an advisor. Each student also must select a thesis topic and forward it to the department chair for approval by the end of the first month of the second semester of doctoral study.

Within broad limits, students should select courses that reflect their individual needs, interests, and talents; their advisor and advisory committee must approve their course selections.

During the second semester of doctoral study, each student should propose an advisory committee of at least five faculty members to the department chair for approval. Before the end of the second semester, students must obtain their committee's approval of a suitable plan of study to be submitted to the department chair for approval. In consultation with the advisor and other faculty members, each doctoral candidate prepares a formal dissertation proposal approved by their committee and submitted to the department chair for approval by the end of the candidate's third semester of doctoral study.

Students are required to include in their plan of study at least 18 s.h. of regular coursework taught by tenured or tenure-track faculty members in the Department of Earth and Environmental Sciences. Students must earn the 18 s.h. after being admitted to and enrolling in the PhD program. Directed

study and research credit do not count toward the required 18 s.h.

All entering students are required to enroll in EES:7270 Geologic Orientation, Scholarly Integrity, and Responsible Conduct of Research during the fall semester of their first year in the graduate program. Students must enroll in EES:5010 Geoscience Seminar Series each semester they are registered until they successfully defend their dissertation, or for two consecutive semesters after the semester in which they pass their comprehensive examination, whichever comes first.

After earning their first 24 s.h. of graduate credit, students must be enrolled at least two consecutive semesters in full-time study (at least 9 s.h. per semester) at the University of Iowa; or they must be enrolled three consecutive semesters for at least 6 s.h. per semester at the university, during which time they hold at least a one-quarter-time assistantship that is certified by the department as contributing to their doctoral program.

Students should complete most of their coursework before taking the comprehensive examination, which consists of both written and oral portions and which must be passed before the end of the fourth semester of doctoral study.

Once candidates have passed the comprehensive examination, they are required to register each semester until they receive the degree. Those who have completed their plan of study may register for GRAD:6002 Doctoral Continuous Registration or GRAD:6003 Doctoral Final Registration.

Students must submit their written dissertation to the committee at least two weeks before the final examination. All candidates must deliver a one-hour public presentation associated with the dissertation defense. They also are required to submit a manuscript presenting the results of their graduate research to a refereed journal or other publication approved by the department chair before they may defend their dissertation.

Students are encouraged to present their research at local, regional, national, or international meetings. The department provides partial funding for travel to such meetings.

Detailed information about graduate degree requirements and timelines for making satisfactory progress toward a degree is available; see Graduate Student Guidelines on the Department of Earth and Environmental Sciences Graduate Program website.

## Admission

All geoscience graduate students must meet the admission and degree requirements of the Graduate College; see the Manual of Rules and Regulations on the Graduate College website (particularly sections IX, X, and XII). They also should acquaint themselves with the university calendar.

## Career Advancement

The doctoral degree is required for college and university faculty positions and for some research positions in industry.

Career opportunities are readily available for geoscience graduates. Professional geologists work in resource companies, environmental corporations, educational institutions, conservation agencies, urban planning, state and federal geological surveys, and government resource and research organizations.

The Pomerantz Career Center offers multiple resources to help students find internships and jobs.

## Academic Plans

### Sample Plan of Study

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

### Geoscience, PhD

Course	Title	Hours
<b>Academic Career</b>		
<b>Any Semester</b>		
72 s.h. must be graduate level coursework; graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. <sup>a</sup>		
<b>Hours</b>		<b>0</b>
<b>First Year</b>		
<b>Fall</b>		
EES:7270	Geologic Orientation, Scholarly Integrity, and Responsible Conduct of Research <sup>b</sup>	1
EES:5010	Geoscience Seminar Series <sup>c</sup>	1
EES Required elective course <sup>d</sup>		3
EES Required elective course <sup>d</sup>		3
EES Elective course <sup>e</sup>		3
<b>Hours</b>		<b>11</b>
<b>Spring</b>		
EES:5010	Geoscience Seminar Series <sup>c</sup>	1
EES Required elective course <sup>d</sup>		3
EES Required elective course <sup>d</sup>		3
EES Elective course <sup>e</sup>		3
<b>Hours</b>		<b>10</b>
<b>Second Year</b>		
<b>Any Semester</b>		
Comprehensive Exam <sup>f</sup>		
<b>Hours</b>		<b>0</b>
<b>Fall</b>		
EES:5010	Geoscience Seminar Series <sup>c</sup>	1
EES Required elective course <sup>d</sup>		3
EES Required elective course <sup>d</sup>		3
EES Elective course <sup>e</sup>		3
<b>Hours</b>		<b>10</b>
<b>Spring</b>		
EES:5010	Geoscience Seminar Series <sup>c</sup>	1
EES Elective course <sup>e</sup>		3
EES Elective course <sup>e</sup>		3
EES Elective course <sup>e</sup>		2
<b>Hours</b>		<b>9</b>
<b>Third Year</b>		
<b>Fall</b>		
EES:5010	Geoscience Seminar Series <sup>c</sup>	1
EES:7990	Research: Geoscience	3
EES Elective course <sup>e</sup>		3

EES Elective course <sup>e</sup>		2
Hours		9
Spring		
EES:5010	Geoscience Seminar Series <sup>c</sup>	1
EES:7990	Research: Geoscience	3
EES Elective course <sup>e</sup>		3
EES Elective course <sup>e</sup>		2
Hours		9
Fourth Year		
Fall		
EES:5010	Geoscience Seminar Series <sup>c</sup>	1
EES:7990	Research: Geoscience	3
EES Elective course <sup>e</sup>		3
Hours		7
Spring		
EES:5010	Geoscience Seminar Series <sup>c</sup>	1
EES:7990	Research: Geoscience	3
EES Elective course <sup>e</sup>		3
Final Exam: Dissertation Defense <sup>g</sup>		
Hours		7
Total Hours		72

a Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.

b Complete during first year fall semester.

c Complete each semester until degree completion.

d Complete at least 18 s.h. of regular coursework (not including directed study or research credits) taught by tenured or tenure-track faculty members in the Earth and Environmental Sciences department; work with faculty advisor to determine appropriate graduate coursework and sequence.

e Courses selected should reflect the individual needs, interests and talents of the student; work with faculty advisor to determine appropriate graduate elective coursework and sequence.

f Written and oral exam to be completed by the end of second year.

g Students must deliver a one-hour public presentation associated with their dissertation defense. In addition, prior to defending their dissertation, all students are required to present their research at a professional meeting and submit a manuscript of their graduate research results to a refereed journal or other publication outlet approved by the department chair.