

# Ph.D. in Geological Sciences Academic Assessment Plan

2012-2013

College of Liberal Arts and Sciences  
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*Office of the Provost*

*University of Florida*

*Institutional Assessment*

*Continuous Quality Enhancement*

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# Academic Assessment Plan for Ph.D. in Geological Sciences

College of Liberal Arts and Sciences

## A. Mission

Our principal mission is : 1) to support the University's strategic goal of becoming a top ten public university by continuing to produce highly regarded geoscience research and continuing to develop a Ph.D. program that will train the next generation of Earth scientists, particularly interdisciplinary scientists' 2) to fulfill our land-grant mission by providing quality B.S. and M.S. educational programs that provide the most efficient route to licensure as a Professional Geologist; and 3) to attract and to educate greater numbers of pre- and in-service teachers through our B.A. and M.S.T. programs.

We educate students broadly in Earth Sciences, leading them to understand the history of our planet, its resources and their sustainability, the marine and terrestrial environments, and current and past global climate change. Our students are prepared to enter the workforce or to continue on to post-graduate research and academic careers in the U.S. and throughout the world.

## College

The College of Liberal Arts and Sciences constitutes the intellectual core of the University. Its principal mission is to lead the academic quest to understand our place in the universe, and to help shape our society and environment. The College pledges to ensure equitable access for all of its constituencies, drawing strength from our rich heritage of racial, ethnic and gender diversity. Through teaching, research and service, members of the College continually expand knowledge and best practices in fundamental questions in the arts, humanities, social sciences, and natural sciences and mathematics. At the graduate level, students master a specialized body of knowledge and pursue original research under the guidance of outstanding faculty.

## University

It is the mission of the University of Florida to offer broad-based, exclusive public education, leading-edge research, and service to the citizens of Florida, the nation, and the world. The fusion of these three endeavors stimulates a remarkable intellectual vitality and generates a synthesis that promises to be the university's greatest strength.

The university maintains its dedication to excellent teaching and researching by creating a strong and flexible foundation for higher education in the 21st century. The university welcomes the full exploration of our intellectual boundaries and supports our faculty and students in the creation of new knowledge and the pursuit of new ideas.

Teaching is a fundamental purpose of this university at both the undergraduate and graduate levels. Research and scholarship are integral to the education process and to the expansion of our understanding of the natural world, the intellect, and the senses. Service reflects the university's obligation to share the benefits of its research and knowledge for the public good.

## Shared Mission

We seek to produce scholars conducting cutting-edge research to create new knowledge and to develop new ideas. Our diverse graduates will be skilled professionals, trained to think

independently and to live up to the highest ethical standards, positioning them to become leaders in their academic and professional careers.

## B. Student Learning Outcomes and Assessment Measures

SLO Type	Student Learning Outcome	Assessment Method	Degree Delivery
Knowledge	Students will articulate orally and in writing the results and applications of their research and scholarship, using the basic concepts, theories, and observational findings related to Earth materials and processes, as they pertain to the student’s research.	Qualifying exam, written thesis and oral defense	Campus
Skills	Students will analyze data in the published literature; synthesize analog and digital datasets to produce original geologic maps and/or datasets; apply the scientific method to analysis of published and self-generated data.	Oral defense and written dissertation	Campus
Professional Behavior	Students will conduct research in an ethical and responsible manner.	Research abstract to a local, regional or national conference; attend Responsible Conduct of Research orientation, and attend Research Ethics workshops	Campus

## C. Research

The cornerstone of a Ph.D. degree is the dissertation, in which the graduate student documents the ability to conduct independent research and to communicate that research to the geoscience community. We expect our doctoral students and graduates to present research papers at top-tier conferences and to publish in high quality, well respected journals. To that end, we require all of our doctoral students to present their research at national or international meetings of their

respective research societies. In addition, we expect our graduates to publish the research and conclusions that formed the basis of their dissertations.

Doctoral students in our program are required to identify a research advisor before they enroll in our department so that they receive guidance in terms of appropriate coursework and initial research focus. Prior to starting their first semester, each student and prospective advisor will meet; if necessary, members of the Graduate Committee and any other faculty requested by the Chair may also be present, to discuss his/her preparation, interests, and goals for graduate education. Advice will be given on curriculum and general procedures. The Graduate Committee will also be available as needed during the semester in an advisory role. Additional guidance will be provided to the student by the supervisory committee before the start of the second year of studies. During the first semester, students will identify a potential research project in conjunction with the dissertation adviser and will provide the Graduate Committee a tentative dissertation title and a list of potential Supervisory Committee members. The student will write a prospectus outlining the hypothesis, goals, and research plans for the dissertation; this prospectus will be approved by the dissertation advisor and a member of the Graduate Committee before the end of the second semester.

Students are trained in conducting research by interactions with their advisor, supervisory committee, laboratory managers, and their peers. Students are required to hold annual meetings with their supervisory committee, at which they present their research goals, plans/methods, and results to date. Committee members will provide written feedback to the students using a joint committee report as well as individually completed rubric forms that assess the student's accomplishments and scientific development. Students provide end-of semester self-evaluations to their advisors to apprise them of their research progress, coursework, and service accomplishments during the previous term and their plans for the upcoming term. Advisors provide feedback on these evaluations and discuss future research plans and objectives with the students.

Finally, to facilitate presentation of research at academic conferences, we fund doctoral students for a portion of travel to one conference per year.

## D. Assessment Timeline

Program Ph.D. in Geological Sciences

College of Liberal Arts and Sciences

Assessment	Assessment 1	Assessment 2	Assessment 3	Assessment 4
<b>SLOs</b>				
<b>Knowledge</b>				
Basic concepts, theories, and observational findings related to Earth materials and processes as they pertain to the student's research emphasis	Preliminary qualifying examination and dissertation proposal defense	Oral and written presentation of research at qualifying exams and supervisory committee meetings		
<b>Skills</b>				
Demonstrate problem-solving skills	Oral defense	Completion of written dissertation		
<b>Professional Behavior</b>				
Conducting research in an ethical and responsible manner	Annual Supervisory committee meeting	Complete Responsible Conduct of Research (RCR) orientation session	Attend Research Ethics workshops etc., at professional meetings	Submitted a research abstract to a local, regional or national conference.

## E. Assessment Cycle

Assessment Cycle for:

Program Ph.D. in Geology College of Liberal Arts and Sciences

Analysis and Interpretation:

May-June

Dissemination:

Completed by September 30

Program Modifications:

Completed by following May 15

SLOs	Year	10-11	11-12	12-13	13-14	14-15	15-16
<b>Content Knowledge</b>							
Basic concepts, theories, and observational findings related to Earth materials and processes as they pertain to the student's research emphasis				X	X	X	X
<b>Skills</b>							
Demonstrate problem-solving skills				X	X	X	X
<b>Professional Behavior</b>							
Present research in a professional manner				X	X	X	X
Conducting research in an ethical and responsible manner				X	X	X	X

Note: Data collection for these assessments will begin in the 2012-13 academic year. We did not collect data in prior years.

## F. Measurement Tools

The measurement tools involve a combination of methods.

Students demonstrate the **knowledge** SLO - comprehension of basic concepts, theories, and observational findings related to Earth materials and processes as they pertain to the student's research emphasis - through four mechanisms: annual supervisory committee meetings; oral/written qualifying exams; oral defense of the dissertation; successful completion of written dissertation. Students hold annual meetings with the supervisory committee, at which time they present research goals, plans/methods, and any results to date, and students are evaluated with a formal rubric. Students are evaluated at the qualifying exam through both written and oral examinations using a rubric (see Appendix A for an example) that assesses satisfactory completion, as determined by each examining supervisory committee member. Qualifying exams are measured by the following grades: pass, conditional pass, needs more coursework or training, or not permitted to continue. Dissertation defenses are assessed as: pass, conditional pass, or fail. These evaluations will be by the students' advisor and dissertation supervisory committee members.

Students demonstrate the **skills** SLO by: analyzing data in the published literature; synthesizing analog and digital datasets to produce original geologic maps and/or datasets; applying the scientific method to analysis of published and self-generated data. Successful completion of these skills is assessed through three mechanisms: annual supervisory committee meetings; oral defense of the dissertation; successful completion of the written dissertation, to be evaluated by the students' advisor and dissertation supervisory committee members.

The student’s ability to demonstrate professional attributes in the **professional behavior** SLO is measured by presence or absence of a meeting abstract submission and presentation, as noted on the students’ annually supervisory committee report. Completion of a department (or appropriate substitute) Responsible Conduct of Research (RCR) orientation session is assessed by presence or absence as noted on the students’ annually supervisory committee report. Attendance at a Research Ethics workshop at a professional meeting is assessed by presence or absence as noted on the students’ annually supervisory committee report.

### G. Assessment Oversight

Here, list the names and contact information of those who oversee the assessment process in your program. Add or delete rows as needed.

Name	Department Affiliation	Email Address	Phone Number
John Jaeger (2012-2013)	Geological Sciences	<a href="mailto:jmjaeger@ufl.edu">jmjaeger@ufl.edu</a>	846-1381
Ray Russo (2013-	Geological Sciences	rrusso@ufl.edu	392-6766



## Appendix A. Qualifying Exam Rubric – Ph.D. in Geological Sciences

Candidate Name: \_\_\_\_\_

Date: \_\_\_\_\_

Proposed Dissertation Title: \_\_\_\_\_

	Evaluation/Guidance	Comments
<p><b>1. Problem Definition:</b> Has stated the research problem clearly, providing motivation for undertaking the research</p>		
<p><b>2. Literature and Previous Work:</b> Demonstrates sound knowledge of literature in the area, and of prior work on the specific research problem</p>		
<p><b>3. Impact of Proposed Research:</b> Demonstrates the potential value of solution to the research problem in advancing knowledge within the area of study</p>		
<p><b>4. Solution Plan:</b> Has applied sound state-of-the-field research methods/tools to solving the defined problem and has described the methods/tools effectively</p>		
<p><b>5. Quality of Oral Communication:</b> Communicates research proposal clearly and professionally <b>oral</b> form</p>		
<p><b>6. Quality of Response to Questions:</b> completeness, organization of argument, subject area of study and expertise in the area</p>		
<p><b>7. Critical Thinking:</b> Has demonstrated capability for independent research in the area of study, and expertise in the area</p>		
<p><b>8. Broader Impacts:</b> Demonstrates awareness of broader implications of the</p>		

proposed research such as social, economic, technical, ethical, etc. aspects.	
9. <b>Breadth:</b> Demonstrates a basic knowledge reflective of the required core fields and how they connect with the specific research area.	
<b>Overall Evaluation:</b>	

Name of the Examining Committee Member: \_\_\_\_\_

Signature of the Examining Committee Member: \_\_\_\_\_

**Please report additional comments on the backside of this page.**