

Geological Sciences - MS

2017 - 2018 Assessment Plan

Currently status is: Report Accepted

I. ANNUAL REPORT FOR 2016 - 2017

Mission Statement

The mission of the Department of Earth and Ocean Sciences is to develop high quality Earth system scientists by providing students with a solid foundation in the Earth and Ocean Sciences. This will be accomplished by conducting world-class research, creating an environment for professional development and training, and engaging in service to the community and the profession.

Goal 1.

Students will have an understanding of the fundamental principles and practices related to their specialized area of study.

Curriculum

Students complete at least one course in 2 out of 3 core areas in Geological Science and a minimum of 30 credit hours in total. Breadth requirement areas are: Solid Earth (GEOL 725 or 735), Ocean/Hydrologic Sciences (GEOL 711, 781, 782 or 770), and Data Analysis (GEOL 755, 758 or 783). Students are required to attend a weekly seminar course (GEOL 800, 1 credit) exposing them to leading edge research in Geological Sciences. At times enrollment limits may preclude the teaching of some graduate level courses. This is not conducive to transferring knowledge to graduate students and it may cause us to miss our goal of ensuring that all students have a firm grasp of the fundamental principles related to their respective specializations.

Learning Outcome 1.

Students will demonstrate their understanding of the principles of the primary areas of the Earth sciences and demonstrate their facility for advanced study in their chosen specialized areas.

Measures and Criteria

Students demonstrate an understanding of primary Earth Science areas by conducting an advisor-supervised literature review, identification of a scientific problem, development of a procedure to address the problem, and acquisition of the skills needed to address the problem. This understanding is demonstrated in the thesis proposal by clearly stating the purpose of the research, articulating the methods to be used, and conducting analyses of the data. 90% of all MS candidates will present a Thesis Proposal in their first year after being admitted into the MS program.

90% of all students submitting a Thesis Proposal will demonstrate a level of understanding of the principles of the primary areas of the Earth Sciences related to their research.

80% of students who are admitted into the MS program will graduate and 80% of students who graduate will do so in 2 years or less.

Methods

In order to assess the student demonstration of understanding in the primary areas of Earth Sciences, and to facilitate comparisons of students between years we developed a Thesis Survey. Items on a Thesis Survey asking about the student's understanding of fundamental principles in their specialized area will be completed by the major professor and every member of the thesis committee associated with the presentation of the Thesis Proposal. Students receiving a score of 3 or 4 on question 1 of the Thesis Proposal survey will have demonstrated their understanding of the fundamental principles. All survey results will be maintained in an annual MS Program Assessment file in the office of the Graduate Director.

Records for each student related to graduation or withdrawal from the MS program will be established and maintained in an annual MS Program Assessment file in the Graduate Studies office. Analysis of these data will be carried out annually as part of program assessment, and will include analysis of the program

averages and ranges of (a) time to degree, (b) student-authored article submission & publication rate, (c) student rate of formal presentation at international/national/regional scientific meetings, as well as other relevant metrics. A copy of all graduates' Programs of Study and transcripts will be included.

The Graduate Director will review all Thesis Proposal Surveys completed that year for the purpose of identifying strengths and weaknesses of the program and this assessment strategy. Where weaknesses are identified, recommendations will be developed and given to the entire faculty. In subsequent years, this review process will also assess the extent to which the recommendations were implemented and the effects of those implementations.

Results

All **7** students who presented a thesis defense during this academic year successfully completed their defenses and theses. Assessment forms were completed for each student by each member of their respective committees. The average score was **3.52** out of **4** for assessment question 1: "The thesis demonstrated an adequate understanding of fundamental principles and practices related to areas beyond the student's specialized area". Of the **7** students completing the MS degree this year, all completed their study within **3** years.

Use of Results

Our rate of successful thesis defenses is a strong indicator that we are preparing our MS students effectively for careers and/or future education. We have improved our return rate of Assessment Survey forms to 100%. Our scores overall were **3.52** out of **4**, a significant amount above our benchmark indicating we are meeting our goals. We will encourage our MS students to pursue a course of study that will lead to degree completion within 2 years.

Learning Outcome 2.

Students will learn the scientific method and use it to gain knowledge.

Measures and Criteria

90% of all students will demonstrate in their presentation of a Thesis Proposal an understanding of scientific methodology, quantitative problem-solving skills and experimental techniques.

Methods

Items on a Thesis Survey asking about the student's understanding of scientific methodology and experimental or numerical techniques and about the student's abilities in quantitative problem-solving skills will be completed by the major professor and every member of the thesis committee during the presentation of the Thesis Proposal. Students receiving a score of 3 or 4 on questions 2 - 4 of the Thesis Proposal survey will have demonstrated their ability. All completed surveys will be maintained in an annual MS Program Assessment file in the office of the Graduate Director.

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Results

Of the **7** students completing the MS proposal during this academic year, the average score on the MS proposal survey questions was 3.17 out of 4.00, above the minimum score of 3.0 per student that we interpret as indicative of readiness for graduate research.

Use of Results

Our rate of successful thesis proposals is a strong indicator that we are preparing our MS students effectively for careers and/or future education. We have improved our return rate of Assessment Survey forms to full compliance. Our scores overall are 3.17 out of 4, above our benchmark indicating that we are meeting our goals.

Learning Outcome 3.

Students will demonstrate their proficiency in the use of laboratory, computational and field equipment and have problem-solving skills.

Measures and Criteria

80% of all students admitted into the MS program will successfully complete a research project and write and publicly defend a thesis under the supervision of their major professor and thesis committee.

Methods

Items on a Thesis Survey sheet related to an understanding of fundamental principles, appropriate scientific methodology, the application of appropriate problem-solving strategies and experimental techniques will be completed by the major professor and every member of the thesis committee during the presentation of the thesis and the public defense of the thesis. Students receiving an average of 3 or better from examiners on the Thesis Defense survey will have successfully demonstrated proficiency. All Survey sheets will be maintained in an annual MS Program Assessment file in the Graduate Director's office.

Results

MS Thesis survey results for each of the 7 students earning an MS degree during this academic year averaged 3.43 or above for all questions in the survey. Based on this result, 100% of our defending students has exceeded the program benchmark.

Use of Results

We will use these data to continue to encourage incoming MS students to pursue similarly successful trajectories to completion.

II. FUTURE ASSESSMENT PLAN FOR 2017 - 2018

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