

University of Louisiana at Lafayette

Detailed Assessment Report 2015-2016 Geology MS

As of: 11/22/2016 11:03 AM CENTRAL

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Mission / Purpose

Mission Statement: Our mission is to provide maximum value to our students, our community, and society through education and research focused on Energy and the Environment. Value for our students – Our goal is maximizing the return on investment for undergraduate and graduate students enrolled in our programs. We strive to provide the strongest set of skills, experiences, and opportunities for students who aspire to careers (in industry or academics) within the fields of energy and/or the environment. Value for our community – Our educational and research focus areas reflect the strengths and address the challenges of our region. Louisiana is at the forefront of the petroleum exploration and production industry and also boasts more than 40% of the wetlands in the U.S. These coastal wetlands are highly-productive and represent an enormous biological and economic resource. The state of Louisiana has identified “water management” and the “next wave of oil and gas production” as target areas for development. It is estimated that in Louisiana alone between 100,000 and 195,000 jobs will be created in these areas over the next 20 years. Our program will help provide the intellectual, research, and problem-solving capacity to address these needs. Value for society – The sustainability of energy and environmental resources are two of the biggest scientific challenges we face nationally and globally. Our goal is to provide the next generation of scientists with the tools to work within these fields and a framework for addressing complex problem solving. Relationship to UL’s mission – Our mission reflects the University of Louisiana at Lafayette’s commitment to achieving excellence in undergraduate and graduate education, in research, and in public service. Our focus on value for students, community, and society, mirrors UL’s broader commitment to promote regional economic and cultural development and to find solutions to national and world issues. Relationship to FIRST Louisiana – The Fostering Innovation through Research in Science and Technology (FIRST) in Louisiana plan was adopted by the Board of Regents as the framework for research within their master plan for higher education. The plan identifies Earth Sciences (among the foundational sciences) as a target for expansion and growth. Our focus areas and mission are directly aligned with the translational research domains of Energy, Environmental Sciences (and Coastal sciences) identified in FIRST Louisiana. Vision: Excellence – We will become a preeminent institution in the Gulf Coast Region (and the U.S.) for training students in fundamental and applied research in the areas of Energy and the Environment. Our strategic plan includes goals and metrics in the areas of faculty productivity (teaching and research) and student success that are designed to evaluate our progress. Opportunity – We will offer unique educational and research opportunities to support the success of our students. These opportunities include internships, networking, research experiences, flexible degree plans, and original course content. Our strategic plan includes goals and metrics in the areas of student success (placement, time-to-degree, internship participation, research participation, etc.) that are designed to evaluate our progress. Community – We will serve the community through work in K-12 classrooms, teacher education programs, engagement with businesses, participation in philanthropic events, and local problem-solving. Our strategic plan includes goals and metrics involving employer surveys, recruiting activities, and enrollment numbers that are designed to evaluate our progress.

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Advanced topics mastery

We have changed comprehensive exam into class grades evaluations

Related Measures

M 1: Advanced mastery of course materials

This objective was not evaluated for 2015-2016

Source of Evidence: Comprehensive/end-of-program subject matter exam

Target:

Not evaluated for 2014-2015

Related Action Plans (by Established cycle, then alpha):

Full implementation to take place in 2015-2016 academic year

Implementation has been fully applied for the 2015-2016 academic year.

Established in Cycle: 2009-2010

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Advanced mastery of course materials |

Outcome/Objective: Advanced topics mastery

Implementation Description: Full implementation of above plan

Projected Completion Date: 09/2016

Additional Resources: none

Only one year of data. No changes proposed until next year

With only one year of assessment, it is too early to propose changes. The original target may have been too strict in view of tightening of standards for the Pass/Fail decision.

Established in Cycle: 2010-2011

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Advanced mastery of course materials |

Outcome/Objective: Advanced topics mastery

Change targets for 2014-2015

We met the targeted learning objectives for three years straight. Our plan for 2014-2015 is to define a set of new learning objectives and targets and to set the bar even higher in the areas we think are critical to student success.

Established in Cycle: 2013-2014

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Advanced mastery of course materials |

Outcome/Objective: Advanced topics mastery

Bring back for 2015/2016

We plan to evaluate this objective for 2015/2016 after skipping 2014/2015.

Established in Cycle: 2014-2015

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Advanced mastery of course materials |

Outcome/Objective: Advanced topics mastery

Continue monitoring

Our plan was to continue monitoring using this same rubric to assess student learning outcomes for several years so we could establish a useful baseline.

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Advanced mastery of course materials |

Outcome/Objective: Advanced topics mastery

Measure: Research Progress | **Outcome/Objective:**

Research Ability

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Measure: Written thesis | **Outcome/Objective:** Written communication of research

SLO 2: Research Ability

Students should demonstrate the ability to undertake a research project and complete it, displaying initiative and creative thinking

Related Measures

M 2: Research Progress

All students are required to write a thesis and to register during their time as graduate students for a minimum of six hours thesis credit (GEOL 599). Thesis advisors submit to the university a grade of S (satisfactory) or U (unsatisfactory) or W (withdrawn) at the end of the semester. In addition, they are now required to report a score within the department for the same students. Expectations include 1 - clarity of vision of the scope of the research project, 2 – ability to conduct literature research concerning the topic, 3 – ability to develop a realistic plan to conduct the research and 4 – ability to solve problems as they arise without requiring faculty instruction at every step (i.e. initiative and independence). Rubric B will be used. Number of students assessed = all students registered for thesis credit each semester. Rubric B: Evaluation of Research Progress Each faculty member responsible for a student registered for thesis credit is required to complete the following assessment as part of the Geology Department's on-going review of the M.S. Program. This is a separate exercise from the reported Satisfactory or Unsatisfactory grade and is designed to permit us to continually monitor the program's strengths and weaknesses and to identify areas that can be improved.

Student name (please print) _____ date _____

Semester _____ Evaluator's name (please print)

_____ Evaluator's signature _____

Assessment of component: for each criterion, score the answer using the following scale. 1 – does not meet expectations 2 – approaching expectations 3 – meets expectations 4 – exceeds expectations

Criteria

Clarity of vision of the scope of the research project. Score: Does the student have a clear plan of the significance of the proposed research and understands how to achieve it? Does he or she appreciate the extent and the limits of the work to be done? Has the written Thesis Proposal been approved (should be completed during first semester of thesis credit or earlier)? If so, has the project been adequately introduced and described? Ability to conduct literature research concerning the project. Score: Has the student conducted an intensive literature search? Have the significant and recent publications been located, obtained, read and understood? Does the student understand how to utilize library facilities to maximum benefit? Ability to develop a realistic plan to conduct the research Score: Has the student made an oral defense of the Thesis Proposal? (This should be done during the first semester of thesis credit). Is the proposed program of research logical and complete? Have faculty comments been responded to and, where appropriate, incorporated into the research plan? Is the proposed calendar of research realistic? Ability to solve problems as they arise without requiring faculty instruction at every step. Score: Does the student display initiative? Have issues (if any) been resolved by the

student? Is the student focused on the project's objective or is he/she easily distracted by peripheral issues? Is the student making appropriate progress towards completing the research?

Source of Evidence: Performance (recital, exhibit, science project)

Target:

Each student is rated 1 to 4 (4 being the highest rating) in each of the four criteria described for this objective (rubric B). Our target goal will be achieved if the average rubric score is >3 for each of these measured criteria.

Related Action Plans (by Established cycle, then alpha):

Only one year of data. No changes proposed until next year

With only one year of assessment, it is too early to propose changes. The original target may have been too strict in view of tightening of standards for the Pass/Fail decision.

Established in Cycle: 2010-2011

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Research Progress | **Outcome/Objective:**
Research Ability

Add new course content

Because we consistently have failed to meet our expectations for student learning outcomes related to research progress, we decided to implement a new strategy for teaching these skills/concepts. Starting in Fall 2014, we are going to require every graduate student to take our thesis development course during their first semester in our program. We have added new content to this course that targets research development.

Established in Cycle: 2013-2014

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Research Progress | **Outcome/Objective:**
Research Ability

Rubric B will not be evaluated for the next cycle

We will take this assessment out of circulation for 2015/2016.

Established in Cycle: 2014-2015

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Research Progress | **Outcome/Objective:**
Research Ability

Continue monitoring

Our plan was to continue monitoring using this same rubric to assess student learning outcomes for several years so we could establish a useful baseline.

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Advanced mastery of course materials |
Outcome/Objective: Advanced topics mastery
Measure: Research Progress | **Outcome/Objective:**
Research Ability

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Measure: Written thesis | **Outcome/Objective:** Written communication of research

improve students involmments on research

We plan to start a monthly seminar series for academic year 2016-2017 to have more students involved in research. We will invite outside speakers to give students more broad spectrum of scientific research.

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Research Progress | **Outcome/Objective:** Research Ability

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Measure: Written thesis | **Outcome/Objective:** Written communication of research

Projected Completion Date: 06/2017

SLO 3: Written communication of research

Students should demonstrate the ability to report their research in a coherent, well organized and well written thesis.

Related Measures

M 3: Written thesis

Number of students assessed = all students completing the thesis each semester (numbers range from about 2 to about 12). Theses are judged by the student's thesis committee, consisting at a minimum of three Graduate Faculty members. At the time that the thesis is submitted for final signatures, each committee member is now asked to evaluate the thesis on a scale of 1-4, where 1 indicates the student does not meet expectations; a 2 means the student is approaching expectations, a 3 means the student meets expectations; a 4 means the student exceeded expectations. We use the rubric evaluation presented below. Rubric C: Evaluation of Thesis (written volume) Each faculty member on a thesis committee is required to complete the following assessment as part of the Geology Department's on-going review of the M.S. Program. This is completed at the time that the written thesis is submitted to the Graduate Dean for approval and is designed to permit us to continually monitor the program's strengths and weaknesses and to identify areas that can be improved. Student name (please print) _____ date _____ Semester _____
Evaluator's name (please print) _____ Evaluator's signature _____

Assessment of component: for each criterion, score the answer using the following scale. 1 – does not meet expectations 2 – approaching expectations 3 – meets expectations 4 – exceeds expectations
Criteria Breadth of disciplinary knowledge. Score: Does the student show appropriate understanding of the basics of geology? Is it clear that he/she understands the significance of the study and its results both within the specialized field and to the broader field of geology in general, and to general science? Depth of knowledge of research topic Score: Has the student understand the research tools used and their values and limitations. Is there evidence of careful consideration of the primary literature with acceptance or rejection, on a logical basis, of earlier conclusions and interpretations? Has the scientific method been followed? Ability to express information in writing Score: Is the document well organized with introduction, conclusions, logical progression of ideas? Is the use of grammar correct and appropriate? Are there problems with spelling? Is style appropriate? Are ideas presented in simple, logical sequence and are arguments expressed clearly and succinctly? Is there general clarity of exposition. Where diagrams are used, are they drawn clearly and large enough? Are they incorporated logically? Are they appropriate?

Do they serve a useful purpose? Have appropriate copyright permissions been obtained?

Source of Evidence: Senior thesis or culminating major project

Target:

Each student is rated 1 to 4 (4 being the highest rating) in each of the three criteria described for this objective (rubric C). Our target goal in previous years was a 3.0 for all three criteria. We have raised the bar in 2014-2015 to target an average score of 3.5 or greater for all three criteria.

Related Action Plans (by Established cycle, then alpha):

Full implementation to take place in 2010-2011 academic year.

Because the assessment plan was completely revised from the original, implementation will be full applied for the 2010-2011 academic year

Established in Cycle: 2009-2010

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Written thesis | **Outcome/Objective:** Written communication of research

Implementation Description: Full implementation of above plan

Projected Completion Date: 05/2011

Responsible Person/Group: Dr. Brian Lock, Graduate Coordinator for Geology

Additional Resources: none

Budget Amount Requested: \$0.00 (no request)

Change assessment tool

Evaluations were not completed for the last two years largely because faculty members found it difficult to effectively assess the written thesis in this manner. We plan to modify the assessment plan for these learning outcomes for 2014-2015.

Established in Cycle: 2013-2014

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Written thesis | **Outcome/Objective:** Written communication of research

Continue to monitor success under new criteria

We discussed this rubric with faculty and decided to renew our focus on these evaluations. We raised target criteria in 2014/2015 to greater than an average of 3.5 for all 3 sub-objectives. It has been > 3.0 in years past. We will continue to monitor our success using this assessment tool.

Established in Cycle: 2014-2015

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Written thesis | **Outcome/Objective:** Written communication of research

Continue monitoring

Our plan was to continue monitoring using this same rubric to assess student learning outcomes for several years so we could establish a useful baseline.

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Advanced mastery of course materials |

Outcome/Objective: Advanced topics mastery

Measure: Research Progress | **Outcome/Objective:** Research Ability

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Measure: Written thesis | **Outcome/Objective:** Written communication of research

improve students involvements on research

We plan to start a monthly seminar series for academic year 2016-2017 to have more students involved in research. We will invite outside speakers to give students more broad spectrum of scientific research.

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Research Progress | **Outcome/Objective:** Research Ability

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Measure: Written thesis | **Outcome/Objective:** Written communication of research

Projected Completion Date: 06/2017

SLO 4: Oral presentation ability

Students should demonstrate the ability to report their research in a coherent, well organized and well presented oral thesis defense

Related Measures

M 4: Thesis defense

Number of students assessed = all students defending a thesis each semester (numbers vary from around 2 to around 12). Oral defenses are judged by the student's thesis committee, consisting at a minimum of three Graduate Faculty members. After the defense, each committee member is now asked to evaluate the presentation on a scale of 1-4, where 1 is below expectations; a score of 2 is approaching expectations; a score of 3 is meeting expectations; and a score of 4 surpasses expectations. There are 4 criteria, which include the following: 1 – breadth of disciplinary knowledge, 2 – depth of knowledge of specific research topic selected, 3 – ability to express information orally (organization, grammar, clarity of exposition, presentation skills, appropriate visual aids such as PowerPoint slides), and 4 - providing evidence that the scientific method was followed during the development of their project. Note that part 4 (the scientific method sub-objective) was newly added for 2014/2015 because we discovered in a programmatic assessment that this was an area of weakness where we decided to target improvement. The rubric for this assessment is presented below. Rubric D: Evaluation of Oral Thesis Defense Each faculty member on a thesis committee is required to complete the following assessment as part of the Geology Department's on-going review of the M.S. Program. This is completed at the time of the oral defense, and is designed to permit us to continually monitor the program's strengths and weaknesses and to identify areas that can be improved. Student name (please print)

_____ date _____ Semester _____
Evaluator's name (please print) _____ Evaluator's signature _____

_____ Assessment of component: for each criterion, score the answer using the following scale. 1 – does not meet expectations 2 – approaching expectations 3 – meets expectations 4 – exceeds expectations Criteria Breadth of disciplinary knowledge. Score: Does the student show appropriate understanding of the

basics of geology? Is it clear that he/she understands the significance of the study and its results both within the specialized field and to the broader field of geology in general, and to general science? Depth of knowledge of research topic Score: Has the student understand the research tools used and their values and limitations. Is there evidence of careful consideration of the primary literature with acceptance or rejection, on a logical basis, of earlier conclusions and interpretations? Has the scientific method been followed? Ability to express information orally Score: Was the presentation well organized with introduction, conclusions, logical progression of ideas? Did the speaker present with appropriate volume, speak clearly without inappropriate pauses and interjections? Were ideas presented in simple, logical sequence and were arguments expressed clearly and succinctly? Where slides were used, were they designed clearly and without excessive wording or too small a font? Were they incorporated logically? Were they appropriate? Did they serve a useful purpose? Were sources credited appropriately? Following the Scientific method. Did the student implicitly or explicitly provide evidence that the scientific method was followed during the development of their project.

Source of Evidence: Senior thesis or culminating major project

Target:

Each student is rated 1 to 4 (4 being the highest rating) in each of the four criteria described for this objective (rubric D). Our target goal will be achieved if the average rubric score is >3.5 for each of these measured criteria. Note that we have raised the bar from >3.0 for all criteria in years past to >3.5 for 2014/2015.

Related Action Plans (by Established cycle, then alpha):

Full implementation to take place in 2015-2016 academic year

Because the assessment plan was completely revised from the original, implementation will be fully applied for the 2010-2011 academic year.

Established in Cycle: 2009-2010

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Implementation Description: Full implementation of above plan

Projected Completion Date: 05/2011

Additional Resources: none

Budget Amount Requested: \$0.00 (no request)

Raise the bar

Since these assessment targets have been met or partly met for 5 consecutive years, our plan for next year is set the bar a bit higher and evaluate our curriculum to find additional ways to improve these learning outcomes.

Established in Cycle: 2013-2014

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Continue to monitor success under new criteria

We changed the criteria for success for 2014/2015 to an average score of >3.5 for all sub-objectives. We also added a new sub-objective focused on "following the scientific method". We will continue to monitor these objectives for 2015/2016.

Established in Cycle: 2014-2015

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Continue monitoring

Our plan was to continue monitoring using this same rubric to assess student learning outcomes for several years so we could establish a useful baseline.

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Advanced mastery of course materials |

Outcome/Objective: Advanced topics mastery

Measure: Research Progress | **Outcome/Objective:** Research Ability

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Measure: Written thesis | **Outcome/Objective:** Written communication of research

improve students involmments on research

We plan to start a monthly seminar series for academic year 2016-2017 to have more students involved in research. We will invite outside speakers to give students more broad spectrum of scientific research.

Established in Cycle: 2015-2016

Implementation Status: Planned

Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Research Progress | **Outcome/Objective:** Research Ability

Measure: Thesis defense | **Outcome/Objective:** Oral presentation ability

Measure: Written thesis | **Outcome/Objective:** Written communication of research

Projected Completion Date: 06/2017

SLO 5: written thesis 2015-2016

In 2015/2016 rubric evaluations for the written thesis (rubric C) were collected from 9 faculty members for 6 students. The average rubric scores were as follows: 1) Breadth of disciplinary knowledge = 3.67; 2) Depth of knowledge of research topic = 3.56; 3) Ability to express information in writing = 3.44. Two of the three scores were >3.5 and the other was 3.46, so our objectives for 2015/2016 were mostly (partly) met. This is a positive step forward because these objectives were only partly met in 2011-2012 and 2010-2011 (this objective was not evaluated in 2014/2015) when we used the >3.0 criterion. Hence, we have reached a new level of success in our objective for written communication skills. This is probably attributable to our renewed emphasis on research quality, including integration of new materials and topics into our thesis seminar course. It also did not hurt that we have hired some great new faculty members in 2014/2015.

Analysis Questions and Analysis Answers

How were assessment results shared and evaluated within the unit?

We have reached objective during the academic year 2015-2016.

Identify which action plans [created in prior cycle(s)] were implemented in this current cycle. For each of these implemented plans, were there any measurable or perceivable effects? How, if at all, did the findings appear to be affected by the implemented action plan?

We have maintained the graduation rate based on the dramatic increase in the students enrollments. We have improve students' involvements on variety of academic events including GSA, AGU and SEG conferences. The evaluation of the Master students' thesis writing and defenses have shown steady improvements.

What has the unit learned from the current assessment cycle? What is working well, and what is working less well in achieving desired outcomes?

Based on evaluation of the program, we have keep the pace on improving our geology master program. Even on the dramatically increased enrollment, we still keep the good graduation rate. More and more graduate students have been able to attend various academic conferences.