ASSESSMENT OF STUDENT LEARNING
Department of Geology
University of Puerto Rico at Mayaguez

Progress Report

Period of Report

August to December of 2004.

Purpose of our Assessment

The fundamental purpose of assessing student learning in the Geology Department is to improve the quality of our program through a continuous revision of its educational objectives, curriculum, and program outcomes. A secondary purpose of this assessment is accountability; demonstrating to the accrediting agencies, governing bodies, constituencies, and other interested parties that we are effective in achieving the goals of our strategic plan. Our efforts will help with the institutional responsibility for producing, reporting, interpreting, and explaining learning outcomes.

Our Vision and Mission

The Geology Department of the University of Puerto Rico at Mayaguez seeks to provide the highest levels of education through continuous revision and expansion of our educational, research, and outreach programs in order to produce well-trained, competent, academic and professional geoscientists capable of responding to societal needs.

We will develop in each student, critical thinking, enthusiasm, initiative and the necessary skills to become lifelong students of Earth Sciences. Emphasis will be placed on learning basic concepts and techniques through research, in an environment that promotes the development of professionals with social, cultural and humanistic sensibility as well as profound ethical values.

Assessment Strategy

The faculty of the Department of Geology approved the Plan for the Assessment of Student Learning on September 13, 2004. This plan describes the different strategies we will use to assess the outcomes of our department in student learning. In order to implement such strategies we have started this semester with the development of specific questionnaires, identifying the best mechanisms to submit them to the students, and coordinate the collection and interpretation of the results.

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Assessment Activities

During this report period we performed the following activities:

1. A questionnaire for curriculum assessment was prepared and submitted to the students enrolled in the courses Geol 4045 (Petrogenesis of Crystalline Rocks), Geol 4046 (Sedimentary Environments and Lithogenesis), and Geol 5026 (Tectonics). This questionnaire is included at the end of this report.

2. A questionnaire for assessment of undergraduate research was prepared and submitted to the students enrolled in the courses Geol 4049 (Undergraduate Research I) and Geol 4055 (Undergraduate Research II). This questionnaire is included at the end of this report.

3. A comprehensive exam to measure the general knowledge in Earth Sciences was started. This exam will be offered at the beginning (to the freshmen) and end (to the seniors) of the academic program.

4. The processing of the collected data was begun and we started working with the analyses and interpretation of the results.

5. We started to learn WebCT and Respondus software in order to implement our assessment tools using the internet.

Accomplishment and Results

During this semester the Department of Geology had two big accomplishments regarding the assessment of student learning; (1) the approval of the first Departmental Assessment Plan, and (2) the first implementation in its history of specific tools for assessment of student learning. In addition, the Office of the Dean of Arts and Sciences organized several workshops and seminars that helped the Departmental Assessment Committee to develop the knowledge and skills to perform the proposed activities. These efforts have produced an environment where the faculty and students are aware of assessment and recognize its importance. They are also willing to help in the process. This new attitude in the Department of Geology is a big step toward a better understanding of our strengths and weakness, which will allow improving our student learning.

As first step to implement our assessment tools we selected three concentration courses of Geology to gather data about our curriculum. The courses were Geol 4045 (Petrogenesis of Crystalline Rocks), Geol 4046 (Sedimentary Environments and Lithogenesis), and Geol 5026 (Tectonics). Twenty nine (29) students from third and fourth year completed the questionnaire of 31 questions (included at the end of this report). All questions, except the last one, were prepared to be answered in a computer sheet and they will be tabulated and statistically analyzed by the University Computer Center. The complete analysis and interpretation of these data will be performed next semester.

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The assessment of undergraduate research was completed by all twelve (12) students enrolled this semester in Geol 4049 (Undergraduate Research I) and Geol 4055 (Undergraduate Research II). The questionnaire prepared for this assessment was simpler and computer sheets were not necessary (see copy of the questionnaire at the end of this report). The complete analysis and interpretation of these data will also be performed next semester.

Work Plan for Next Semester

The assessment activities for next semester (January-May, 2005) in the Department of Geology will focus in the following:

1. Finish the comprehensive exam to measure the general knowledge in Earth Sciences. This exam will be offered for the first time to seniors students in May 2005 and to freshmen students in August 2005.

2. Process the data collected during this semester and performs the appropriate analyses and interpretation of the results.

3. Continue the learning of WebCT and Respondus software in order to implement our assessment tools using the internet.

4. Start working with the complete portfolio of the courses.

5. Prepare a questionnaire to assess the Departmental Facilities, including the computer laboratory, teaching resources, research equipment, and others.

6. Prepare a Web Page of the assessment in the Department of Geology.

CURRICULUM ASSESSMENT
Department of Geology
University of Puerto Rico at Mayagüez

This questionnaire is intended for geology students only. The results of this assessment will help the Department design and modify the curriculum to meet the graduating student profile. D*o not* write your name nor student number in the computer answering sheet. Please choose only one answer.

1. Year of Study:
    a. Freshman (1st year)
    b. Sophomore (2nd year)
    c. Junior (3rd year)
    d. Senior (4th year or more)

2. Department that your were accepted when entered to UPRM:
    a. Geology
    b. Engineering
    c. A Science Department other than Geology
    d. An non Science or Engineering Department

3. Expected Graduation Date:
    a. 2004 b. 2005 c. 2006 d. 2007 e. 2008

PART I: SKILLS AND VALUES

Using the scale below, please evaluate the effectiveness of the geology program (curriculum) in developing the following skills. For this evaluation please consider ALL courses taken in UPRM so far.

A: excellent B: good C: average D: poor E: deficient

SKILLS AND VALUES
4. Critical thinking and problem solving skills through the scientific method
5. Skills of Team Work
6. Communication skills in Spanish and English
7. Computer literacy and its scientific applications
8. Knowledge of up-to-date scientific tools and techniques
9. Awareness of contemporary scientific issues
10. Awareness of ethical implications in science
11. Ability to learn by yourself
12. Ethics

PART II: SCIENTIFIC KNOWLEDGE
Using the scale below, please evaluate the effectiveness of the curriculum in developing the knowledge of the following fields:

A: excellent B: good C: average D: poor E: deficient

SCIENTIFIC KNOWLEDGE
13. Paleontology
14. Sedimentology and Stratigraphy
15. Structure &Tectonics
16. Igneous and Metamorphic Petrology (including volcanology)
17. Geomorphology and Quaternary Geology
18. Hydrogeology
19. Geophysics and Seismology
20. Environmental Geology
21. Geochemistry
22. Engineering Geology
23. Mineralogy
24. Geology of Puerto Rico

PART III: OVERALL PERFORMANCE OF THE DEPARTMENT
Evaluate each of the following as strength or a weakness of our Department using a grading system from A to F.

A B C D F
Strength Weakness

CRITERIA
25. Variety of Courses
26. Laboratory Equipment and Facilities
27. Faculty
28. Flexible Curriculum (ratio of core vs. electives courses)
29. Courses Content
30. Research Opportunities

PART IV: OTHER SUGGESTIONS
Mention three aspects that we should change for improving the curriculum of the Department of Geology.

1.
2.
3.

GEOLOGY UNDERGRADUATE RESEARCH
Assessment form to be completed by the student
Semester: 1st Year: 2004-2005

Student Information

Years at UPRM: _____

Major when admitted to UPRM: _____

Semester of Research: _____ Geol 4049 _____ Geol 4055

Description of Research Topic

How did you choose the topic? _____

The selected topic is related to:

__ Sedimentology __ Mineralogy __ Remote Sensing __ Hydrogeology
__ Volcanology __ Petrology __ GIS __ Other
__ Geomorphology __ Structural Geology __ Paleontology
__ Stratigraphy __ Seismology __ Geophysics

Research Experience

In a scale of **1** (strongly disagree) to **5** (strongly agree) assess your experience in undergraduate research in geology.

Criteria	1	2	3	4	5
A well defined project with clear goals was assigned					
Faculty was accessible and helpful					
Learned the scientific method					
Applied knowledge from my geology courses					
Became exposed to new concepts					
Developed analytical skills					
The experience was challenging					
Improved my writing skills					
Improved my oral skills					
Gained confidence in my abilities to do research					

Would you be interested in continuing the same research in the future?

Yes _____ No _____ If not, why? _____

Comments concerning this research experience: