

Assessment of the Undergraduate Curriculum  
Department of Geology and Geophysics  
May 1, 2006

## **Overview of the Program**

In the past five years, 146 undergraduate students have graduated from with degrees from our department (average of 29 per year). We currently have 51 undergraduate majors.

## **Summary of Program Learning Objectives**

The department aims to provide an integrated curriculum in the field of earth science for undergraduate majors as preparation for graduate study and/or scientific careers. This curriculum includes traditional geology majors in L&S, and the interdisciplinary Geological Engineering undergraduates from the College of Engineering.

The earth sciences draw from a variety of scientific fields, including biology, chemistry, physics, engineering, and computer science. We want all of our majors to be grounded in certain general skills and knowledge, even as they begin the process of specialization. Our general goals include:

- An understanding and appreciation of the magnitude of geologic time.
- An understanding of the chemical, physical, and biological bases of earth systems.
- Familiarity with the variety of size scales of geologic features.
- An understanding of and facility with the principles and methods of mapping.
- The ability to acquire scientific data in the field.
- The ability to store, manipulate, and model data in a quantitative fashion.
- The ability to read and evaluate primary scientific literature.

## **Post-graduate Careers for Geology and Geophysics Majors**

87 students have graduated from our program in the past 3 years. Of the 60 students for whom we have current information, 63% (38) have gone on to graduate school, 20% (12) are working in geology-related jobs, 12% (7) are working at non-geology jobs, and 5% (3) joined the military.

## **Evaluating Student Achievement**

The principal tool the Department uses in assessing the attainments of its undergraduates is a questionnaire that is distributed to senior majors. In the questionnaire, we ask students to assess the undergraduate curriculum, departmental strengths and weaknesses, and advising procedures, and to describe their educational and career plans. We have completed questionnaires from 44 graduates from 2004-2005.

In addition, we distribute surveys to students in our principle undergraduate courses, asking them to comment on the course sequence and curriculum, and on their professional goals. We have surveys from 41 students in spring 2006 courses.

## **Summary of Results**

In general, student assessment of the program is very positive. In particular, students report that:

- Field trips are very widely appreciated as useful, enriching, and enjoyable.
- The faculty are generally approachable, understandable, and concerned with undergraduates.
- The department presents a close knit environment, conducive to learning.
- They appreciate opportunities to get involved in research.
- They appreciate opportunities for involvement with Geoclub and Paleoclub.
- The quality of TA's in the department is excellent.

Areas of possible improvement are:

- Geology 203 (Earth Materials) - Several years ago, we totally reorganized our undergraduate curriculum, combining two core courses (Mineralogy, Petrology) into one (Earth Materials). The instructors for this course have put an enormous effort into making it viable, but the volume of material covered still appears to be problematic for many.
- More training in GIS, modeling, and other applied aspects of geosciences.
- Better instruction in scientific writing.
- Better training in reading the primary literature.
- Better career advice.

### **Statement on Next Steps**

Our Undergraduate Committee has taken steps to alleviate some of these concerns. We have instituted an advising day each semester, which many students attend. We have arranged several career advising seminars with our Board of Visitors, which have also been well attended. We recognize the need for further progress, however, and intend to meet later in the month to make plans to bring to the faculty in early fall. In addition, we intend to survey the faculty to assess their concerns about the undergraduate curriculum and learning.