

**PROGRESS REPORT ON  
ASSESSMENT OF UNDERGRADUATE PROGRAM,  
DEPARTMENT OF GEOLOGY AND GEOPHYSICS**

**October 1, 2001**

**Preamble**

The Geology and Geophysics (G&G) Department received a grant from the Office of the Senior Vice President / Executive Vice Chancellor to support faculty efforts to assess the effectiveness of the undergraduate program. Alison Houghton (B.A. - Psychology) was employed for four months on a part time basis to do much of the background research and preparation.

A meeting was held with Ken Tokuno (Academic Affairs Program Officer) at University of Hawaii at Manoa (UHM) to discuss the project in depth, to learn what the university's expectations were in terms of assessment and to find out what was already being done on campus. Dennis Taga (Director, Institutional Assessment and Policy) was also contacted regarding the UH-wide Alumni Survey.

In the first month, websites were searched for assessment tools, in particular <http://www2.acs.ncsu.edu/UPA/assmt/resource.htm>. This site led to information from 30 universities. Information was gleaned from other Geology Departments for topics such as learning objectives. University-wide sites were helpful for alumni surveys.

Fourteen geology departments (U. Washington, U. New Mexico, U. Wyoming, U. South Carolina, U. Kansas, SUNY - Albany, U. Oregon, U. Utah, U. Indiana, U. Michigan-Morris, U. Minnesota, U. Colorado, CSU-Northridge and Boise State U.) were all contacted by email with seven replying. Some replies were extremely helpful; others had nothing to offer.

The twelve UHM departments that received grants for assessment were contacted to see if they could assist us or work together but only two replied. The School of Accountancy (SOA) sent a helpful reply and some of their employer survey was used as a model. Our assessment efforts are continuing. We have modified our class evaluation form, created and posted employer and alumni surveys and administered a questionnaire to our new undergraduate majors.

**Specific tasks**

**1. Class evaluation form**

Students are asked to evaluate all G&G classes every semester. The G&G evaluation form had no questions related to assessment such as course objectives, relevance to career objectives, broadening of intellectual understanding or benefits of field trips. Such questions are common at other universities, it was felt that these should be added. G&G class evaluation form was revamped to include these questions (see Appendix 1, as Part A, #2, #11, #22, #23 and Part B, #11). The format of the form was also changed from one of questions to statements. The

responses were made more formal and the order of questions was rearranged to examine course content first, followed by the instructor, and lastly the student. This form is waiting for approval from the G&G Curriculum Committee and the Department. Copies of original and revised forms are in Appendix 1.

## **2. Employer survey**

The department had an outdated (> 10 years old) employer list of about 15-20 local firms, some of whom had ceased operating. A new list was created from the phone book looking for geotechnical and environmental companies, as well as city, state and federal agencies. Most companies were phoned to confirm the best contact person for the survey and faculty supplied some names. Fifty-four companies and employer organizations were identified.

Our survey was adapted from the UHM School of Accountancy (SOA) employer survey. The School of Accountancy's survey asked employers to first comment on the relevance of each course to the work in their field. In preparing the G&G survey, we adapted the SOA's survey, putting the required courses first and the optional courses next, and gave space for suggested modifications and additions by employers. The present UHM Catalog listing of courses was used for course descriptions and in some cases modified to be more employer-friendly. The survey was posted to employers on 23 August 2001, with an accompanying letter from the G&G Chair. Responses were requested by 7 September 2001 with 20 having been returned (37%) as of 24 September 2001. The results are being tabulated and interpreted. Copies of the letter / survey form / course descriptions are in Appendix 2.

One spin-off from this exercise was that several faculty decided they needed to modify their UHM Catalog entries and six are waiting for G&G Curriculum Committee approval before going for SOEST and then onto Bachman Hall for approval and entry in the next catalog. Additional spin-offs has been an indication from employers willing to take part in a Job Fair, and offer internships to students.

## **3. Entrant questionnaire**

A common assessment tool of student learning is some form of pre-testing of students. This is undertaken to provide evidence that student learning has taken place over a designated period of time. The questionnaire is intended to demonstrate that on completion of the bachelor's degree students have an understanding and intellectual grasp of a specific body of knowledge. This specific body of knowledge should also be the focus of the departmental objectives, the pre-test and end-of-degree testing should allow us to determine whether the Department objectives are being achieved. In correspondence with colleagues at other universities, it was found that most were doing course evaluations, some were doing alumni and employer surveys but none were doing pre-testing. A basic questionnaire was created for entering students to provide us with information on gender, proportions of Hawaii versus transfer students, initial and current majors, and some idea of intended plans on graduation. The course chosen to administer this questionnaire was GG301 because it is the first majors course for most students. Twelve students answered the questionnaire, which was given to them at the start of their second class this semester, 29 August 2001.

Some conclusions from this survey are:

- Hawaii students selected UHM often for financial reasons (58%)
- mainland students came here both to study G&G and for lifestyle reasons (42%)
- students are equally divided between wanting to enter graduate school and seeking employment when they finish their B.A. / B.S. degree
- 33% of students felt they had a grounding in some aspects of the geology courses
- reasons for majoring in G&G range from long-term interest in the subject (50%) to interest in a related area (environmental law) to "boredom" in other areas they have studied

Copies of the questionnaire and summary of results are in Appendix 3.

#### **4. Alumni Survey**

UHM undertakes an alumni survey every three years. The last survey was in 2000, covering students who graduated in 1995. None of the responses were from SOEST graduates. In the past neither SOEST nor G&G have conducted alumni surveys. To meet the goals of the WASC review, it was decided to create a G&G alumni survey. Various other sample alumni surveys from elsewhere were examined. The University of Washington survey was found to best serve our needs. Although this is a general form for all University of Washington graduates, their questions on the student's present status, income, etc. are concise. The first two sections were copied and amended for G&G usage. Questions with a more specific geological slant, using examples from SUNY - Albany G&G survey form, were added.

This survey was sent out to all G&G 1999 and 2000 graduates, except two whose addresses were unknown, on 10 September 2001. The names and addresses were supplied by the SOEST Student Services Advisor, and the survey was accompanied by a letter from the G&G chair, with an offer of a free SOEST T-shirt if they responded. This offer was added because the SOEST Student Services Advisor in 1997 had a poor response rate (3/300) from a previous survey. Copies of the chair's letter and the new survey are in Appendix 4.

#### **5. Degree program objectives**

The G&G Department Curriculum Committee drafted a set of objectives last spring but had not finalized it as it had not been reviewed by the G&G faculty. To gain a perspective on what other G&G departments considered as their objectives, a spreadsheet was created with objectives from four of these geology departments based on a web search and written requests. The California State University system had an impressive site for their 15 Geology Departments. Their objectives came from a conference at which undergraduate learning was discussed. Three other university geology departments (University of Minnesota - Morris, Montana State University - Bozemann and University of Michigan) had very clear objectives including assessment methods and measurements.

The G&G Curriculum Committee will review these objectives and forward a recommendation to the faculty this fall.

## **6. Capstone / end of degree evaluations**

In reviewing assessment examples used by other departments, it was clear that Geology Departments are in a fortunate position. Geology programs can use a required field methods course to assess a wide range of aspects of a G&G undergraduate degree program. A field course by its very nature requires students to apply what they have learned in several of their courses to a variety of situations. Changing the existing GG305 Field Methods course to a Capstone course would require little effort but would provide many benefits.

Another option is to revamp the current required GG410 Undergraduate Seminar course. This has appeal because it addresses the issues of oral and written communication as well as having students demonstrate that they have learned from their geology studies. University of New Mexico provided an excellent example of a course to hone these skills. Students are required to write technical reports as would be required by a company, to give short presentations on prepared topics of their choice and to give an impromptu talk. This course would meet several of possible program objectives and UHM core requirements. It is felt that this modification would enhance the student's career potential and give some faculty the chance to assess the students' knowledge of geology and geophysics.

## **7. Assessment Plan**

All of the above six tasks are considered necessary components for a comprehensive G&G assessment plan for undergraduate degrees. Work in progress by the G&G curriculum committee to achieve this plan includes:

- Approval of undergraduate learning objectives.
- Examining the results of the first entry evaluation.
- Making small but essential adjustments to GG305 and GG410 courses to make them capstone courses
- Examining the results from the alumni survey to gauge how students feel about their experiences in the G&G Department and what value they place on it.
- Examining the responses from the 54 potential employers who were asked to assess the degree program, its courses and its usefulness in the employment market, and sharing these results with faculty, students and employers
- When the surveys are returned, evaluating the responses and making any changes that would improve programs to enhance the value of G&G graduates to potential employers. Also the information will be shared with students.

Undergraduate students need to be advised on the results of this assessment including which courses are most preferred by employers of graduates with B.A. / B.S. degrees versus those preferred by employers of M.S. or Ph.D. graduates, or courses that will be more beneficial to students wanting to enter graduate school. By sharing the results of these assessments it is hoped that students will play a more active role in their education.

## **8. Conclusion**

The G&G Department asked for and received funds to employ a person for four months to do much of the preparatory work for assessment of student learning. Much of this work took place over the summer but input from the faculty is required before the assessment plan can be finalized. Many components of the plan have been developed and used, but the final format of the overall plan will not be ready until the end of the year at the earliest. This plan will surely sharpen the focus of the faculty to the very necessary outcomes required for a quality undergraduate degree.

Paul Wessel, Chair, G&G Department

Mike Garcia, Chair, G&G Curriculum Committee