



UNIVERSITY OF WISCONSIN-MADISON

Department of Geology and Geophysics

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MEMOTO: Alex Nagel
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FROM: Charles W. Byers *CW B*
Undergraduate Studies Committee
Department of Geology and Geophysics

Here is the department's plan for assessing the undergrad and grad programs. I'm the contact person. Happy New Year!

Department of Geology and Geophysics
College of Letters and Science
University of Wisconsin-Madison

PLAN FOR ASSESSMENT OF THE UNDERGRADUATE MAJOR
AND THE GRADUATE PROGRAM
31 December 1996

This document is submitted in response to the College's mandate of 21 September to provide a plan for assessing the instructional program. This plan has been developed as an outgrowth of the department's Self-Study and Strategic Plan (1992-93).

Educational Goals

As described in the mission statement in the Strategic Plan, the educational goals of the department are broader than the majors and graduate programs alone. With regard to those two facets, 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 Letters and Science and the interdisciplinary Geological Engineering undergraduates from the College of Engineering.
- To offer specialized training in several subdivisions of earth science leading to the M.S. and Ph.D. degrees, as preparation for professional employment in business, government, or academia.

Undergraduate Program Assessment

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

1. An understanding and appreciation of the magnitude of geologic time.
2. An understanding of the chemical, physical, and biological bases of earth systems.

3. Familiarity with the variety of size scales of geologic features.
4. An understanding of and facility with the principles and methods of mapping.
5. The ability to acquire scientific data in the field.
6. The ability to store, manipulate, and model data in a quantitative fashion.
7. The ability to read and evaluate primary scientific literature.

Assessing the development of these skills will be undertaken by the Undergraduate Studies Committee in the department. Because this committee oversees curriculum change, there will be a direct feedback mechanism from the assessment.

We propose three methods of evaluation, to be implemented in the Spring Semester 1997. The first of these is a capstone evaluation. Most of the educational goals listed above are involved in three geologic field courses taken by most of our upperclass majors. G456 Field Methods is a semester course in which mapping is taught via numerous field excursions. G457 Conducted Field Trip is a ten-day geologic mapping project carried out in Ontario. G459 Field Geology is a six-week course in mapping, taught in the summer session in Utah.

A student's performance in these courses is a measure of how well he or she has integrated the previous coursework in the major. The instructors of these courses will be asked to provide to the Undergraduate Studies Committee a report on the level of preparedness displayed by the students, with regard to the list of goals above. The committee will request the instructors for specific recommendations on strengthening the curriculum.

The second method of evaluation will be an exit questionnaire for the graduating senior majors, asking them to assess the undergraduate curriculum, departmental strengths and weaknesses, and advising procedures, and to describe their educational and career plans.

The final method will also be a questionnaire, this one directed to the departmental alumni. We plan to survey, by mail, the graduate majors of the past five years. We wish to learn the near-term outcome of their undergraduate education in the department, whether they are continuing to pursue geology in graduate school or as a professional career. We also are interested in their perspective of our curriculum, after having spent some time away and perhaps seen what has been of most use to them. In summary, our assessment will provide information from three sources; faculty, student majors, and alumni. We hope that the combination of these various viewpoints will provide a good snapshot of the current undergraduate program.

All of the evaluation methods can be carried out during the coming spring and summer. We should have initial results in hand for feedback planning for the Fall Semester 1997.

Graduate Program Assessment

The assessment of the graduate program will be overseen by the departmental Graduate Studies Committee, which monitors fulfillment of requirements for the graduate degrees.

Because of sub-specialization at the graduate level within the field of geology and geophysics, there are no department-wide norms or skills to evaluate. We do have general outcome expectations, however. An M.S. graduate of the department should be able to function as a professional geologist. He or she should be able to plan and carry out scientific investigations, make interpretations, and communicate results effectively. A Ph.D. graduate should be able to function as an independent scientist, capable of recognizing and evaluating geologic problems and of initiating research programs to investigate them. In short, the quality of our graduate program hinges on the employability of our graduates. Employment, advancement, and recognition of the graduates are indirect measures of how well we are preparing them.

As a first step in assessment, we propose to survey our graduate alumni of the past decade, via mailed questionnaire. We plan to ask them about their career progress and to solicit their views on the graduate curriculum. This mailing can be accomplished in the coming spring semester. The response should give us guidance on further directions of assessment.