

Department of Geology and Geophysics Graduate Assessment Report

The Department of Geology and Geophysics conducts research and disseminates information on the structure, chemistry and evolution of the Earth, life on Earth, and the interactions between physical, chemical and biological processes. We strive for breadth and excellence in our coverage of the sub-disciplines within the geosciences. We believe that research and creation of new knowledge are intimately inter-related with, and essential to, our graduate studies program. Our department is well represented in a broad range of research disciplines across all the major areas of geosciences. As such, there is a large diversity of sub-specialization at the graduate level, with no common or capstone courses that are taken by all of the graduate students, and 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 or geophysicist. 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 they are prepared.

All M.S. students complete a thesis that is defended in public. M.S. students take a variety of courses related to their area of research. Ph.D. students, in addition to course work in geology or geophysics, must complete a minor subject. All Ph.D. students also take a preliminary exam and present a public defense of the dissertation. Some sub-disciplines also require students to take a qualifying exam (either oral or written). Most students, both M.S. and Ph.D. make public presentations at national or international meetings. The department encourages this participation by facilitating support to attend the meetings. M.S. and Ph.D. students are also encouraged to publish their work. Since 1882, (through 2000) the department has granted 1514 graduate degrees (977 M.S., M.A., or M.Ph.s and 537 Ph.Ds.). In 1998, The American Geological Institute ranked UW-Madison third in the nation (behind Stanford University and the University of Texas at Austin) in production of M.S. and Ph.D. graduates in the geosciences.

Alumni involvement takes place formally through an active Board of Visitors that meets twice a year in Madison to evaluate and advise the department, counsel students, and supervise fund-raising. The board was instrumental in helping to raise approximately \$1 million of the \$5 million addition to Weeks Hall (2005). In addition, most of the living alumni keep in touch with the department, and changes in their addresses and professional careers are regularly listed in the department's annual newsletter and alumni directory -- The Outcrop.

The principal tool the department uses in assessing the graduate program is the success of our graduates after completing their degrees. Table 1 (below) shows the number of degrees awarded in the 10 year interval (1991-2000) and employment status of graduates.

Between 1991 and 2000, the department graduated 59 Ph.D. candidates and 104

M.S. candidates. Fifty-nine per cent of our Ph.D. graduates went to academic or research institutions (including government research laboratories, the U.S. Geological Survey, and museums). Twenty-seven per cent of Ph.D. candidates went to work in industry and 12 % went to work in fields not directly related to geology and geophysics. A large percentage (44%) of our M.S. students went on to Ph.D. programs. The next largest group (30%) went to work in industry (including both oil companies and environmental consulting firms). Ten per cent of M.S. graduates went to work in fields not directly related to geology and geophysics. The remaining M.S. graduates took positions at academic or research institutions, in K-12 education, or at administrative or regulatory agencies.

Table I - Degrees and post-graduate employment for the period 1991-2000

Degree	Employment	Number	Per cent
Ph.D.	all graduates	59	36
M.S.	all graduates	104	64
Total	all graduates	163	
			% M.S.
M.S.	continued for Ph.D.	46	44
	industry	31	30
	academic/research	10	10
	K-12 education	4	4
	regulatory/admin.	3	3
	non-geoscience	10	10
			% Ph.D.
Ph.D.	academic/research	35	59
	industry	16	27
	regulatory/admin	1	2
	non-geoscience	7	12

An indirect measure of our graduate program is our success in recruiting a diverse group of students from throughout the U.S. and abroad. Between 1991 and 2000, 40% of applicants to whom we offered admission and support accepted our offers. The largest number of students who declined our offers of support went to the following five institutions: Stanford, University of Arizona, University of Michigan, University of Washington, and Penn State. From 1989 to 1995, the percentages of women graduated with M.S. and Ph.D. degrees were 30% and 24% respectively, which is higher than the national trends for geosciences in the same period (28% and 21%, respectively, as reported by the American Geological Institute). The proportion of women graduates increased to 38% of M.S. degrees and 37% of Ph.D. degrees in the period 1996-2000. In summary, direct and indirect measures indicate a strong and successful graduate program.

However the department must continue to explore ways to improve recruiting as competition increases for top applicants.