**A Non-Traditional Geoscience Degree for Non-Traditional Students:**

**Applied Environmental Geosciences at Weber State University**

Weber State University (Ogden, UT) is an open-enrollment, dual-mission institution within the Utah System of Higher Education (USHE). As a dual-mission institution, Weber State serves as both a regional, master’s-granting university and the community college of northern Utah. The open-enrollment policy presents many challenges, and rewards, for the various academic departments that are focused on their 4-year baccalaureate mission. The Department of Geosciences, one of seven departments in the College of Science, has been awarding Bachelor of Science degrees in Geology and Earth Science Teaching since the institution gained 4-year status in the mid-1960s.

For several decades, the majority of geoscience majors at Weber State have been non-traditional students – they are generally older than 24 years of age; many are married, with children; most are working at least 20 hours per week off campus; many are military veterans; many are first-generation college students; and virtually none of them came to university planning to major in the geosciences. Female students have comprised approximately 35-50% of the total geoscience majors during this time.

During the early 1990s the Geosciences faculty came to two important realizations about our students and our curriculum. First, we were losing majors to other departments, despite the student’s interest in the geosciences, because our traditional BS degree in geology presented several insurmountable roadblocks to these non-traditional students – most notably the summer field camp requirement. Our non-traditional students, many of them spouses, parents, and breadwinners, simply could not work a 4- to 5-week summer course, away from their home and family, into their program of study. Second, the vast majority of our graduates did NOT aspire to attend graduate school shortly after graduation – instead they wanted to find an entry-level, applied-geoscience job along the Wasatch Front in northern Utah. They were not training themselves to become “geologists” in the strict sense. In response, we designed the BS in Applied Environmental Geoscience (AEG) to meet the needs of these students and this degree has been offered since 1996.

The important features of the AEG degree include:

1. The program of study emphasizes the applied aspects of the geosciences and our current faculty expertise and course offerings allow AEG majors to specialize in water resources/hydrogeology or GIS/remote sensing.

2. The degree does NOT require a summer field camp, and is therefore friendly/welcoming to non-traditional students.

3. The degree does NOT require calculus, and is therefore friendly/welcoming to students at an open-enrollment institution. The AEG program does require college algebra, trigonometry, and statistics.

4. Our department values and emphasizes geoscience “in the field”, during both afternoon “labs” and multi-day field trips. With a campus located along the Wasatch front, straddling the Wasatch fault and the shoreline bench of Pleistocene Lake Bonneville, WSU is surrounded by an amazing outdoor geosciences laboratory.

5. The AEG degree includes a capstone course (Geoscience Field Methods) that requires students to work as a team for a simulated geotechnical company to prepare a geologic site assessment for a location near campus. The Field Methods class is taught during the fall semester and includes a 5-hour field session each week. This course is designed to develop many of the same skills taught as part of a tradition summer field camp.

At the end of Spring Semester 2013 the Department of Geosciences had 102 majors, distributed as follows:

 • Geology: 46 (45%)

 • Applied Environmental Geoscience: 40 (39%)

 • Earth Science Teaching: 16 (16%)

We have averaged 8.8 total graduates per year for the past 6 years (2007-2013). The average number of AEG graduates has been 3 per year, or 34% of the total, over the same time period.

Between 2007 and 2012, thirteen (13) students graduated with a BS in Applied Environmental Geoscience. Our current information indicates that 6 of these graduates (46%) are working as applied geoscientists, 4 (31%) are working in a non-geoscience position, and 3 (23%) are out of touch with the department. Those graduates employed as applied geoscientists have the following job titles: Environmental Scientist; Environmental Professional; GIS Analyst; Geologist; Environmental Protection Specialist; and Environmental Health Specialist. They are employed by the Department of Defense, U.S. Forest Service, a county health department, and private geotechnical companies. Prior to 2007, we have also had AEG graduates go on to law school and graduate school in the geosciences. Five students graduated from the AEG program this year (2012-2013) – 38% of our total graduates (13). One graduate has secured a position as a Reclamation Specialist, working for a private mining-services company. The others are actively looking for positions.

Although there is still a need to produce well-trained geologists for today’s geoscience workforce, it is also clear that the geoscience workforce today is much broader than positions labeled geologist or geophysicist. Geoscience Departments can take advantage of that fact by offering students multiple avenues to entering the geoscience workforce. The Applied Environmental Geoscience program at Weber State University is an example of how an applied program, focused on preparing non-traditional students for entry-level STEM jobs, can co-exist alongside a traditional geology program.

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