WSU Five-Year Program Review

Response to External Review Team's Report Department of Geosciences May 16, 2013

Process Summary:

The Department of Geosciences prepared a self-study document during Fall Semester 2012 that highlights the department's accomplishments and challenges with respect to curriculum, assessment of learning, program advising and graduates, faculty qualifications and professional development, staff and administrative support, facilities, and community/professional relationships over the 5-year period (2007-2012) since its last program review in 2008. The self-study report (55 p.) and faculty vitae were submitted to the David Matty, Dean of the College of Science, in November 2012. The department worked with the dean to select a 4-person external review team to conduct a site visit during Spring Semester 2013 and submit a report of findings shortly thereafter. The team members were Danny Horns (Utah Valley University), Scott Linneman (Western Washington University), Keith Weber (Idaho State University), and Grant Willis (Utah Geological Survey). They visited the department on March 26, 2013 and submitted their final report (10 p.) on April 12, 2013. The faculty and staff of the Department of Geosciences met several times over the next several weeks to consider and discuss the review team's recommendations and to prepare this response.

Response to Identified Program Strengths:

We are very gratified that the review team's overall impression of the Department of Geosciences is that it is "robust, energetic, and focused on producing well-educated, and well-trained students who are poised to succeed in the job market or in advanced degree programs". The report goes on to identify the faculty and staff as the principle program strengths. "Chief among praiseworthy aspects is the WSU Geoscience faculty. Every one of these six individuals is absolutely committed to the success of the students. They are intelligent, cooperative, enthusiastic, and exceedingly generous with their time". The reviewers also noted that the department benefits from an "excellent administrative staff of one".

The second major strength identified by the review team is our various curricula (geology, applied environmental geoscience, Earth science teaching). "The Geoscience faculty realize that WSU's program fills a specific niche in geoscience education in Utah, and they have done a very good job tailoring a program to fill that niche". The department has created degree programs "targeted to the needs of [an] unusually large percentage of nontraditional students, while maintaining quality education for traditional students."

Action Plan: As a faculty, we will continue to focus our efforts on providing a high quality education to our program majors, teaching service course for other programs on campus, and contributing to the general education of non-science majors. We will strive to continue our success in hiring and retaining highly qualified instructors and staff by providing a positive work environment, facilitating professional development, seeking increased compensation, and finding

better ways to facilitate undergraduate research and reward faculty who support and promote this high-impact learning practice.

Action Plan: With respect to curricula, we are dedicated to regularly assessing our program-level outcomes and revising our courses and programs of study, as needed, to prepare students for employment and graduate studies. Our current curricula are carefully planned, cover key knowledge and skills, incorporate environmental and geospatial applications, and emphasize field experiences. These will continue to be valued hallmarks of studying the geosciences at Weber State University.

Response to Identified Challenges Faced by the Department:

The review team's assessment of the major near-term challenges match the issues that we raised in our self-study report of November 2012:

1. <u>Increasing number of geoscience majors.</u> Each of the other three issues summarized below are being exacerbated by the department's recent increase in majors – up from 54 in 2009-2010 to 100+ in 2012-2013.

2. <u>Lack of a laboratory manager/instructor</u>. This issue has been raised during several program reviews over the last 10-15 years. The Department of Geosciences is the only department, other than Mathematics, in the College of Science that does not have such a position.

3. <u>Anticipated faculty turnover</u>. Two out of the 6 current faculty members will likely retire during the next couple of years. Prompt replacement of retiring faculty will be critical to the program's stability.

4. <u>Limited budget</u>. Enrollment growth, persistent need to update instructional technology, and the increasing cost of providing field-based-learning opportunities are straining the department's budget.

Action Plan: We will work with the Dean of the College of Science to address issues 2-4 above. We view the timely replacement of retiring faculty as the most critical issue that the department faces over the next 1-3 years, followed by the creation of a new lab manager/instructor staff position within the department.

Responses to Review Team's Recommendations (section 5.0):

5.1a -- Integration of geospatial science and technology throughout the curricula.

Action Plan: We agree with the need to better integrate geospatial science and technology ("GIS" for short) throughout our required courses, and the desirability of developing a new lower-division course along the lines of "Introduction to Digital Mapping". This recommendation will be considered as part of a broader on-going effort to revise our geospatial program with an NSF-funded initiative to develop a new associate's degree in geospatial technology.

5.1b -- Improvement of geospatial lab facilities.

Action Plan: We agree with this recommendation and this issue is actively being addressed as part of the programming process for a new laboratory building for the College of Science, scheduled for completion in mid to late 2016.

5.2 -- External funding and grant support.

Action Plan: We agree with this recommendation and will include, when appropriate, faculty salary as part of the budget for future external-grant proposals.

<u>5.3 – Personnel upgrades.</u>

Action Plan: As stated in the previous section, we view the timely replacement of retiring faculty as the most critical issue that the department faces over the next 1-3 years, followed by the creation of a new lab manager/instructor staff position within the department.

5.4 – Facility upgrades.

Action Plan: Again as part of the programming and design of the new building for the College of Science, classroom media (computer and projection systems), dedicated-server resources (e.g. geospatial data server), and archival storage for rock and mineral specimens will be evaluated and upgraded.

5.5 – Program modifications.

Common Core: This is not so much a recommendation as an answer to the question posed by the dean, "is a common core present for major/minor tracks?" We agree with the review team's assessment that the following six (6) courses serve as a common core for our four (4) degree programs (Geology BS, Geology BA, Applied Environmental Geoscience BS, and Earth Science Teaching BS):

GEO 1110 PS Dynamic Earth Physical Geology

- GEO 1115 Physical Geology Lab
- GEO 1220 Historical Geology
- GEO 2050 Earth Materials
- GEO 3150 Geomorphology
- GEO 3550 Sedimentology & Stratigraphy (not required for EST majors)

Having a common core greatly facilitates the assessment of department-level learning outcomes across the various degrees and provides significant flexibility for students as they evaluate which degree program best matches their educational and career goals.

5.6 – Streamlining and consolidating selected course offerings.

Action Plan: As stated above, we will be evaluating our entire geospatial program in the near future and will consider the team's recommendation to replace our second course in remote sensing (GEO 4400) with a lower-division introduction to geospatial technologies.

Considering the expertise of our current faculty and current teaching loads, the team's recommendation to combine the existing introduction to meteorology (GEO 1130 PS) and oceanography (GEO 3010) has merit, and will be considered and likely acted upon during the next academic year.

5.7 – Re-evaluating course prerequisites.

Action Plan: The review team highlighted a problem that our advising, day-to-day interaction with our majors, and graduate-exit-interview results also identified -- our majors would greatly benefit from taking the required chemistry, physics, and mathematics support courses earlier in their program of study. We will dedicate at least one department meeting next fall to this issue and make appropriate changes to our course prerequisites and advising protocols.

5.8 – Establishing student TA opportunities.

Action Plan: We agree with the merits of the recommendation, both in terms of providing seniorlevel students with valuable teaching experience and in terms of reducing faculty workloads. However, this is not part of the current culture within the College of Science and there is no clear funding source at present. The department chair will discuss this recommendation with the dean and other department chairs.

5.9 – Increasing the frequency of key courses.

Action Plan: Even before the review team arrived on campus, our department-level advising and graduate exit interviews had identified this problem and we began working on solutions during Fall Semester 2012. Beginning in Spring 2014, we will offer Historical Geology (GEO 1220), a core course for all geoscience degrees, both fall and spring semesters (previously only offered during the spring semester). In addition, beginning Fall 2013, we will offer Structural Geology (GEO 3060) every year, as opposed to every other year. We are also exploring the possibility of offering Igneous and Metamorphic Petrology (GEO 4300) every year as well. We will actively monitor the effects of these scheduling changes to determine their impact on graduation rates and time to degree.

5.10 – Suggestions regarding Earth Science Education program.

CSME: We agree with the team's recommendation that the College of Science actively work to fund and fill the empty director position for the Center for Science and Mathematics Education (CSME).

Summary:

We would like to thank each member of our external review team for their thoughtful and thorough evaluation of our program. We agree with each of their recommendations and will strive to implement those that are actionable at the department level (this excludes 5.5 and 5.10), as funding and resources allow. We are confident that doing so will help to improve teaching, learning, scholarship, and service within the Department of Geosciences.