

Department of Geosciences Program Review

Dean's Response

June 16, 2008

The mission of the College of Science states:

The College of Science provides quality education in the natural sciences and mathematics. The college offers majors and minors in seven departments (Botany, Chemistry, Geosciences, Mathematics, Microbiology, Physics, and Zoology). The college also supports students through its Developmental Mathematics Program. The departments and programs of the College of Science support professional and graduate school preparatory programs, and contribute significantly to the general education of students by improving scientific understanding of the natural world and quantitative literacy. Education is provided through formal classes, laboratory and field experiences, and undergraduate research projects. Student learning is also supported by departmental clubs and professional preparatory organizations. The college promotes science and mathematics teaching through the Center for Science and Mathematics Education, and community outreach through such facilities as the Layton P. Ott Planetarium and Museum of Natural Science.

The programs in the Department of Geosciences are designed to contribute to the overall mission of the College of Science by providing general education courses, support courses for other programs, and major programs that prepare students for employment or further education.

The program review team noted a number of strengths in the current program: (1) the faculty are experienced and dedicated teachers, with most faculty also pursuing active research programs; (2) the advising of majors, which is an important part of the close student-faculty interaction in the department; (3) the students, who enjoy success performing research, participating in internships, finding employment, and in graduate programs; (4) in some cases (e.g., the GEAR lab) the facilities are exemplary; and (5) the curriculum, which integrates traditional geology with geospatial analysis, environmental applications, close student-faculty interaction, numerous field experiences, modern technology, and laboratory work.

The Dean certainly agrees with the assessment of the program review team regarding the numerous strengths of the program. Without question the faculty are strongly committed to the mission of the Department and the College in providing outstanding educational opportunities for students through “formal classes, laboratory and field experiences, and undergraduate research projects.” The active research programs of the faculty are also to be applauded.

Along with its strengths, the review team identified a number of challenges for the programs in the Department of Geosciences: (1) staffing, particularly in the areas of computer information technology support, secretarial support, and the lack of a laboratory manager; (2) the need for further program assessment from recent graduates working in the region; (3) the imminent need for additional space as the program grows, along with the challenges of an aging building; and (4) the assistance that could be provided by establishing an external advisory committee.

Again, the Dean believes that the review team has done a good job of identifying significant challenges that should be addressed as the Department of Geosciences continues to move forward and build its program over the next five years.

With regard to the specific issues associated with staffing, the Chairs' Council determined this past Spring, 2008 that it is important to create a new position of information technology specialist in the College of Science. Although this individual will have significant responsibility for support of the GEAR laboratory (for geographic information systems) in Geosciences and the 132-node supercomputer in Physics, the individual will also be available to support IT needs across all of the departments in the College of Science. A committee has been organized to conduct the search that reflects the interdisciplinary requirements of the position, with the expectation that a person will be hired during Fall Semester, 2008.

The Dean has also been in conversation with the Chair of the Department of Geosciences regarding the future change in appointment of the secretarial position from one-half time to either three-quarter or full time. The Dean supports this increase and it is anticipated that the change will occur with the hiring of a new secretary in the relatively near term.

Unfortunately, it seems unlikely that a lecturer/laboratory manager will be able to be supported within the next several years. At the present time there are two other significant staff positions that need to be established within the College of Science collectively. The College of Science Chairs Council has been discussing the possibility of creating an Associate Dean or an Assistant to the Dean position that will support Principle Investigators with grant writing and post-award support along with general budgetary support responsibilities. This decision is pending, based on the future direction and support of the Office of Sponsored Projects now that a new director has been hired effective July 1, 2008. The Chairs Council also believes that it would be extremely helpful to also support the hiring of an equipment maintenance staff specialist; unfortunately with the many needs in the College, it is unlikely that such an individual will be able to be funded through E&G support in the near future. However, should significant indirect cost capture be possible through grant writing or perhaps if another funding stream could become available from other sources, such a position may be considered on "soft money". This position would certainly assist with some of the equipment needs in the Department of Geosciences, as their instrumentation maintenance needs continue to increase, although it is hoped that the future hire of an IT specialist can help in this area to some degree.

Within the Department of Geosciences response to the program review team report, the Department points out that “maintenance and obtaining additional equipment are ongoing challenges.” At the same time the review team did point out the excellent state of the GEAR lab. Both statements are true. The need for modern research and teaching equipment is an ongoing concern for the entire College of Science. Needless to say, E&G funding is far too limited to be able to support the many, expensive pieces of equipment that are required of modern laboratory programs in the life and physical sciences. However, significant progress has been made in this area in the past couple of years, and it continues to be a point of major focus for the Department of Geosciences and the College collectively. Equipment that has been, or is about to be, purchased since last year for use by the Department of Geosciences includes an X-Ray diffractometer, an environmental scanning electron microscope with an energy dispersive X-Ray spectrometer, and a 3-D computer visualization system, among other items. The total cost of these important instruments total approximately \$280,000, and will be shared with other departments in the College, including Chemistry and Physics. In addition, a 132 node supercomputer cluster is also available for the entire College of Science, valued at roughly \$250,000. Although significant purchases have been made thanks to a grant from the George S. and Dolores Doré Eccles Foundation, special one-time funding from the Provost’s office, support from the Hemingway Trustees, a NASA grant, and funding through the College of Science, it is not anticipated that this level of funding can be provided routinely. The acquisition of ever more expensive and sophisticated instrumentation necessitates ongoing maintenance agreements and the need for an equipment specialist who can help to maintain the equipment in working order.

Space constraints are also serious and ongoing issues in the College of Science, negatively impacting all departments. The Science Laboratory building is now nearly 40 years old (completed in 1969) and the adjacent Lind Lecture Hall is only one year younger. The design and current status of the Science Lab building is highly restrictive to collaborative projects and suffers from significant fire, earthquake, and asbestos issues. However, more immediately, there is no available space in the building for expansion of programs, or for necessary support of research by faculty and students. Efforts are continually underway to identify temporary and long-term solutions to the severe space constraints that the College of Science currently operates under. As an example of the challenges faced with the existing facility, several relocations within the College are planned that will ultimately free up another small research space in the Chemistry Department. In addition, remodeling will be required to house the new FT-NMR in the Chemistry Department later this summer or next fall (the FT-NMR is an instrument that is valued at more than \$130,000 and is required for the American Chemical Society’s certified B.S. degree).

The review team also mentioned that the “success in research is especially laudable given [the faculty’s] standard teaching load” of 12 TCH per semester. Within their response, the Department also points out that “faculty are being stretched to the limit with many teaching overloads (including unpaid overload for summer field camp), mentoring undergraduate

research, managing budgets, and having to do computer IT activities.” While many of these issues have already been discussed above, the issue of mentoring undergraduate research must also be addressed in a sustainable fashion. The College of Science Chairs’ Council has been discussing the issue and plans to revisit it in a more focused way during Fall Semester, 2008. The issue is becoming increasingly important to the entire college given (a) the rapid growth in undergraduate research, (b) the very conservative policy of providing 0.25 TCH per SCH, which is far too restrictive for the time-intensive mentoring required of undergraduate research, and (c) the importance of supporting active research programs for faculty interested in remaining current in their disciplines, which is a fundamental requirement of excellent teaching in the rapidly evolving disciplines of the life and physical sciences. The Dean anticipates that a formal policy regarding reassigned time for research and scholarship activities will emerge from this fall’s discussion.

Finally, the program review team also suggested that it would appropriate to establish an advisory council for the Department of Geosciences. At the present time, there are no specific plans to create departmental-level advisory committees, but the Dean, together with his Development Director, is planning on creating an advisory board for the College of Science. It is likely that this will be established during the upcoming year.

The Dean greatly appreciates the thoughtful self-study developed by the Department of Geosciences, the numerous informed comments made by the program review team, and the reflective response by the Department. Many of the concerns and recommendations suggested by the review team are already being addressed, but the many recommendations will also certainly be very helpful in strategically planning for the next five years of the program.