

Department of Botany Program Review

Dean's Response

June 11, 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 Botany 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, including (1) a strong and dedicated faculty, (2) uniqueness of the program in Utah, (3) working efficiently with limited resources, and (4) the focus on being a student-friendly department. Both the Department and the Dean concur with the review team's assessment of the departmental strengths as identified.

The review team also identified a number of challenges of the program, including (1) visibility and marketing, (2) space and modern equipment resources, (3) the current semester schedule posing a challenge with spring plant-growth cycles in Utah, (4) inadequate support from Facilities Management and Information Technology, (5) the use of a half-time secretary, and (6) waning research activity among the senior faculty in the department.

In addition, the review team made nine recommendations to consider in the next few years: (1) make its general education programs more competitive with other life science offerings in other colleges, (2) update its curriculum to include modern cellular and molecular techniques, (3) make more effective use of the College's development director, (4) make use of the Botany Club

as a recruiting tool, (5) provide additional field experiences, (6) more college and university support in marketing its programs, (7), better support from university services, (8) additional support for faculty who receive external grant funding, and (9) increasing the secretarial position from one-half time to full time.

Again, the Dean believes that the review team has done an excellent job of identifying challenges and making appropriate recommendations for the future of the Department of Botany. As the Department justifiably states, some of the challenges and recommendations are primarily departmental while others are more adequately addressed at the college and university levels.

The review team's comments regarding updating curriculum to include cellular and molecular techniques, and the reference to waning research activity among senior faculty have been adequately addressed by the department's responses.

The review team also mentioned the limited time for faculty to participate in research activities with undergraduates, given the heavy 12 TCH per semester teaching load. 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.

The additional comment made by the review team, and in the departmental self-study, regarding the reliance on a one-half time secretary is also an issue that is likely to be resolved within a few years. At the present time Botany and Microbiology share a very effective secretary who does an excellent job with both departments. Although she is unable to be in two places simultaneously, she is able to meet the other needs of both programs, and is greatly appreciated by the chairs of both departments. At the time when it becomes necessary to replace the current secretary, it is likely that serious consideration will be given to providing a full-time secretary to both departments.

Regarding the concerns and recommendations centered on visibility, marketing, and life science general education, it is evident that a significant amount of work remains to be done. The Botany Department's SCHs have declined noticeably over the past four years, with an approximately 20% drop between 2005-06 and 2006-07; the overall decrease over the past four years has been almost 30%. This decline is largely due to the decrease in enrollments in the general education component of the program. At the same time the number of graduates has increased from 0 in 2002-2003 to 11 in 2005-2006, dropping again to 5 in 2006-2007. These

numbers are consistent with statistical fluctuations in the graduation rates of a small but steady number of total declared majors over the same period (varying between 51 and 60).

In order to help address the declining SCH issue in Botany, and the desire to increase enrollments in all programs in the College of Science, the College has a very active publicity and recruitment committee with representation from every department in the College. The College's general advisor also supports the publicity and recruitment activities of the committee. The committee has recently revised recruitment materials that are provided to the recruitment office and assisted in updating our departmental and college web pages. In addition, a monthly College of Science E-Newsletter is published out of the Dean's office which features one department or program in each issue, along with special announcements.

The College of Science Chairs' Council also began a conversation this past spring about developing new and inviting general education offerings that meet the recently revised and adopted Life Science and Physical Science general education goals and criteria. This conversation will continue into this fall and will integrate with the campus-wide conversation regarding general education assessment. It is of paramount importance that graduates of Weber State University develop a significantly deeper understanding of and appreciation for science and mathematics, and that the number of students majoring in the sciences and mathematics increase. Of course this is not simply a Weber State University issue, but it reflects national trends. As documented in countless state and national reports, the low level of understanding and expertise in STEM fields (Science, Technology, Engineering, and Mathematics) is at a crisis level for United States in terms of maintaining a competitive advantage in the world economically, technologically, and scientifically.

Space and equipment 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.

The Botany Department has pointed out in their response to the review committee that there is some reservation regarding additional major equipment purchases in the department at the present time, given low enrollments in specific courses, and significant anticipated turnover in the department in the next few years. At the same time, however, it is recognized that new, state-of-the-art equipment are required of modern science programs, including those in Botany.

It goes without saying that general E&G funding is far too limited to support major scientific equipment purchases that can often cost well in excess of \$50,000 for certain critical instruments. As a result, to that end the College of Science began a major capital equipment purchasing campaign in 2007 – 2008 to obtain much needed equipment in each of the science departments in the college. Funding proposals have been made to private foundations, grant requests have been submitted to governmental agencies, funds have been provided by one-time savings due to open faculty lines, gifts have been provided by private donors, and one-time funds have been provided through the Provost's office. Additional smaller purchases can be made through departmental operating budgets, departmental gift accounts, and student fees. Modest levels of start-up funding are also provided for new faculty hires, assisting young faculty in establishing their research laboratories. Specific research-grade equipment for individual departments can also be obtained through grants to NSF, NASA, NIH, and similar governmental agencies.

While major grant writing is strongly encouraged within the College of Science, such activity requires a significant commitment on the part of the departmental faculty, combined with appropriate support from the College and the University. With a growing focus on obtaining external funding, the University has just completed a search for a new director of the Office of the Sponsored Projects. It is anticipated that the hiring of the new director will enhance the support provided to grant writers in the College of Science and across the campus. The College of Science Chairs Council has also discussed the possibility of hiring an individual, or creating an Associate Dean or an Assistant to the Dean position, that will support Principle Investigators with grant writing and post-award support. This decision is pending, based on the future direction and support of the Office of Sponsored Projects.

In addition, the Chairs' Council has determined that it is important to support a College of Science information technology specialist. Although this individual will have significant responsibility for support of the geographic information systems laboratory 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 search 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 greatly appreciates the thoughtful self-study developed by the Department of Botany, 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.