

Dean's Response to the Program Review of the Chemistry Program July 30, 2013

I greatly appreciate the thought and effort that went into the report from the Program Review Team, as well as the self-study and report response by the Chemistry Department.

During this review cycle, I requested that departments select external reviewers without any ties to the department in order to ensure the most objective review possible. The Chemistry Department is to be commended for selecting outstanding reviewers who met these criteria and also comprised an outstanding cross section of disciplinary professionals. During their visit, I provided the reviewers with a list of specific questions that I felt would help guide the evaluation, and assured each Review Team that their honest and objective observations, responses, opinions and suggestions were expected. They were asked to consider the questions in developing a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats), which would comprise the core of their report. Consequently, the corresponding report reflects solely the views and opinions of the reviewers, and it appears to be extremely thoughtful and comprehensive in its assessment of the Chemistry program at Weber State University.

In their report, the reviewers identified a number of strengths, including the strong student focus and dedication of the Chemistry faculty and staff and the curriculum that is certified by the American Chemical Society. The department and I agree with these conclusions.

In developing their SWOT analysis, the reviewers made a number of suggestions that are included in the department response. The department response focuses on the Summary Recommendations that were made by the Review Team, which I will also address, below. However, throughout the report are additional and often more specific recommendations that were made by the Review Team, and I urge the department to attempt to address these recommendations as well as they move ahead in this process.

In response to the recommendations addressed by the department response:

- 1) *Strategic Plan: In their summary recommendations, the review team noted that "Engaging key faculty in development and implementation of a 3- to 5-year strategic plan may be a first step to addressing these recommendations," which was acknowledged by the department. I agree fully with this recommendation and ask the department to develop and implement a 3- to 5- year strategic plan that will not only address the reviewers' recommendations, but also will help the department to better define its path into the future. In part, the strategic plan should be based on market analysis, regional industry needs, and the specific needs of students given our institutional mission and demographics. An external advisory board may provide great assistance in this regard, and I recommend that the department consider establishing and utilizing such an entity. I stand ready to help the department in this regard, and recommend completion of the strategic plan by not later than the end of the 2014 Spring semester, at which time it should be submitted to the Dean for review.*
- 2) *Curriculum: In their report, the reviewers made a number of suggestions intended to help the department improve its curriculum. Certainly, a major recommendation made by the Review Team was for the department to "substantially revise" their ACS Certified degree option to satisfy the ACS Committee on Professional Training guidelines. In their response, the department noted that a "thorough departmental review of the curriculum is planned for this summer (2013)," and, to their great credit, the department has since followed through with this promise by holding a retreat in June, 2013. Presently, all evidence is that the department is continuing to discuss and refine new curricula that not only address current requirements, but also take advantage of the guidelines to develop an ACS Certified Biochemistry Track such as suggested by the Review Team. I support fully these initiatives, commend the Chemistry Department for their swift action, and urge them to continue to develop their curricula per the suggestions of the Review Team. However, as they develop their new curricula, I also urge the department to keep in mind that appropriate support mechanisms, such as advising, tutoring, supplemental instruction, etc. must*

also be considered to improve student retention and persistence to graduation. I am willing to discuss how the college can help the department as they move through this process.

In their report, the Review Team recommended that the department increase the amount of undergraduate research required by the program, stating that "at most institutions....two semesters of research is rarely a rigorous experience..." I agree, however, I also acknowledge (and concur with) the reviewers' warning that the research requirements should be ramped up only if robust mechanisms can be devised to provide faculty with adequate teaching load credit for mentoring research students. This speaks to a larger workload issue that faces the majority of departments within the College of Science and will be a priority for discussion within the College in the coming year. At the same time, I suggest that by adopting best practices and pedagogies utilized successfully elsewhere, the department may be able to integrate more undergraduate research experiences directly into many of their courses. Regardless of the avenue taken, I fully support a greater emphasis on undergraduate research within the Chemistry Department and its programs, and stand willing to discuss with them ways in which together, we may accomplish this.

- 3) Facilities: The Review Team, the Chemistry Department and I agree that improved classroom and laboratory facilities are urgently needed, and as we are currently entering the design phase for a new Science Building, the likelihood of constructing a new facility within the foreseeable future is bright. At the same time, however, I note that the department will continue to be challenged to "think out of the box" as it contemplates potential designs for its future classrooms, given cost constraints and the need to make these as adaptable as possible for future needs. Consequently, pedagogical changes may be required as well, and the department would be wise to investigate best practices that are known to improve learning among today's chemistry students, and to consider ways in which these can be adopted, adapted, and incorporated into the design of future lab spaces.

Improving the instrumental infrastructure within the department was also a key recommendation of the Review Team and was addressed by the department in their reply. The reviewers considered the outdated, aging, and unmaintained instrumentation to be both a weakness and a threat to the department (and the college), and noted correctly that upkeep of such instruments may add to the (unaccounted) workload of faculty. The department response countered with statements that pointed out that the basic functions of many instruments have not changed over the years, but only the interface has, and moreover, that the department "has been requesting an instrument maintenance staff member for thirty years." From my own experience: both are correct. The newest instruments are not always needed, but in training our students to move into the workforce as seamlessly and as successfully as possible, we must provide modern instruments for their use. The availability of modern instrumentation also facilitates undergraduate research. However, I acknowledge that modern instruments are quite often expensive to purchase, maintain, operate, and replace. Furthermore, I also acknowledge that as we move toward a new modern building and enhance our instrument holdings, the need for technical support will become even more critical and will have to be addressed. Nonetheless, while some instruments may be purchased and installed as part of the new building, I strongly urge faculty members to seek external funding for new instruments and for supporting undergraduate research. In the long term, both can lead to better justification for technical support, and I am certainly willing to help the department to develop strategies to move more in this direction, or to support such efforts as our college budget permits. I will continue to investigate ways in which the College can increase support for instrument maintenance and replacement.

- 4) Faculty: The Review Team and the Chemistry Department both recognized that current faculty loads are generally in excess of the 12 contact-hour/semester load recommended by the ACS. In part, this is a function of Regents and WSU policies. The department response suggests that this is due to the loss of a faculty line several years ago. The Review Team recommended that two new faculty should be hired to staff necessary courses and to allow time for other faculty to develop curriculum, etc. They suggested that one position be filled with a tenure-track faculty having biochemistry or bio-analytical expertise. Presently, such a search has been approved and will commence during Fall, 2013. The Review Team's other recommendation was less specific, and the department response indicated a preference for a person with expertise in Chemistry Education. I agree that this is a wise choice, and I am willing to discuss with them and the Provost how we might be best able to move in this direction in the future.

The workload issues identified by the Review Team are especially critical in Chemistry, but not unique to them. Such issues occur in departments throughout the college, and I acknowledge that a better workload model needs to be developed and accepted. Having said this, I also encourage the department to investigate how to make their courses and their curriculum more efficient from a workload perspective. Developing and teaching courses that incorporate hybrid or blended delivery mechanisms, computer grading, etc. will require some upfront effort, but if done well, could have the potential to lower actual faculty workloads with time. I remain willing to assist the department in such efforts as time and resources permit.

The Review Team considered the amount of overload teaching taking place in the Chemistry Department to be a threat to the long-term success of the program. The department response correctly notes that Weber State incentivizes overload teaching, and also notes that the department depends on overload teaching to address student demands for service courses. While both are valid points, I am concerned about whether the overload activities detract from expectations related to scholarship and service, including the ability of the faculty to become more active in undergraduate research mentorship. Consequently, I am willing to discuss these issues with the faculty and the administration in order to identify possible solutions.

Finally, the Review Team and the Department agreed that start up funds for new hires need to be competitive with other undergraduate universities in order to attract qualified applicants in the new hire process. I agree fully with this observation, and will continue to work to locate additional sources of funding to address this need.

- 5) *Pedagogy: The Review Team recommended 1) the creation of an environment that encourages the implementation of active, collaborative, student-centered teaching methods, 2) develop meaningful research experiences for undergraduates, and 3) diversify faculty workload responsibilities. In its response, the department indicated that faculty members are actively working to address the first two recommendations, which is commendable. Within budgetary constraints, I am willing help the department move ahead in both areas should they request my assistance. As to (3), I strongly recommend that the department discuss ways to address the Review Team's suggestion. For example, the department might provide more reassigned time to some faculty to accommodate increased undergraduate research or course development responsibilities while allowing others to take on teaching loads nearer ACS maximums to offset the lost TCH. This is just one possibility, and I urge the department to investigate other, and potentially more innovative, options.*

Finally, I recommend that the Chemistry Department undergo a full program review again during the 2017-2018 academic year as per the usual five-year review cycle.

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