



CALIFORNIA STATE UNIVERSITY, FULLERTON


College of Natural Sciences and Mathematics

Department of Chemistry and Biochemistry

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To: Dr. Marie Johnson, Dean
College of Natural Sciences and Mathematics

FROM: Dr. Peter de Lijser, Chair 
Department of Chemistry and Biochemistry

Subject: Department response to Report of the Program Performance Review Committee

Initial Remarks:

The review committee for the Department of Chemistry and Biochemistry 2018-19 Program Performance Review consisted of four members with a diverse array of experiences. The committee members were:

- Erica Bowers, Professor of Literacy and Reading Education, Director of the Faculty Development Center at CSUF
- Merri Lynn Casem, Professor and Chair of Biological Sciences, CSUF
- Linda Roberts, Professor of Chemistry and former Department Chair, California State University, Sacramento
- Jozef Stec, Associate Professor of Pharmaceutical Sciences, College of Pharmacy, Marshall B. Ketchum University, Fullerton, CA

We appreciate the efforts of the committee and the opportunities and challenges they identify in their review. The thorough and thoughtful report clearly identifies Department strengths as well as challenges and proposes several good ideas. The recognition and recommendations to the Dean and Provost for dealing with issues related to research (laboratory) and office space are much appreciated. These issues aren't unique to the Department of Chemistry and Biochemistry, but rather a common thread for all Departments in the College. The Department of Chemistry and Biochemistry strongly supports the committee's statements that "*Instrumentation-heavy disciplines such as chemistry cannot operate without an on-going strategy for regular replacement and modernization. CSUF administration should prioritize resources for instrumentation and help departments plan by disbursing funds each year to the College and departments*" and "*the committee hopes that administration will understand and prioritize the complex operating needs of the chemistry department.*" In addition, the statement that additional staff are needed in order to maintain department operations going at a minimum level has been argued many times by the Department Chair to the Dean, the Provost and the President. If Departments were given more flexibility in their hiring practices (e.g., staff in place of a faculty) it would greatly benefit the unit's operations. It is clear that the financial system would need to undergo a change because funding for faculty lines and staff come from different sources. Nevertheless, it is something the higher levels of the Administration will need to continue discussing as the Department (and the College) can no longer "do more with less" and after years of running our program like that, it is now a bare bones situation in terms of staffing and infrastructure, which will affect student success and graduation rates as well as faculty morale.

General Comments on the Report:

Before I comment on the recommendations to the Department, I want to point out a few items from the report and clarify or correct them.

- In section 2, under Degree Programs, the report indicates that the BA degree can be complemented with an Emphasis in Environmental Chemistry. This is correct but the BS Chemistry degree has the same option (that was not mentioned).
- In the section "Undergraduate Curriculum" and in several other places, the committee indicates that the CHEM 495 capstone will be replaced with integrated laboratory capstone courses. This is not correct; the Department currently allows two courses (CHEM 472B Advances in Biotechnology Laboratory and CHEM 492 Sustainability) to be used as a replacement of CHEM 495 (other options include doing an internship (CHEM 490) or a Library Research Project (CHEM 499)). One additional course is being developed (CHEM 467 – Medicinal Chemistry Laboratory) and we hope to add others in the future. However, CHEM 495 will remain the principal option for most of our students to meet the senior research capstone requirement and we estimate that at least half of our majors will use that option every semester.
- The committee refers to "CHEM 427 Medicinal Chemistry" as a course that will embed a research experience; this is not correct. The Medicinal Chemistry lecture course is CHEM 429 and it cannot be used to replace CHEM 495; we are in the process of developing a Medicinal Chemistry Laboratory course (CHEM 467) that will meet the capstone requirement.
- The committee indicates that the Department has added CHEM 195 to engage students in research at an earlier stage. CHEM 195 is also being developed; no course proposal has been submitted yet.
- In section 6, under Equipment, the committee refers to the Biochemistry teaching laboratory as DBH 121; this should be 161.
- Finally, the two new LC-MS instruments were purchased with funding from DOD and NSF-MRI (one each).

Specific Feedback to Recommendations by the PPR Committee:

I will address the issues and recommendations of the committee in detail below. I have reproduced the specific issues and recommendations from the committee below in italics and my comments are added below.

1. *Continue to explore ways to increase the number of faculty/full-time lecturers to keep pace with the growth of the major.*
 - *As noted in the self-study, hiring in the area of inorganic/materials chemistry and organic chemistry should be priorities.*

Although the Department would very much like to hire additional faculty, there are a number of issues. First, the University has a "replacement only" policy in terms of hiring. Faculty in the FERP program do not count towards replacement so it is only when someone leaves the University, they can be replaced. A second issue is the lack of office and laboratory (research) space. Additional hires would require the creation of new and appropriate spaces. Plans for some potential spaces were given in the Self Study and if they can be incorporated into the McCarthy Hall renovation, it would create office space in MH and space for new

research labs in DBH (currently general chemistry teaching labs). Currently the Department is conducting a search for a Chemistry Education Research faculty with a preference for someone with experience in organic or inorganic chemistry, addressing that particular need. Our next search will focus on Experimental Inorganic Chemistry and future searches will likely focus on organic chemistry although that will require new or modified research lab spaces. Under the current circumstances it would seem more appropriate to hire additional full-time lecturers with expertise in specific disciplines. It should be noted, however, that full-time lecturers are also entitled to an individual office space. The Department would have to commit to the same rigor of the hiring and interview process when hiring full-time lecturers as it does when hiring full-time tenure track faculty to ensure a dedication and commitment to the Department and the students.

2. *Maintain a robust and active departmental curriculum committee to manage and plan for curricular changes and to oversee consistency and continuity in course learning objectives.*

- *The department has many curriculum changes planned and underway and these will best be managed by regular meetings of faculty from each caucus to review and discuss changes. Furthermore, the department should use this committee to engage in deep discussions concerning how courses are taught when multiple lead faculty are involved and how learning objectives in courses sequence and connect with one another.*

All committees in the Department are staffed based on self-selection by the faculty and staff. This can be modified by indicating a need for representation from every caucus in some of the committees, including the curriculum committee. The PPR committee is correct that there are some looming issues related to rigor and consistency within certain courses and the Department has made a start to deal with that by creating a document that lists the expected topics, learning outcomes, and expectations for instructors. This document now exists for CHEM 120B and CHEM 301A, both of which have multiple sections taught by a variety of instructors, including tenure-track, tenured, and part-time faculty. The goal for the curriculum committee is to work with the caucuses to establish similar documents for all courses that have multiple sections. The curriculum committee will also take the lead on reviewing all syllabi to make sure there is consistency across the board (within a given course), and all UPS requirements are met.

3. *Offer graduate courses such that students can graduate in a timely fashion.*

- *Currently, graduate students are delayed in graduating due to lack of course offerings. The department is already considering how to address this by revising the curriculum, a task that can be taken on by the departmental curriculum committee in conjunction with the graduate program advisor.*

The Graduate Committee recently elected a new program advisor, who has immediately started working on revising the requirements for the degree in order to reduce the time to graduation. This has been a long-standing issue although the main bottleneck remains the research commitment for the MS degree, which often takes students multiple years to complete. The new program should allow students to graduate faster because it will require fewer courses that are only offered once every two years and more courses that are offered every semester (taken by all graduate students). The organic chemistry caucus also met recently to come up with a two-year rotation plan for the courses allowed on the MS and MA study plans. One issue that has also been a problem is the small number of students in a certain area (for example organic chemistry) and the cancellation of classes with low enrollment (often required by the Dean's office). In recent semesters that hasn't happened, but it must be recognized that it is difficult (and costly) to teach a course with an enrollment of 4 or fewer students. Growing the graduate program will be necessary to avoid these issues in the future and plans are being developed to do so (outreach, recruitment, incentives for CSUF students to continue on into the MS program and starting early, etc.). The Department will also start a scholarship for graduate students that will hopefully help with recruitment. The University should strongly consider full tuition waivers for all graduate Teaching Assistants in order to improve the graduate programs

across the campus. Finally, the Department will investigate an opportunity to apply for a Bridges grant (from NSF) and work together with local UC institutions to create a program where applicants to UC programs will be directed to CSUF for a two-year MS program (supported with a stipend) with a guaranteed entry into the PhD program at the UC upon completion of the MS program.

4. *Provide mentorship to junior faculty and leadership opportunities to mid-career faculty.*
 - *The department has a large number of new hires that would greatly benefit from mentoring by more experienced faculty. The balance of teaching and research in chemistry is particularly challenging and new faculty should be assisted in learning how to manage their workload. Mid-career faculty are the incoming leaders for the department and should be provided with opportunities to assume positions of leadership and responsibility. The department, Dean, and Provost all have a role in this.*

Mentorship. The Department has a mentoring program for junior faculty in place. All new junior faculty are asked to select one or two senior faculty to act as their mentor. Although this is not a formal program, it has been very beneficial for junior faculty. The program has been in place for many years (well over 20) and has worked well; there doesn't seem to be a need to formalize it, which would create more unnecessary paperwork. Untenured faculty have also had a tradition of meeting once a semester in an informal setting (over breakfast) to discuss issues among themselves. In addition, the Department Chair has made it a point to meet one-on-one with junior faculty over lunch or coffee to get an idea of issues that are of importance to the junior faculty. Finally, when the Department does a faculty search, all campus interviews have a set time for a meeting of the candidate with just untenured faculty.

Leadership Opportunities. The point of leadership and responsibility opportunities for mid-career faculty is well taken but unless the faculty indicate such a desire, it is difficult to implement. Many mid-career faculty are still mainly focused on research and teaching to make the step to full professor. Part of the expectation for this step is an increase in service so it is only natural that the mid-career faculty will start seeking out additional opportunities in this area. Opportunities for developing leadership skills are usually available within CSUF as well as at external (professional) organizations and the Department Chair will share these opportunities with faculty who have expressed an interest in them.

5. *Support staff advancement and provide professional development opportunities for staff.*
 - *Staff currently have classifications that are well below their actual training and job duties and they have few professional development opportunities. Staff should be fully supported in advancing themselves professionally.*

The Department Chair is very supportive of staff advancement and has helped at least one staff member in that area. There has been some significant turnover in department staff in recent years but now that there is some stability, it will be a good time to evaluate all job descriptions to see if any changes are needed. It should be pointed out that a recent request for a change in classification, although supported by the Department Chair, was rejected at a higher level within the University.

6. *Address issues of inequity and workload throughout the department including issues of pay inequity for graduate teaching assistants.*

Workload and inequity. Workload issues are an area of high concern but not easily solved without additional support from the University. New course preparations are expected from all faculty but are more likely to hit junior faculty as they work to meet expectations for tenure and promotion. The Department as a whole should consider what is a reasonable expectation for junior faculty and put that in writing in the new Department Personnel Standards. Similarly, if new course development is an expectation for promotion to full professor, it should be part of the document. No matter what, there will always be some inequality as

some new faculty members will come in with more specific teaching experience, requiring them to do less of new course preparation. Budget issues have restricted the general distribution of units for new course preparation (beyond the first two years of a new faculty member) but it something that can be considered on an individual basis. Because the budget for operations is already at a minimum, the funds to cover this would have to be coming from elsewhere.

Coordination. As discussed earlier, the Department is working on establishing documents for multi-section courses (expectations, requirements, goals, etc.), which will help establish a better system for coordinating these courses. It is a high priority to find a faculty member willing to coordinate CHEM 120B to make sure there is consistency in the material being taught, etc. The Department is also working on clarifying the expectations of course coordinators (lab or lecture). The College has discussed some guidelines for assigning units to coordinators, but nothing has been officially decided yet.

Teaching Assistant Salaries. The pay inequity for graduate teaching assistants is a major issue but it can only be solved at the College level. At the very least there should be some clarification from the Dean's office on TA salaries, who is eligible for what, and what it is based on so that Departments and TA's can find out how to increase their salaries. The rules should apply equally to all TAs in the College.

Graduate Assistants. The Department will consider setting up a system for assigning graduate assistants for large classes. However, a budget that is shrinking together with increasing minimum salaries for student assistants presents a major challenge to implementing any such system.

Part-Time Instructor Support. The lack of support reported by part-time lecturers is a valid point, but efforts are underway to improve this situation. As mentioned above, the documents that are being prepared for multi-section courses will greatly benefit lecturers as it will clearly state expectations, goals, etc. Having coordinators in place for multi-section courses will also help lecturers as they prepare to teach these courses. The Department is also working on a Handbook for Part-Time Faculty, similar to the Handbook for Full-Time Faculty, which should include much information useful for new instructors.

7. *Review safety practices in the department and consider the following changes:*

- *1) create a department safety committee, 2) restrict undergraduate access to laboratories, 3) analyze potential dangers that arise from teaching and research proximities, 4) support organic chemistry laboratory instructors with TAs during lab, 5) expand stockroom hours to cover evening lab courses, 6) reduce storage of chemicals in teaching labs.*

Safety Committee. Safety is a very important issue in the Department (and College) and the comments by the PPR are appreciated and well-taken. Establishing a safety committee may not be necessary as this task can be part of the Laboratory Coordination and Equipment Committee (or a sub-committee).

Undergraduate Access. Restricting undergraduate access to laboratories has been brought up before in the Department and was unanimously rejected by the faculty. As research requirements seem to increase (without University support in terms of units), the research active faculty depend mostly (or solely) on undergraduate students. Restricting these students to research labs would significantly reduce the research productivity, making it even more difficult to meet the requirements for tenure or promotion. Given the strong emphasis on safety training and the fact that very few (if any) accidents have happened in research labs, it seems fair that current policies are appropriate. An option for discussion would be to have students retake the safety class once a year to refresh their memory on safety issues.

Teaching and Research Proximity. Integrating teaching and research is an important goal for the Department and most easily achieved by offering students authentic research experiences. As the Department is looking for ways to have more students meet the senior research capstone experience by means of integrated research lab courses, it is difficult to have areas where research and teaching (equipment or chemicals) are separated. It is a fair point to evaluate the potential dangers although a thorough safety training (and timely refreshers) will go a long way to preventing issues.

Organic Chemistry Lab. The layout of the organic chemistry teaching labs (DBH-212 and 213) is indeed a potential safety issue due to limited visibility across the room. Lowering the number of students in the room

(enrollment cap) would help but will create additional issues (more sections would have to be offered). Having additional staff in the lab would be a good solution but comes at a significant cost. For example, under the new model of the organic chemistry laboratory offerings (starting in Fall 2020), there will be a maximum of 15 sections of organic chemistry lab (306A and 306B; 3 hours each). At a minimum cost of \$13 per hour for an assistant, the total cost for the semester would be \$8,775 and at \$15 per hour it will rise to \$10,125. It is unclear where these additional funds would come from although potentially it could be covered by charging users for gases and cryogenics. The Department may also consider building a new organic chemistry teaching lab in MH (as part of the 5th floor remodel) and convert the DBH labs into designated research spaces (for individual faculty or for integrated research experiences). The new lab would have to have a better (safer) layout with space for certain equipment.

Extended Stockroom Hours. The Department supports the availability of the stockroom during hours when labs are in session and will investigate the opportunity to do this. It is not clear whether personnel (student assistants) are allowed to work outside of regular business hours.

Chemical Storage. A reduction of chemical storage in teaching labs will be explored but would depend on there being enough storage space in the chemical stockroom to store all items that are not being used.

8. *To remove remedial courses from the curriculum without increasing DFW rate in CHEM 120A, offer CHEM 115 as an online course during summer and winter intersession.*

It is currently unclear whether CHEM 115 is fulfilling its purpose as a solid preparation for CHEM 120A and actually assists in lowering DFW rates in CHEM 120A. The Department will devote an upcoming department meeting to this topic and hopes to present data from different sources to get a better idea of current practices and potential future opportunities. As indicated in the PPR report by the committee, one option would be to not offer CHEM 115 for a few semesters and look at the performance in CHEM 120A. Offering CHEM 115 as an accelerated course in summer and winter is a possible option. It is not clear whether an online version would be sufficient or if a face-to-face course would be needed. Although CHEM 120A includes an activity that is integrated with the lecture and provides for time on task, there is a significant amount of variety between different instructors. This is something that will be addressed when CHEM 120A creates a document with requirements, expectations and learning goals to be followed by all instructors. Nevertheless, it may be necessary to also have SI for CHEM 120A when CHEM 115 is no longer offered. This will require a commitment from CSUF to support SI for all 120A sections every semester.

9. *Require one external grant awarded with on-going vigorous attempts to obtain funding in the absence of awards in RTP guidelines for tenure.*

- *Discussions with junior, mid-career and late-career faculty indicated this level of grant writing is the most appropriate in the current environment.*

Currently, the Department is working on a revision of the Department Personnel Standards, which date back to 2003. The lead was taken by Dr. Nicholas Salzameda and Dr. Paula Hudson but all faculty are involved and provide feedback during department meetings where blocks of time are reserved for these discussions and data analyses. The Department is very much aware of the changing climate in terms of grant awards and success rates and has taken that into account when preparing the new document. The Department has agreed to a model where the grant requirements for tenure and promotion can be met in different ways and has full support from all the faculty. This revision process is a very significant undertaking and it is easy to get bogged down in numbers while losing sight of the big picture. The Department has a goal of finishing up the teaching requirements for tenure and promotion this semester (standards for service and research have already been agreed upon) and then work on setting standards for early promotion and for promotion to full professor. The plan is to have a complete document ready sometime during the fall 2019 semester and work with the office of Faculty Affairs and Records to have it approved during the spring of 2020 for implementation of Fall 2020.