

Internal Reviewer Review Report – Chemistry and Biochemistry California State Polytechnic University, Pomona

The purpose of this internal review of the Department of Chemistry and Biochemistry is to provide an unbiased examination of the quality of education and service in the program, and to identify opportunities for improvement and growth. After carefully reviewing the program's Self Study, we took part in an internal visit on 2/20/2025 with the Department of Chemistry and Biochemistry to review. This report is divided into sections based on the lines of inquiry and highlights the strengths, challenges, and recommendations.

Inclusive Polytechnic Identity	Strengths	• There are 10 different activities in the department that provide a PolyX experience for students, including courses, clubs, community events, and research experiences. • The department has a wealth of experiences for the students that meet professional and career readiness standards, the integration of technology, and critical thinking and problem-solving • Collaborative learning is frequent in the department courses and projects • Students have strong mentorship through senior projects and supervised research opportunities which are often interdisciplinary.
	Challenges	• The following relates to facilitates, but greatly impacts the ability of the department to meet the expectations of "learn by doing" - ○ Facility updates are needed relating to student and faculty safety. ○ Largest concern is ventilation controls in labs – only 3 of 68 hoods have been updated. Students have become dizzy from fumes. ○ Maintenance and repair on lab safety equipment is a concern – who is responsible for this? Cleaning the hoods, which should be done regularly, costs \$2500. ○ Current structure in place does not meet current standards for safety – infrastructure is 50 years old, and the labs were not designed for the current chemistry work. ○ Critical place where improvement is needed. ○ Current lab space does not allow for adequate supervision of student safety. Labs are at times spread out between 3-4 spaces. There have been 2 injuries in general chem lab and 2-3 in graduate labs this year.
	Recommendation	• University needs to address facility safety so that students can continue to have strong learn by doing experiences. • University should look at possible restructuring of the labs available for chemistry to meet minimum safety standards. • Department should continue supporting students through the experiences they are offering.

Department Structure and Organization	Strengths	• Work is structured through committees • Each subdivision is represented on committees • Faculty serve in areas they are interested, any work left is assigned • Faculty feel there is an equitable distribution of work • Subdivisions are included in course scheduling and assignments • Junior faculty have priority for schedules and committee work • Over the last 7 years the department has continued to grow by recruiting and retaining faculty who provide students with rich and diverse research experiences and who exemplify CPP's Teacher-Scholar model.
--	-----------	--

	Challenges	Finding ways to support adjunct faculty in PD opportunities. This is a challenge since there is little motivation or support for them to attend CAFE events as they are not compensated for their time.
	Recommendation	CPP and CAFE should explore stipend-based PD opportunities for adjunct faculty

Assessment	Strengths	- There is a very organized structure in place for assessment within the department. - The supervision of assessment is rotated through department subdivision faculty - Associate Chair is assigned to coordinate and prepare annual assessment reports - Student outcomes are assessed every two years using lab safety assessments and common assessment tools - Closing the loop strategies are evident – modifications are made to course learning based on conceptual weaknesses in assessments - Next assessment period will focus on literacy outcomes – aligned with university assessment - Bio chem lab is part of GVAR assessment which is incorporated into regular assessment.
	Challenges	- Difficult to delineate chem majors in the bio chem lab assessment for GVAR - Lab safety – labs were closed during covid and now work is focused on recreating plan for lab safety and collecting data on a regular cycle on student learning outcomes.
	Recommendation	Department should continue collecting data on student outcomes, especially related to lab safety.

GI 2025	Strengths	- Graduation rates for URM and Non-URM students have remained consistent and near even each year. - Department has actively pursued strategies to enhance student course experiences – activity courses, extra assistance in high DFW courses, embedding tutors and learning assistants in labs and lectures. - There has been an increase in the graduation rates of Pell grant recipients since 2014. The graduation rates of Pell-recipient to non-Pell recipients has been even the past two years. - The department has worked with the LRC to add more chemistry tutors, focusing on high DFW and high repetition courses. - Online tools for student success have been implemented – homework guides, online resources for in-class instruction, virtual lab spaces for pre-lab instructions. - Department members started a <i>Chemunity</i>, meant to meant to emphasize
---------	-----------	--

		and embrace the diversity that is our department. With support from the student success funds, they have engaged in several different activities that are open broadly to members of the department (including faculty, staff, and students) Providing a place and safe space for our under-represented students has created a community and a way for students to feel like they belong. Such sense of community and achievement will help with student persistence and graduation rates. Research-active faculty have close relationships with mentees and often include professional development activities during mentoring.
	Challenges	- The change in the campus advising model has created challenges to student success and time to graduation. Advising is now completed by the CoS Advising Center. Faculty feel this is created a loss of strong relationships with students and advising mistakes have occurred, partly due to large turnover rates of Advising Center staff. - This has also created a loss of conversations surrounding the profession.
	Recommendation	- One suggestion was made to have group advising, create incentives for meeting with faculty advisor to build relationships. - One solution was to return to adding advising holds, while this may be seen as a barrier by the university, faculty feel it assists with course choices to help students not increase their time to graduation.

Technology	Strengths	Support from CoS Dean's office to pay for Gradescope license
	Challenges	- Infrastructure is aging, equipment is currently more of a need. - Computers are outdated, purchased 10 years ago - Computer lab and chairs need to be updated soon "band-aid" solutions occur most commonly - Expense of software has become prohibitive, but the tools are very necessary for student success – Chem draw, Gradescope
	Recommendation	The university should invest in technology for a large department such as Chemistry whose work depends on its graduates understanding up to date tech.

Support	Strengths	- On department surveys: - Both TT and non-TT faculty feel supported by colleagues and feel the department is collegial - Non-TT faculty feel that they are able to contribute to student learning, and innovation - Department is stable with moderate growth. - Student success funds are used for DEI initiatives, such as <i>Chemunity</i> and are used for guest speakers, heritage celebration events, Chemistry Club, and discussion groups. - Two different foundation accounts help support the work of the department. Funds are provided via donation or by IDC recovery from grant expenditures. Large instrument purchases are made through this fund
---------	-----------	---

	Challenges	• There is not university support for research and instrumentation upgrades currently. • The areas of greatest dissatisfaction for TT faculty were workload, resources on campus, and campus climate • The areas of greatest dissatisfaction for non-TT faculty were workload, job security, and campus climate • Both TT and non-TT noted that the physical instructional facilities were by far the lowest area of satisfaction • Upper division courses are often sacrificed for lower division courses because the department is a large service department, with other majors needing lower division chem and bio chem courses. • Faculty leave/retire and are not replaced • Department is losing 18 WTU next AY, 5 lectures and a lab will be lost due to retirements. • This will mean offering fewer service courses which will impact other programs. • ASC support has been cut, which creates difficulty in supporting students. • There is only one lab technician for stockrooms in three different buildings, an increase in staff would provide more stability and a better workload distribution • The service load of the department to other programs is very heavy (e.g. there were 54 sections (12 lecture, 42 labs) for General Chem 1 and 2 in Fall 2023. • As demand increases, the dept can increase offered sections, however, many of these time slots would conflict with the availability of the health center. As with any science lab, there is the danger of accidents occurring and having access to the health center is paramount to ensuring students are treated quickly upon reporting an accident. Paired with the limited availability of stockroom staff, faculty are unable to run many labs outside of normal business hours (for example, trying to avoid scheduling organic chemistry labs to end after 5pm wherever possible). This is problematic for student scheduling as well as non-traditional students who work full-time. • The operating expenses do not cover the actual costs of the college
	Recommendations	• University should increase department lab full-time staff and should also have health center that is open during scheduled laboratory courses to serve non-traditional students. • The university needs to address campus climate among all staff and faculty in a comprehensive manner. • The university needs to address the poor state of the chemistry facilities for the safety of students and faculty.

Summary

The Chemistry Department demonstrates strengths in providing robust and dedicated "learn by doing" PolyX experiences with diverse activities, strong mentorship, and collaborative learning. However, significant challenges exist, primarily concerning outdated and unsafe facilities, including inadequate ventilation and lab safety equipment, and a lack of lab personnel - impacting student safety and the

department's ability to meet "learn by doing" expectations. The department has a well-structured organization with equitable workload distribution and a strong focus on assessment, including closing the loop strategies and a commitment to DEI initiatives like *Chemunity*, leading to consistent graduation rates. Nevertheless, the department faces challenges in supporting adjunct faculty, changes in advising models, and addressing infrastructure issues, including outdated technology and inadequate staffing. Critically, the university needs to address the urgent safety concerns related to the aging facilities, invest in technology and staffing, and improve campus climate to support both faculty and students effectively.

Sincerely,

Reviewer 1: Heather Taylor, Ph.D. Signature/Date: *Heather E. Taylor* 3/20/25

Reviewer 2: Hao Ji, Ph.D. Signature/Date: *Hao Ji*

03/20/2025