CAL POLY POMONA
ASSESSMENT & PROGRAM REVIEW

Annual Assessment Report 2023-2024

BS Chemistry – American Chemical Society, Biochemistry, General Chemistry

Department of Chemistry & Biochemistry

College of Science

CONTACT

Name of Program Assessment Lead Kathryn McCulloch
Name of Person Completing Report Kathryn McCulloch

DISCIPLINARY ACCREDITATION Yes

DEVELOPMENT AND DOCUMENTATION OF STUDENT LEARNING OUTCOMES

How were the program's SLOs developed? (select all that apply)

- Our disciplinary accrediting agency has recommended learning outcomes, so we used and/or modified them.
- We developed them as a program/department using our own knowledge and expertise of the field.

Other than the CPP Catalog and the Office of Assessment and Program Review website, where else are your SLOs published? Select all that apply.

- Department Website - provide URL: https://www.cpp.edu/sci/chemistry-biochemistry/about-the-department/learning-outcomes.shtml
- Course Syllabi

ASSESSMENT ACTIVITIES IN 2023-2024

This section provides the opportunity for programs to share and discuss assessment activities conducted in **AY 2023-2024.** This includes data collection, rubric development, data analysis, discussion of findings, development or implementation of closing the loop improvement strategies, update of your assessment plan and/or curriculum matrix, etc.

How many total SLOs does your program assess according to your assessment plan?

- 7

How many SLOs did your program assess this past year in 2023-2024?

- My program assessed SLOs in AY 2023-2024 (e.g., artifact collection, scoring, closing the loop, etc.).
- My program engaged in other assessment activity not specific to any SLO (e.g., modified curriculum matrix or assessment plan, received all data for program review, etc.)

Please share the assessment activities the program engaged in that were not specific to any SLOs.

Our current assessment plan extended only through AY 2023-2024, so the department met over two department meetings to review the 4 Program Learning Outcomes, the 7 Student Learning Outcomes, and develop an assessment timeline that would allow each SLO to be assessed at least twice in the next 6 year period. The Department also discussed how using the same (or very closely related) courses and artifacts for assessment will better allow us to identify trends and act on the data.

Please list the SLOs examined

- SLO #1: Students will use computer technology to gather, process, analyze, and present chemical data, and communicate critical analysis of scientific information through written reports, laboratory notebooks, and oral presentations
- SLO #2: (Core Competency: Quantitative Reasoning) The ability to apply mathematical concepts to the interpretation and analysis of quantitative information in order to solve a wide range of problems

Student Learning Outcome (SLO): **Students will use computer technology to gather, process, analyze, and present chemical data, and communicate critical analysis of scientific information through written reports, laboratory notebooks, and oral presentations**

Assessment Activities	Evidence Used	Evaluation and Interpretation of Evidence
• Collected/Analyzed/Developed/Modified/Discussed assessment tools	• Assignment/exam/paper completed as part of regular coursework (Direct)	• Used rubric or scoring guide • Scored exams/tests/quizzes

Findings			
N of Artifacts	**Criterion Used**	**Goal Met**	**Eye-opening Result**
43	A rubric was used that assigned a score (0, 0.25, 0.50, 0.75, 1.00) to four questions per figure (5figures total; maximum score of 20). Students were considered to be at 'advanced proficiency' with a score of 18 or higher, 'proficient' proficiency with a score of 16-17.9, 'developing' proficiency with a score of 14 - 15.9, and 'beginning' proficiency with a score below 14. Our program sets a target for success when 2/3 or more of students are scored at 'proficient' or better.	Yes	The course used for artifact collection was taken by nearly all senior-level students (only 1 student was a junior; all others were seniors), indicating that nearly 3/4 of our students are showing proficient skills in terms of analyzing scientific data by the time they near graduation.

Student Learning Outcome (SLO): **(Core Competency: Quantitative Reasoning) The ability to apply mathematical concepts to the interpretation and analysis of quantitative information in order to solve a wide range of problems**

Assessment Activities	Evidence Used	Evaluation and Interpretation of Evidence
• Collected/Analyzed/Developed/Modified/Discussed assessment tools	• Assignment/exam/paper completed as part of regular coursework (Direct)	• Used rubric or scoring guide

Findings			
N of Artifacts	**Criterion Used**	**Goal Met**	**Eye-opening Result**
27	A rubric was designed to assess four components of the core competency, quantitative reasoning. The four components of quantitative reasoning were data representation, calculation, application/analysis, and communication; these were used to allow the results to be compared to assessment of this core competency performed in AY18-19. Our program considers a successful achievement of the outcome when more than two-thirds of the students are scored as 'developing' or 'mastery'.	Partially	The component with the most students showing room for growth was the communication component, which was the force driving down the percentage of students at developing or higher. This shows that there is room for growth when students are writing abstracts (the artifacts were lab reports) and that students may benefit from having more clearly defined rubrics when preparing lab reports.

IMPROVING THROUGH ASSESSMENT

Ideas to improve student learning can come from different constituents. With whom did the program discuss assessment planning and/or share results during AY 2023-2024? Select all that apply.

- Program/department faculty as whole
- A committee of program/department faculty
- Program/department assessment committee

The past academic year posed both challenges and opportunities. Please share any assessment discoveries (e.g., insights about assessment procedures, great achievements, etc.) regarding program assessment in 2023-2024 so that others may learn from your experiences.

Our program is working toward continual growth and found it useful to apply the same (or closely related) rubric to allow us to compare our data from AY 23-24 to data from AY 18-19. We are seeing that it is a longer process to get rubrics and protocols in place to make as much meaning from assessment as we can.

Please share how the program triangulates various data sources to determine student success. Consider assessment findings, CPP's GI2025 markers, CSU Dashboard, CPP's Student Success Dashboard on Tableau, CPP's Graduating Senior Survey on Tableau, course evaluations, etc.

Our program has not historically used the data sources described in this prompt when completing our annual assessment reports. This is an area where our program has room for growth.

Does the program offer a certificate or credential (e.g., teaching credential)?

- No

The most current assessment plan and curriculum matrix we have on file for your program may be found here. To ensure we have the most updated assessment plan and curriculum matrix for your program, and for posting on our website, please upload the following documents:

Assessment Plan - Yes

Curriculum Matrix - Yes