

De Anza College

Program Review – Annual Update Form

- 1. Briefly describe how your area has used the feedback from the Comprehensive Program Review provided by RAPP members (if unsure, request the feedback form from your dean/manager).**

The feedback from RAPP was positive and/or supportive of the department's current goals, with no specific feedback for improvement given. The department has therefore continued to focus on instruction and on its program goals.

- 2. Describe any changes or updates that have occurred since you last submitted program review (comprehensive program review [submissions](#))**

The most critical change to the program is the transfer of one of our full-time faculty to Foothill College. Although the department was fortunate enough to receive a temporary full-time faculty for the 2024-5 academic year, this has resulted in the lowest percentage of load taught by full-time faculty and the highest percentage taught by part-time faculty within a quarter in the department's history: during the Fall 2024 quarter, 27.4% of load was taught by full-time faculty, 10.6% of load as overload, and 62.0% of load by part-time faculty. Correspondingly, the department is more challenged than ever to staff its full schedule, and equally challenged to pursue its department goals.

- 3. Provide a summary of the progress you have made on the goals identified in your last program review (as included in the comprehensive program review).**

A) Increase student supports and reduce costs in introductory courses

The department has unfortunately been unable to make significant progress in reducing textbook costs. The department adopted the OpenStax texts for both general chemistry (Chem 1A, 1B, 1C) and organic chemistry (Chem 12A, 12B, 12C) for a one-year trial period. The resulting feedback from faculty was essentially unanimous in that the texts lacked the rigor or a sufficiently developed set of problems to be appropriate for their respective courses when used alone. Some full-time faculty do use the text by supplementing with their own material, but the department does not have the faculty available to assist part-time faculty with developing those resources, and it is not reasonable to expect new part-time faculty to enter into the program with such materials developed. The department had tried several years ago to implement the previous edition of the general chemistry OpenStax text, and there was agreement the text has made substantial progress in that time; thus, the department will hopefully reconsider the texts in their next editions.

Although some discussions have occurred with MESA regarding embedded tutors in our courses, there are not a large number of students that end up in courses with full-time faculty as instructors, and there are presently no full-time faculty that are able to commit fully enough to such a project to make a meaningful impact.

B) Implementation of AS degrees in chemistry and biochemistry

The unit restrictions for creating an ADT in chemistry have not changed, so the department is still unable to offer such a degree, although we hope this may change in the near future. Unfortunately, no progress has been made on an AS degree due to lack of available faculty, particularly in the Fall 2024 quarter.

C) Develop and maintain a modern laboratory program

The department is undertaking a review of all of our lab courses. Two chemicals – chromic acid and methylene chloride – have been identified as unnecessarily toxic and removed from use. A new lab program for Chem 30A was adopted from Foothill and introduced during the 2023-4 academic year, and a new program for Chem 30B was introduced by a full-time faculty member during the same time. The lab program for organic chemistry has not had a thorough overhaul in roughly 20 years. The two faculty currently teaching organic chemistry are currently working to prepare a proposal for updating the lab program, which will hopefully be presented to the department in the Spring 2025 quarter for implementation in the Fall 2025 quarter. The department will hopefully begin a comprehensive review of the general chemistry (Chem 1A, 1B, 1C) program this quarter.

4. If your goals are changing, use this space to provide rationale, or background information, for any new goals and resource requests that you'll be submitting that were not included in your last program review.

Our program goals have not changed, as much progress is still needed to meet our current goals.

5. Describe the impact to date of previously requested resources (personnel and instructional equipment) including both requests that were approved and were not approved. What impact have these resources had on your program/department/office and measures of student success or client satisfaction? What have you been able to and unable to accomplish due to resource requests that were approved or not approved?

In terms of personnel, the department is currently at its lowest staffing level of full-time faculty versus number of students served in its history. The imminent approval of a replacement full-time faculty will return the department to the same level as when the current coordinator was hired in 1999. There has been a roughly 50% increase in number of students served in that time. Combined with faculty currently on release or on PDL, this has led to only 27.4% of schedule load being taught by full-time faculty in the Fall 2024 quarter. This has severely impacted our ability as a department to make progress on our program goals.

In terms of equipment requests, the requests that were not funded were for equipment that is currently still in use but aging. Therefore, there has not been an immediate impact by the request not being fulfilled, however it is expected that over time the equipment will fail and its replacement will become urgent.

6. How have these resources (or lack of resources) specifically affected disproportionately impacted students/clients?

The department identified in our most recent CPR that disproportionately impacted students are concentrated in lower courses: Chem 25, Chem 30, and Chem 1A. These are also the courses that are disproportionately taught by part-time faculty – in particular, by part-time faculty that are new hires. Although all of our faculty are fully qualified, there is a familiarity with a lab program that comes with time, since each experiment has its own safety considerations and learning outcomes. In that light, we again will need to hire new faculty in order to cover the schedule for the Spring 2025 quarter. And, as mentioned above, the lack of sufficient full-time faculty is severely limiting our ability to address our department goals.

Securing a growth position would help significantly towards increasing the amount of load taught by full-time instructors in general and in the Chem 25, 30, and 1A courses specifically.

7. Refer back to your Comprehensive Program Review under the section titled **Assessment Cycle** as well as the SLO website (<https://www.deanza.edu/slo/>) for instructional programs. In the table below provide a brief summary of one learning outcome, the method of assessment used to assess the outcome, a summary of the assessment results, a reflection on the assessment results, and strategies your area has or plans to implement to improve student success and equity. If your area has not undergone an assessment cycle, please do so before completing the table below.

Table 1. Reflection on Learning Outcomes (SLO, AUO, SSLO)

Learning Outcome (SLO, AUO, SSLO)	Chem 12A – #2: Generate logical stepwise reaction mechanisms for simple organic reactions.
Method of Assessment of Learning Outcome (please elaborate)	A question on the final exam that required the students to write complete mechanisms for three separate reactions. Each reaction was worth 8 points, for a question total of 24 points. A passing score (70%) on the question was 17 points. The final exam itself was worth 200 points, and the course point total was 1000 points.
Summary of Assessment Results	The results represent two sections of Chem 12A from the Fall 2024 quarter (04 and 05), totaling 49 students. Only 15 (31%) of students received a passing score (17/24 or greater) on the question, with a class average of 13/24 (rounded), or 53%. There was some variation on the performance on individual mechanisms, with class averages of 51%, 59%, and 50% on each mechanism, respectively.
Reflection on Results	<p>Mechanisms are perennially difficult for students to master, therefore the scores are disappointing but not surprising. What is surprising is the fact that students were allowed essentially an unlimited number of flashcards to use during final; moreover, the students had been directed to make specific flashcards for each of the mechanisms they learned during the quarter.</p> <p>Separately, what is not reflected with enough granularity in the numbers is the types of mistakes that students are making, which fall into several predictable categories, including the number and types of arrows to use, the number of electrons to show, showing proper charges, and knowing the sequence of events in a reaction, including whether the events occur simultaneously or sequentially.</p>

<p>Strategies Implemented or Plan to be Implemented (aka: enhancements)</p>	<p>This quarter, I am asking the students to show me their flashcards before the exam. This way, I am able to assess the type of information they are including so that I can advise them as to whether it is useful and/or sufficient. I am also trying to increase the number of sample problems I review in class, and when feasible I have the students work in groups to solve problems so they can share strategies that I have learned.</p> <p>In future quarters, I would consider making an expanded grading matrix for this specific question, so that I could analyze more quantitatively which kinds of mistakes students are making, which then would shape my approach for explaining mechanisms.</p>
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Done? Please email this form to your dean/manager.

8. Dean Manager Comments:

Our chemistry department is going strong but in great need for staffing and facilities help. The department offers General and Organic Chemistry series, each of which is one year, along with offering courses for General Education and Nursing programs.

The department's need is mainly another fulltime faculty. At the moment, as indicated in this report, they are teaching classes only less than 30% as part of fulltime load. The rest is overload or parttime and that is considering the temporary fulltime faculty this year. Being a science department with serious safety requirements, running classes with mostly parttime faculty carries risks. We are blessed with dedicated parttimers who know the science and respect safety, but each school has their own requirement, and it is hard to require parttime faculty to attend regular meetings to keep updated on our procedure. This is a long-term risk. Additionally, as the department works on developing certificates and updating their many curriculums and dealing with Common Course Numbering, they do need fulltime help.

Another issue for our chemistry department is the facilities; there are many facilities related issues that come up year after year and are not addressed. Namely, the HVAC System, Fume Hoods, water flooding in the lab rooms after each rain, and now the multimedia upgrade in the labs which was planned for a year ago and still pending facilities. The issues have been well communicated, and it is worth mentioning here again.