

## Faculty Request Form - Fall 2024

## Department/Area and Name of Submitter

Chemistry; Megan Brophy/Mehrdad Khosravi

## Details on Faculty Positions Requested

\* if requesting more than one position within the same area, please provide the area's priority ranking for each position to help inform RAPP of the priority preferences as determined by the area.

Position Name	Replacement or Growth	Retirement/Resignation Date	Instruction, Non-Instruction, Both	If Both, indicate the ratio	*Area Ranking
Full-time chemistry instructor	Replacement	June 30, 2024	Instruction		

## Guiding Principles

De Anza College's mission and Educational Master Plan serve as guiding principles for programs to facilitate continuous development, implementation, assessment and evaluation of their program effectiveness as part of ongoing planning efforts.

De Anza identified the following areas within its Educational Master Plan:

- Outreach, Retention, Student-Centered Instruction and Services, Civic Capacity for Community and Social Change

Through its Equity Plan Re-Imagined, it identified the following framework to work towards narrowing long-standing equity gaps:

- **Racial Equity:** Faculty members, classified professionals and administrators should: recognize the realities of race and ethnicity for students of color. Develop intersectional understanding of the ways in which institutional racism shapes educational access, opportunity and success for Black, Filipinx, Latinx, Native American, Pacific Islander and other disproportionately affected students.
- **Student Success Factors:** The College should ensure students: Feel connected to the college; Have a goal and know what to do to achieve it; Actively participate in class and extracurricular activities; Stay on track – keeping their eyes on the prize; Feel somebody wants them to succeed and helps them succeed; Have opportunities to contribute on campus and feel their contributions are appreciated.

Based upon these guiding principles above, please refer back to the comprehensive program review to inform your response below (see the following areas in the comprehensive program review: Reflect on Enrollment Trends, CTE Programs - Statewide and Regional Labor Market Trends, Exploring Course Success Rate Trends, Exploring Gaps in Successful Course Completion by Ethnicity, Teaching and Learning Strategies, Trends in Awards and Staffing Needs).

## A. Instructional Faculty

## Faculty Position Request Data Sheet

Limits: From 2018-19 to 2025-26

Fill Rates						
Physical Sciences/Math/Engin - Chemistry-FD						
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Enrollments	3,023	3,219	3,229	2,732	2,795	3,074
Sections	113	119	124	105	113	117
Fill Rate	95%	95%	94%	89%	89%	93%

## Success and Equity

Physical Sciences/Math/Engin - Chemistry-FD

	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Success Rate	76%	81%	78%	77%	77%	81%
Withdraw Rate	12%	12%	14%	13%	12%	9%
Equity Gaps	-24%	-18%	-15%	-16%	-21%	-14%

## Faculty Load Ratios

Physical Sciences/Math/Engin - Chemistry-FD

	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Full Time	33%	31%	28%	33%	30%	28%
Part Time	55%	54%	57%	49%	54%	55%
Overload	13%	15%	15%	18%	16%	18%
FTEF (full time only)	5.4	5.4	4.9	5.1	4.8	4.7

Data is for the academic year, including summer term and early summer/second spring terms for Foothill College. Enrollments include students who are counted for apportionment for the report years (i.e., Apprenticeship, noncredit and other students who do not necessarily have a reported grade). Cross-listed courses are included in the home department. Some courses may continue to be listed but no longer have data due to renumbering or because the course was not offered in the past five years.

1. How does the department use the data listed above to develop, adapt, and improve teaching and learning to respond to the needs of changing environments, populations served, and evolving institutional and state priorities? Be sure to refer back to your Comprehensive Program Review form to inform your response.

In our program review, we determined that the cost of course materials is a significant barrier to success for students pursuing STEM- and health-care related fields. Our course success rates show severe disproportionate impacts for Black (-20 ppg) and Latinx (-24 ppg) students as well as notable impacts on students with disabilities (-12 ppg) and low-income students (-10 ppg). The department has worked to mitigate this impediment and address success gaps by implementing OER course materials when practical; however, OER adoption has not been universal, and we continue to rely on pay-to-access homework platforms for many of our introductory-level classes. We are participating in a state-funded grant that involves creating sustained access to Zero Textbook Cost (ZTC) offerings of our 30A course by developing auxiliary study and homework materials to supplement the existing OER texts available for this course by Fall 2025. The full-time faculty member who would have been the lead on this project departed the college in June 2024, leaving a gap in expertise at a critical time. We are optimistic that the department will be able to meet this commitment thanks to the efforts of part-time faculty, but this will only impact one course.

Another good target for a ZTC course is Chem 25, which is the preparatory chemistry class for general chemistry. This single-quarter class is currently one of the most expensive classes in the department- it requires both a lecture textbook (combined ebook/homework platform) and publisher-provided lab manual with a combined bookstore cost of \$92.75 plus taxes. We recognize that this presents a significant financial burden for our students; however, we are reticent to commit to a grant opportunity without sufficient faculty coverage.

## B. Non Instructional Faculty

1. Describe the data used to develop, adapt, and improve teaching, learning, and/or support to enable this position to respond to the needs of changing environments, populations served, and evolving institutional and state priorities (this may include a description of the population served, student needs and experiences from surveys or focus groups, or ratios related to the number of students served relative to current occupational standards, be sure to refer back to the program review where applicable).

## C. Instructional and Non Instructional Faculty Justifications

1. How does this request align with the goals in the Educational Master Plan? (refer back to the comprehensive program review areas: Mission and Program Goals).

The educational master plan identifies student retention and student-centered instruction as central areas of focus. In Chemistry, we observe differential challenges with retention through the enrollment patterns in our courses. Disproportionately-impacted student groups are highly represented in our foundational courses; however, their share of the student population declines in subsequent courses, indicating that these student populations are less likely to persist and complete year-long sequence classes. In alignment with the EMP, one of our Program Goals is to increase the success rates of disproportionately impacted groups in Chemistry 25, 30A, and Chem 1A through increased student support and reduced costs.

This position will replace one of our full-time instructors who transferred to Foothill College effective July 1, 2024. This instructor filled a vital role in our department, regularly teaching 30A and organic chemistry as well as overloads. Notably, they were the only FT instructor to have taught Chemistry 30A, the first chemistry course for students entering allied health fields in recent years. Chem 30A, along with Chem 25, serves as a gateway to the General Chemistry (Chem 1ABC) and Organic Chemistry (12ABC) sequences. 30A therefore presents an important opportunity to introduce students to the department, provide a welcoming and empowering learning environment for students, and nurture our students' sense of belonging in STEM. These efforts help students to see themselves succeeding in subsequent courses within the program while they develop essential skills. 30A and 25 equip students with the foundational skills needed to manifest their vision of future success into tangible educational and professional accomplishments. Having a full-time instructor who is committed to teaching 30A as a primary assignment also ensures that PT faculty have a mentor with whom to review course outlines of record, student learning objectives, and safe laboratory standards.

2. How does this request align with the College's Equity Plan Re-Imagined? (refer back to the comprehensive program review areas: Exploring Gaps in Successful Course Completion by Ethnicity and Teaching and Learning Strategies)

Our comprehensive program review notes that Black and Latinx students make up >35% of the student population of Chem 30A and >25% of Chem 25; however, this proportion drops to ~20% for Chemistry 1A and continues to decrease through 1ABC and 12ABC. We observe a disproportionate impact for these groups: they show a strong interest in chemistry classes at the beginning of their education; however, they do not persist at the same rates as other student groups. The Equity Plan Re-Imagined focuses on ensuring student success by helping students to feel that they are connected members of the college community, with a particular recognition of the institutional barriers faced by students belonging to disproportionately impacted racial and ethnic minorities. Our introductory courses, including CHEM30A, are the first point-of-contact most students have with the department, and have the highest fraction of students from disproportionately impacted groups. We have a pool of excellent part-time instructors who teach this class; however, we do struggle to find enough instructors to meet student demand for chemistry courses. For the 24-25 academic year, we intend to offer 13 sections of 30A, 18 sections of 25, and 22 sections of Chem 1A. One section of 30A will be staffed by our temporary full-time replacement instructor; the other 52 will be taught by part-time instructors or by full-time instructor overload. Chem 30A is a critical point of entry for students who are beginning their chemistry education, and it is essential that we have full-time faculty attention devoted to developing and revising state-compliant curricula as well as low-cost, high-quality course materials. Regular, focused, full-time attention to Chem 30A, 25, and 1A is of paramount importance in addressing equity gaps while supporting the college's academic programs.

3. How does the position support on-going college operations and/or student success? (refer back to the comprehensive program review areas: Exploring Course Success Rate Trends, Exploring Gaps in Successful Course Completion by Ethnicity, Teaching and Learning Strategies)

From a student success perspective, the likelihood that a student will persist through challenges to succeed in attaining their goals in higher education is tied to whether the student feels a sense of belonging. Students must know that the people guiding them through their educational journey are genuinely invested in their success. Students entering college often have apprehensions towards chemistry; our introductory courses present an opportunity to build confidence and acquire the critical reasoning and study skills that they will need to succeed in challenging upper-division courses, or it can be a demoralizing experience that reinforces a student's sense that they are "not a STEM person," in some cases even leading them to change their career plans. Students respond positively to individualized attention and feedback inside and outside of class. Refilling this position will help to ensure that our department has adequate staffing to keep a sustained focus on developing our introductory courses with a focus on student success and equity.

The chemistry department will not have sufficient staffing for operations to continue in supporting its current course offerings if this position is not filled. We knew this position would be vacant from the end of February- we hired a temporary full-time instructor for the 24-25 academic year, without which we would have made painful cuts to our course offerings. Hiring new qualified part-time instructors has proven difficult, and many PT instructors have maxed out their district load before spring quarter. We currently offer 5 sequences of organic chemistry (12ABC) per year; the faculty member who transferred taught 2 sequences for a total of 8 sections per year. This position will support the continued operation of organic chemistry, which many STEM students require for transfer and degree completion.

4. Why is the position needed and how would the position contribute to the health, growth, or vitality of the program? (refer back to the comprehensive program review area: Staffing Needs)

In our program review, we noted a great need for additional full-time faculty to support curriculum and articulation. For the 2023-2024 academic year, the FT Faculty Workload was unsustainably low at 27.7%. This ratio would drop to ~20% without a replacement. This contrasts sharply with Biology, another lab-intensive discipline in which the FT workload was 54% in the same period. Replacement is necessary to allow the department to support its current course offerings and maintain our existing lab program. We submitted a separate request for two growth hires in Fall 2023, and they were ranked "high" and "moderate" by the committee. The department needs both of these growth positions, in addition to this replacement position, to move beyond base subsistence to a healthy level of staffing with the bandwidth to develop and support our teaching methodologies and lab program. These hires will allow for expanded course offerings, increased student success, and continued academic excellence.

The field of chemistry continues to evolve in response to emerging technologies, as do best practices in chemical education. Maintaining a vibrant chemistry curriculum that is accessible and exciting to evolving student populations requires faculty to remain current in our chemical research as well as classroom methodologies. The low-ratio of full-time faculty in the department has hampered our ability to participate in professional development opportunities both on campus and within the wider chemical education community. It is difficult to find substitute instructors, and faculty have delayed professional development leaves because they are worried about finding instructors in their absence. Full-time faculty have felt pressured to take additional overload assignments to prevent class cancelation, and probationary faculty have overloaded by necessity. Once we have more full-time faculty in place, we can dedicate more time and resources to classroom innovation and student success.

5. Describe the current staffing and history of staffing in your area and how the current staffing affects the health, growth, or vitality of the program. (refer back to the comprehensive program review area: Staffing Needs)

The department has operated from a substantial deficit of full-time faculty for years, which became increasingly drastic as we expanded course offerings with no additional full-time hires to support this growth. While the number of sections has remained relatively flat over a five-year period, this belies the fact that the number of full-time faculty in our department has not increased in twenty-five years, while the number of sections offered annually in the department has more than doubled and our class sizes have increased. Our inability to expand offerings further reflects the fact that the current size of our program already exceeds what can reasonably be managed and staffed by our current faculty.

With the loss of one full-time faculty at the end of 2023-2024, the staffing situation has become untenable and require the department to significantly restructure the course schedule and reduce section numbers. We plan to offer a total of 96 sections during AY24/25, representing 10 unique classes and not including special projects or honors sections. Twenty of these sections (24%) are staffed by full-time faculty, and the remaining 76 sections will be staffed by our current part-time faculty pool, FT overload, and new part-time faculty hires. We can only complete necessary college business (including curriculum revisions) this year because we were able to hire a temporary full-time instructor. Without a permanent replacement, we will reduce our off-sequence offerings for general and organic chemistry, as supporting the safe and effective administration of nine separate laboratory programs each quarter will not be possible. Such cuts will substantially impede student success and transfer and may result in students completing their chemistry sequence outside of the district.

6. Explain how the work will be accomplished if the position is not filled. (refer back to the comprehensive program review areas: Staffing Needs)

Without a permanent full-time position, the department will not be able to meet the goals detailed in our program review nor sustain our current number of course offerings. The department also lacks the manpower to contribute to campus-wide initiatives. Chemistry 30A a key course for one of the college zero-textbook-cost grants. In the wake of this transfer, the college lost the only FT instructor who had taught 30A with an OER and had a commitment to develop a zero-cost homework option for the class. Part-time instructors stepped up to fill that need, without whom the college could have lost that grant. We have a pool of experienced and enthusiastic part-time instructors; however, many work multiple jobs teaching at different colleges or in industry and cannot dedicate their full attention to our program.

Many essential tasks fall outside the purview of part-time instructors. In addition to regular curriculum revisions, lab exercise development, resource requests, textbook recommendations, part-time hiring, and coordinating part-time evaluations, chemistry faculty are charged with maintaining a robust, safe, and compliant laboratory program. Without a hire, we will restructure our schedule such that we can sustain a lab program that meets transfer requirements as well as safety standards. This will result in fewer scheduling options for students as well as fewer employment opportunities for part-time faculty. It is not feasible for our remaining five faculty to support the safe delivery of nine separate lab courses each quarter. We lack the manpower to administer evaluations in a timely manner for our part-time instructors, which further impacts our ability to retain qualified educators. Ultimately, students trying to progress through our general and organic chemistry sequences to meet their transfer requirements will find that their options for enrollment (which are already insufficient to satisfy demand) will be further reduced.

7. Other information, if any.

1. We must have sufficient full-time faculty to deliver a robust, modern, and safe laboratory program. All our courses include a substantial wet laboratory component in which students are required to handle hazardous materials. Faculty are responsible for following the health and safety procedures outlined by the college as well as relaying this information to students and enforcing chemical hygiene protocols in lab. Our lab programs include working with hazardous materials including carcinogens, toxins, and flammable materials. Improper handling of chemicals and waste can result in the inadvertent production of chlorine gas or explosive peroxides. We often hire part-time faculty at the last minute to staff fully-enrolled classes. Our full-time faculty are overextended and unable to oversee lab operations, waste

management, and basic housekeeping in these circumstances. This environment does not set up our new instructors to be successful: it is harder for us to retain instructors and diversify our department, and it presents a scenario in which student and employee safety may be compromised.

2. This replacement request will prevent us from reducing our current course offerings, and is in addition to our prior request for two growth positions. The growth positions remain essential for our department to support our class offerings and grow our program into an equitable and supportive environment for students, faculty, and staff.
3. One of our full-time faculty members is currently on 100% release time while they fulfill the essential role of academic senate president and is under no obligation to contribute to department business. The college has not offered us a temporary replacement for this position, which further impacts the workload of the remaining faculty, reduces support for part-time instructors, and ultimately stymies our students' access to a quality educational experience.

Dean/Manager Comments (Deans, please review the form for completeness and clarity and provide additional details as needed)

The department is in desperate need for a replacement fulltime faculty so they can, in addition to covering classes, also work on curriculum updates and deal with challenges of AB1111.

It is also worth mentioning that Foothill College has decided not to continue with their off-sequence offering of Organic Chemistry which means there will be a big demand on our offerings which makes our need for a fulltime Organic Chemistry instructor even greater.

This form is completed and ready for acceptance.