

2021-2022 Program Review



CAN Program Review (Instructional) - Chemistry (Fall 2021)

STEP 1: Program Review Narratives

2021-2022

Instructional Program Review (IPR)

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Program Context

1. Mission: The mission of the chemistry department is to offer rigorous, adequate and updated course work to support all students in achieving their individual academic goals: Associate degree in Physical Sciences; preparation for transfer into STEM fields; general education; and personal enrichment are the current exit points.

2. Articulation: All our courses are fully articulated with the UC and the CSU systems.

3. Community & Labor Needs: We are not a CTE program. We do have one CTE course, CHEM 410. This course is taken by students pursuing degrees in Nursing and various Health Science fields. Articulation with receiving institutions is current. The College Transfer Officer keeps us informed of changes that might impact our students and program.

Looking Back

4. Curricular Changes: CHEM 114 Survey of Chemistry and Physics was created to support the Early Childhood Education. Program at the petition of the ECE faculty. The effective term is 2019. However, this course has never been offered. As a result, there is no SLO, enrollment, retention, or success data available.

No other curricular changes were made in the period Fall 2019 to Spring 2021. We offered the typical chemistry curriculum: (1) Preparatory Chemistry, CHEM 192; (2) General Chemistry I, CHEM 210; (3) General Chemistry II, CHEM 220; (4) Organic Chemistry I, CHEM 231; (5) Organic Chemistry II, CHEM 232; and (6) Chemistry for Health Science, CHEM 410.

CHEM 192, CHEM 210, CHEM 231, CHEM 232 and CHEM 410 are active transferable courses. All chemistry courses were offered fully online in the academic year 2020-2021

On a typical academic year, multiple sections of CHEM 210 are offered every semester, one of them online. One section of CHEM 220 is offered in the Fall semester and 3 in the Fall semester, one of them online. Two sections of CHEM 410 are offered every semester. One section of CHEM 192 is offered every semester. One section of CHEM 231 is offered in the Fall semester and one section of CHEM 232 is offered in the Spring semester.

5A. Progress Report - IPC Feedback: There were no recommendations in the 2018-2019 program review.

5B. Progress Report - Prior Program Goals: 1. To ensure student access to the application of computers in the chemistry laboratory.

Although our request for a set of 35 laptops with Office suite software and a charging cart was not approved. We were able to acquire an old computer cart from the Physics Department. We have been using these computes to: (1) collect data from our large inventory of Vernier laboratory probes via interfacing, and (2) conduct virtual laboratory experiments when appropriate, etc.

We followed the suggestion by former Dean Adam Witham to direct students to seek accessibility to computers from programs on campus. Fortunately, many students have their own computes or belong to programs on campus that lend them computers. These have helped us guide students to: (1) manipulate experimental data, (2) create excel spreadsheets and graphs, (3) create formal laboratory reports, (4) view instructional videos, and submit online assignments while in the classroom.

2. Allow students a greater opportunity to learn from individualized hands-on experiences by manipulating laboratory common equipment as opposed to share data for lack of sufficient laboratory equipment.

We requested the following laboratory equipment for each student to have access: (1) for CHEM 210 and CHEM 220 - 35 each 50 mL burets, bure clamps, adjustable prong clamps, clamp ring sets, clamp holder; (2) for CHEM 231 and CHEM 232 - 35 each 60 mL separatory funnels, 125 mL separatory funnels; and (3) to support quantitative measurements of unknown samples in all

chemistry classes – a Topload weighing balance.

Item number 1 was approved. This was very welcomed since the combination of CHEM 210 and 220 serves the largest number of students in the largest number of other disciplines the chemistry department serves.

In regards to item 2, we continue to share equipment and to replace a very limited number of broken separatory funnels using the regular chemistry operations budget.

In regards to item 3, we continuously search for possibilities of fully working donated equipment by the Chemistry/ Biotechnical industry around the Bay Area.

3. Request for a part-time Physical Sciences Special Projects Assistant

The need for this staff position is to (1) help maintain chemical instrumentation used by students in lab; (2) help develop, troubleshoot, coordinate implementation, and help evaluate efficacy of new laboratory curriculum; and (3) assist in the administration of laboratory-based independent research and honors contracts. Unfortunately, we were unsure of the request submission process at the time of submitting last cycle's program review and missed the submission deadline.

4. Request for a Physical Sciences Laboratory/Teaching Assistant

The need for this staff position is to offer a reliable and technically qualified assistance to students in the laboratory room and outside of the classroom as a way to provide the necessary academic intervention to improve student retention and success. Unfortunately, we were unsure of the request submission process at the time of submitting last cycle's program review and missed the submission deadline.

6A. Impact of Resource Applications: 1. The old cart of computers donated from the Physics department provided 26 computers that are constantly used in all chemistry laboratories when we meet for lab in-person. No in-person laboratories have been held since March 17th of 2020. According to the program review data packets, there were 620 unduplicated headcount students enrolled in the year 2019-2020. Subtracting 90 students enrolled in one online CHEM 2010 section offered in Fall 2019 and on online CHEM 2020 section offered in Spring 2020, we can conclude that 590 students got to utilize computers in the chemistry laboratories. Having sufficient computers to give out to students in the lab impacts the ability of students to collect and manipulate their own data, watch instructional videos at their own pace, research relevant literature sources live, work on virtual assignments and ask for clarifications during lab sessions.

2. The 35 burets and other buret accessories were distributed to students in the face-to-face CHEM 210 and CHEM 220 laboratory sections. Each laboratory section holds 30-32 students. Having 35 burets allowed each student to manipulate its own buret to learn the laboratory technics and applications of the tool introduced. Approximately 400 students had the opportunity to learn firsthand laboratory techniques that are used in transfer schools and places of employment.

3. Although we did not submit the requests for either the Special Projects Assistant or the Laboratory/Teaching Assistant, the chemistry department managed to (1) support 2 honors students; (2) make a limited number of curricular improvements (reduce waste, greener labs, incorporate videos); (3) academically support students by extra office hours, extra review sessions, and STEM Center referrals. It is evident that these strategies are neither efficient nor sufficient to adequately support the students' and departmental needs. We are submitting a request for laboratory student assistants and a teaching aide in the corresponding section of this program review.

6B. Impact of Staffing Changes: There were no staffing changes from Fall 2019 to Spring 2021.

The chemistry department will suffer a drastic staff need given that the only two fulltime faculty members are either voluntarily separating or retiring in the academic year 2021-2022. One fulltime faculty is leaving at the end of the Fall 2021 semester. The second fulltime faculty will leave at the end of the Spring 2022 semester. The Chemistry Department, which services many other disciplines, will be left with no fulltime faculty for the following academic year. Although our current adjunct faculty members are a highly engaged and dedicated group of individuals, the lack of fulltime faculty makes it difficult to create a stable teaching and learning environment. We hope we can identify and hire qualified fulltime replacements before August 2022.

In the current semester, Fall 2021, the 2 fulltime faculty carry 2.08 of the 4.72 FTES. Since one of the fulltime faculty will leave the District at the end of the semester, an additional 1.04 FTES worth of the 4.36 offered will be allocated to adjunct Faculty.

The Chemistry Department will submit requests for fulltime faculty replacements through the appropriate channels.

Current State of the Program

7A. Enrollment Trends: The Fall 2018 to Spring 2021 Chemistry Department Productivity by semester compared to the College-wide productivity is summarized below. The data shows the Chemistry Department to have high productivity with a Load between 524 in Fall 2018 and 652 in Spring 2021 and a fill rate between 85.7% in Fall 2019 and 97% in Spring 2021. The second highest numbers in both categories was in Fall 2020. It is worth noting that all classes offered in the chemistry department in Fall 2020 and Spring 2021 were delivered remotely. The data indicates that the productivity of the Chemistry Department was higher than the productivity of the College in this time period.

Semester	Chemistry			College wide	
	Load	Fill rate (%)		Load	Fill rate (%)
Fall 2018	524	85.9	387	77.0	
Fall 2019	543	85.7	364	74.5	
Fall 2020	619	96.5	386	73.0	
Spring 2019		600	88.6	369	72.8
Spring 2020		586	91.8	355	71.1
Spring 2021		652	97.0	366	71.6

Fall 2018 to Spring 2021 Chemistry Department Productivity (Load) per semester by course

Course	Fall 2018	Fall 2019	Fall 2020	Spring 2019	Spring 2020	Spring 2021
CHEM 192	333	283		417	629	Not offered 400
CHEM 210	574	482		640	483	572 777
CHEM 220	588	554		535	579	674 718
CHEM 231	328	502		467	NA	NA NA
CHEM 232	NA	NA		NA	485	502 465
CHEM 410	588	840		450	500	450 585

The Chemistry Department shows high productivity in classes that offer double lecture with split lab sections: CHEM 210, CHEM 220 and CHEM 410. All in-person courses have a maximum laboratory limit enrollment of 30 students in compliance with OSHA regulations. This limitation can have a significant impact on the productivity of CHEM 192, 231 and 232, which are taught as regular single section. Productivity is higher in classes that have sections in-person and on-line such as CHEM 210 and CHEM 220. The enrollment cap for these two classes is 45. The inconsistent CHEM 192 productivity trend requires further research. Historically, students who took this class were students wishing to go in the Radiologic Technology program; need it as preparation for the CHEM 210/220 sequence; or were high school students completing a requisite to take advance placement chemistry courses at their corresponding schools. CHEM 192 was expected to also be a choice of science course with laboratory to fulfill the general education requirement. We will work closely with the PRIE office to collect data regarding the current career goal of students who take CHEM 192 in order to design intentional interventions.

7B. Significant Changes in Your Program: Other than the inconsistent productivity of CHEM 192 noted in 7A above, the department has not experienced unusual changes. The increase of enrollment in classes taught online is understandable since these classes are intrinsically more accessible.

7C. Planning for Your Program: Given the uncertainties in terms of the feasibility to teach face-to-face courses brought about by the COVID 19 pandemic, the chemistry department plans to request support to help develop and expand experiments using "take home lab kits" .

We would like to create 8-12 hands-on illustrative experiments targeted for a 2-3 hours sessions that explore key concepts in all the chemistry classes. This will be a long term project targeting two courses per year. There are several aspects of this project such as: writing experiments, troubleshooting the experiments, proofreading the hand-outs, creating a list of materials, procuring the materials, checking any possible legal compliance, assemble the kits, distribute the kits, etc.

We envision these experiments also to have an associated explanatory video for courses offered on an asynchronous format. We will explore the possibility of working with the multimedia department for support with the videos project.

This effort is labor intensive, as we determined from experience in Fall 2020. We will request support to hire student assistants.

We already put together last minute lab kits to be sent home for CHEM 410 - Chemistry for Health Sciences in Fall 2020. This is one of the courses that serves student moving to Nursing, Radiologic Technology, Respiratory Therapy, Kinesiology, and related health sciences programs. Some of these programs will no longer excuse students from not having some type of hands on experience due to the pandemic. We offer students remote assisted hands on experience with these lab kits that contain all they need to complete 10 labs safely at home. We need to formalize this effort and expand to the other classes. Potentially we would like to have themed labs with unique perspectives that might lead to increased enrollment.

Additionally, we will explore different course scheduling to continue to offer the accessibility of fully on-line courses but also have the option of face-to-face interaction for students who prefer that modality. Additionally, we will explore the possibility of offering face-to-face and hybrid evening courses.

The personnel that put together the "take home lab kits" that will support our plans for distance education instructional modality need to resume their duties to support the return to face-to-face laboratories. There will be very limited, if any, time to work on the "take home lab kits". However, this effort needs to continue as we plan to continue virtual and hybrid offerings to maintain accessibility and promote enrollment.

8A. Access & Completion: The general chemistry classes, CHEM 210 and CHEM 220 have consistently high fill rates of 90% and higher (often times over 100%). This indicates they are easily accessible. The upper division courses for majors showed a lower fill rate in the 2018-2019 academic year. From Fall 2019 until Spring 2021, the fill rate has been around 91%. The average fill rate of CHEM 410 in the period Spring 2019 to Spring 2021 is 101%. It is challenging to draw accurate conclusions since the instructional delivery modality was not the same every semester. However, it is safe to assume that access to the chemistry classes is adequate. CHEM 192 has been suffering from low enrollment. Further research about the cause for the deviation from the typical access trend shown by the rest of the chemistry classes. Please refer to section 7A for our proposed plan to research this finding.

The chemistry department completion rates follow the same trend as the completion rate of the College.

Term	Success CHEM (%)	Success College (%)
Fall 18	71.6	70.3
Spring 19	72.4	73.4
Fall 19	66.4	69.7
Spring 20	85.2	71.6
Fall 20	66.4	69.8
Spring 21	74.8	72.7

The trend shows higher retention in spring and lower in the fall. The factors seem of a global nature.

Further details on enrolment, retention and success by gender and ethnicity are given below.

Enrollment, retention and success in percent by gender:

Gender	18-19			19-20			20-21		
	Enrollment	Retention	Success	Enrollment	Retention	Success	Enrollment	Retention	Success
Male	42.6	78	69	40.8	84	75	38.2	83	73
Female	55.4	83	76	57.1	81	75	58.8	82	74

Enrollment, retention and success by ethnicity in percent:

Ethnicity	18-19			19-20			20-21		
	Enrollment	Retention	Success	Enrollment	Retention	Success	Enrollment	Retention	Success
Asian	11.9	86	80	13.8	89	83	18.0	91	88
Black	1.8	NA	NA	1.4	NA	NA	2.5	75	65
Filipino	5.3	81	81	7.8	92	90	7.7	81	78
Hisp./Latx.	41.2	75	63	42.2	76	63	40.4	78	65
White	28.3	87	83	24.3	88	85	20.9	88	79

The above data indicates that the enrollment of women is between 55-60% while that of men is between 38-42%. This is the typical percent distribution by gender observed in the chemistry department.

Regarding ethnicity, we have experienced a substantial increase in the enrollment of Asian students. A minor increase in the enrollment of Black students, and a somewhat larger enrollment increase of Filipino students. The enrollment of Hispanic/Latinix students gravitates at around 41% while the enrollment of White students has declined by 4% each year.

Important to note that, although Hispanic/Latinix students make up the larger ethnic group in the department, along with black students show the least percent on retention and success. Refer to section 8B for additional information.

8B. Student Equity: The student equity gap impact trends on access, retention, and completion of the Chemistry Department mirrors the equity gap trends of the College as a whole for all groups: gender, race/ethnicity, age, disability, first generation, veteran, foster youth, low income. The most significant equity gap is observed in the retention and success of Hispanic/Latinx and Black students. More time is needed to fully analyze every group and every teaching modality to create several line graphs or bar charts that would show trends that could help the design of targeted intervention, especially since information about ethnicity, disability, veteran status, etc. is not available to instructors for the semester until after it has concluded. As a consequence, lesson plan modifications, academic remediation, appropriate student services referrals, etc. are delayed.

The department strategies we use to minimize the achievement gap of our students is in the form of a wholistic approach:

1. Send information about students services before classes start, including academic, financial aid, food bank, EOPS, etc.
2. Go over student services and where to go to gain access during the first week of classes.
3. Encourage all students to take advantage of the STEM Center and the Learning Center tutoring in Reading/ Writing/ Math/ Chemistry
4. Offer no cost or reduced cost textbooks and lab manuals when possible.
5. Participate in the Bookstore Inclusive Access Program.
6. Design in house experiments that can be shared at no cost over the Learning Management System.
7. Make computers available for use by all students in the laboratory.
8. Work closely with the DRC office to to provide all recommended accommodations.
9. Direct students to the Counseling Center for academic advising regarding educational goals.
10. One-on-one referrals to the appropriate students services after either observing unusual behavior or learning from unusual circumstances directly from students.
11. Monitor student's performance, offer individualized assistance, and remind them of available resources on campus.
12. Submit CARES reports when appropriate.
13. Submit all requested progress reports to programs on campus to identify students at risk and how to provide support.

8C. Completion - Success Online: Although the data packet left out CHEM 192 and CHEM 231, the data for the rest of the courses shows a reasonable trend. The enrollment and % completion increased in the last three years. This is a natural effect of moving to online delivery modality, which increased access, and getting better at this modality with increased exposure.

Chemistry Department

Academic Year	enrollment	% completion
2018-19	121	52.5
2019-20	228	65.2
2020-21	464	77.0

We are cautiously optimistic about this increased percent success and plan to research different course offering schedules to continue to increase accessibility to our chemistry courses.

9A. SLO Assessment - Compliance: The chemistry department creates a three-year SLO assessment plan. Fulltime and adjunct faculty teaching the various courses collect the agreed upon data. The data is submitted to Jeanette Medina who inputs it in tracdat. The SLO data for all chemistry courses is current. No data is available for CHEM 114 since that course has never been offered.

9B. SLO Assessment - Impact: Analysis of CHEM 210 and CHEM 220 data continues to show difficulty decoding relevant information from word problems, connecting number meaning to physical meaning, and applying chemical concepts to related situations without seeing an example before.

Students in CHEM 231, 232 and 410 show deficiencies related to the technical and abstract nature of the subject matter. They require many hours of focus practice to get used to this type of critical reasoning problems.

We have tried STEM tutors, learning center tutors, Embedded Peer Leaders for CHEM 210 and 220 without much success. CHEM 410 has not had a tutor for several semesters. This is because students are not comfortable with the matter to take on the responsibility to teach others. CHEM 231 and CHEM 232 have the issue of being the last classes to take before transferring.

We are in great need of qualified individuals who can provide academic support to students inside and outside the classroom. Tutors and student peer leaders cannot really provide this specialized support. We need a person with, at least, an AS degree in chemistry.

10. PLO Assessment: Only 1-3 students complete a Chemistry major. Most Physical Science majors (either Chemistry or Physics) take Physics in their last semester at Canada. The direct method to assess PLOs in Chemistry is a capstone project in the second semester of organic chemistry. In this project, each student is given two unknowns. Each unknown is fully identified using

chemical and analytical instrumentation methods. Students submit a concise report to justify their sample identification. Students have been successful in completing this project. Thus demonstrating proficiency in the three Physical Sciences Program Student Learning Outcomes.

In Spring of 2020 and 2021, an alternative online project was given to students mimicking the capstone project online. Students watched videos of the required laboratory technics and anticipated laboratory results. They were provided with laboratory results scenarios for them to puzzle out the pieces to help them identify the corresponding unknown.

When we return to in-person labs, the qualified teaching assistant mentioned in 9B can support the chemistry staff in the preparation of the 50-60 unknown samples, and support students during the 2-3 weeks duration of the project by guiding through the proper laboratory procedures and the analysis of the gathered experimental evidence. It also requires dedicated chemicals and supplies. A dedicated budget to support the capstone project will be much appreciated.

Program Review Narrative Status: Complete

Goal Description: To ensure student access to the application of computers in the chemistry laboratory .

We would like to request a set of 35 laptops with Office suite software and a charging cart. These laptops will be used by all students in the laboratory to (1) collect data from our large inventory of Vernier laboratory probes via interfacing, (2) manipulate experimental data, (3) create excel spreadsheets and graphs , (4) create formal laboratory reports, (5) conduct virtual laboratory experiments when appropriate, etc. Additionally, having laptops available in the laboratory room facilitates access of all students to the technology to view content, closed captioned videos, annotated power points, and interactive activities. Furthermore, having laptops consistently in the laboratory for student use may reduce barriers for them to submit their online assignments if they can finish them in class.

Goal Status: 1 - New (PR)

Relevant Program Review Cycle: 2020-2021

Estimated Start Date: 08/14/2020

Estimated Completion Date:

Who's Responsible for this Goal?:

Please select the college goals with which your program goal aligns.: Student Completion/Success - Provide educational and student services programs that highlight inclusivity, diversity, and equity in their mission to help students meet their unique educational goals and minimize logistical and financial barriers to success.

Please select the college strategic initiatives with which your program goal aligns.:

Action Plans

2020-2021 - Routinely utilize computers to interface to chemical analytical instrumentation across the chemistry laboratory curriculum.

Assist students in learning how to manipulate technology.

Assist students in accessing course content and using technology.

Facilitate completing assignments such as online quizzes.

(Active)

Who's Responsible for Completing this Action Plan?: All Chemistry Instructors

Estimated Completion Date: Open ended

Resource Requests

We would like to request a set of 35 laptops with Office suite software and a charging cart. - Increased accessibility to technology that will be found in future places of employment will make our graduates more marketable.

Status: Not Funded - Inactive

Type of Resource: Information Technology

Cost: 85000

One-Time or Recurring Cost?: One-Time Cost

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Critical Question: How does this resource request support closing the equity gap?: NA

Critical Question: How does this resource request support Latinx and AANAPISI students?: NA

Resource Priority Ranking: Low Priority

Goal Description: To increase retention and completion of students of all groups by offering an ongoing qualified and reliable academic support and academic intervention.

Request for a Chemistry Instructional Aide i

Goal Status: 1 - New (PR)

Relevant Program Review Cycle: 2022-2023, 2023-2024, 2024-2025

Estimated Start Date: 08/16/2022

Estimated Completion Date: 05/26/2025

Who's Responsible for this Goal?: Chemistry Department

Please select the college goals with which your program goal aligns.: Student Completion/Success - Provide educational and student services programs that highlight inclusivity, diversity, and equity in their mission to help students meet their unique educational goals and minimize logistical and financial barriers to success.

Please select the college strategic initiatives with which your program goal aligns.: Improve Student Completion

Action Plans

2020-2021 - Submit a Physical Sciences laboratory/ Teaching Assistant new position request. (Active)

Who's Responsible for Completing this Action Plan?: The chemistry department

Estimated Completion Date: May 2020

Resource Requests

Chemistry Instructional Aide I - For many years, the chemistry department has faced the recurrent challenge to find student tutors. This has been exacerbated during distant education. We can cite several reasons but, the most evident by far, is the nature of the subject matter. Although many mathematical chemistry problems can be solved by following a set step-by-step mechanism, many more require an analysis of the problem that goes beyond what students have been introduced to in their time at Canada College. This is particularly observed in Organic Chemistry and in Chemistry for Health Science classes. We have tried Learning Center Tutors, STEM Center tutors, and Peer Leaders without much success. Students get extremely frustrated when they cannot find a tutor. We have no way to help. We believe this problem can be alleviated by having a dedicated Chemistry Instructional Aide I who is fully qualified to teach chemistry and fully qualified to help students through their laboratory experiments during laboratory sessions alongside with the teacher in the laboratory room.

Status: New Request - Active

Type of Resource: Instructional Personnel

Cost: 11500

One-Time or Recurring Cost?: Recurring Cost

Critical Question: How does this resource request support closing the equity gap?: By showing all students they matter and taking the time to answer their questions for as long as it takes, we make all students welcome and create a sense of community that fosters greater engagement by groups who might feel marginalized.

Critical Question: How does this resource request support Latinx and AANAPISI students?: Having a personal interaction on a day to day basis with someone who can also help students understand the subject matter and cares for them creates a sense of belonging and community leading to an overall increased academic performance.

Resource Priority Ranking: High Priority

Goal Description: To offer hands-on laboratory activities based on

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articulated laboratory curriculum to teach relevant technical skills and critical thinking skills in any offered instructional delivery modality.

Because of the abrupt transition to distance learning due to the outbreak of the COVID 19 pandemic, the faculty and staff in the chemistry department was faced with the challenge of teaching the laboratory component of all our courses while maintaining its transferability adequacy for students to gain acceptance into their transfer school of choice. We rushed to create "in-house laboratory kits" for students to conduct safe experiments at home that teach the same skills taught in a chemistry laboratory room. We would like to create a complete set of, fully tested, professionally written, fully compliant, and fully adaptable laboratory activities to accompany the "in-house laboratory kit" for each course taught in the department. These lab kits will be accessible to all students through the Canada bookstore.

Goal Status: 1 - New (PR)

Relevant Program Review Cycle: 2022-2023, 2023-2024, 2024-2025

Estimated Start Date: 08/15/2022

Estimated Completion Date: 05/26/2023

Who's Responsible for this Goal?: Chemistry Department Faculty, Staff, and Student assistant

Please select the college goals with which your program goal aligns.: Student Completion/Success - Provide educational and student services programs that highlight inclusivity, diversity, and equity in their mission to help students meet their unique educational goals and minimize logistical and financial barriers to success.

Please select the college strategic initiatives with which your program goal aligns.: Improve Student Completion

Resource Requests

Laboratory student assistant - The creation of the "in-house laboratory kits" is a time consuming project that requires repetitive actions such as counting small wooden blocks or cutting pieces of construction paper. Having costly chemistry personnel perform these tasks is not justified. One or two student assistants are ideal for these tasks. We are requesting 20 hours of help per week from one or two students. There is no technical qualification required, just the ability to follow directions and keep focused on task.

Status: New Request - Active

Type of Resource: Non-Instructional Personnel

Cost: 9600

One-Time or Recurring Cost?: Recurring Cost

Critical Question: How does this resource request support closing the equity gap?: In-house Chemistry laboratory kits assembled by a student assistant allow access to laboratory activities to all students, including those who cannot make it to campus and might not be able to sign up for chemistry classes. The laboratory kits can be mailed.

Critical Question: How does this resource request support Latinx and AANAPISI students?: In-house Chemistry laboratory kits assembled by a student assistant allow access to laboratory activities to all students, including those who cannot make it to campus and might not be able to sign up for chemistry classes. The laboratory kits can be mailed.

Resource Priority Ranking: High Priority

Seed funding for the completion of "in-house laboratory kits" - The laboratory kits consist of a long list of modified laboratory supplies found in regular laboratory rooms, including a handheld scale. These items were purchased with Chemistry Department budget in the academic year 2020-2021 at an estimated cost per student of: \$32.00 for CHEM 192; \$33.00 for CHEM 410; \$40.00 for CHEM 210, and \$50.00 for CHEM 220 (the cost varies depending on specialized supplies). Although the money invested is recovered from the sales of the kits, we pretty much exhausted the department's budget. There is no budget left to create the next semester's kit until the next academic year start. Additionally, now that we are going back to some percentage of face-to-face instruction, the chemistry department budget alone is not sufficient to fund both, the laboratory kits project and the regular laboratory. The seed funding will be used to fund the project without exhausting department budget. The following year cycle will be funded with the money recovered by the bookstore sales.

Status: New Request - Active

Type of Resource: Supplies (Items less than \$5000)

Cost: 9570

One-Time or Recurring Cost?: One-Time Cost

Critical Question: How does this resource request support closing the equity gap?: This resource allows access to laboratory

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activities to all students, especially students who cannot make it to campus and might not be able to sign up for chemistry classes. The laboratory kits can be mailed.

Critical Question: How does this resource request support Latinx and AANAPISI students?: Same answer than in above question: This resource allows access to laboratory activities to all students, especially students who cannot make it to campus and might not be able to sign up for chemistry classes. The laboratory kits can be mailed.

Resource Priority Ranking: High Priority