

2018-2019 Program Review Cycle



Instructional Programs

CAN Program Review (Instructional) - Chemistry (Odd Year)

Program Review Narratives

2018-2019

Instructional Program Review (IPR)

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Executive Summary

0. Executive Summary: The chemistry department provides educational opportunities for students to acquire discipline specific fundamental background and laboratory skills necessary to be successful in chemistry related fields. Analytical laboratory instrumentation such as Gas Chromatography (GC), Ultraviolet Spectroscopy (UV) and Infrared Spectroscopy (IR) is an integral part of the curriculum. Additional advanced instrumentation such as High Pressure Liquid Chromatography (HPLC) and Nuclear Magnetic Resonance (NMR) is used by Honors students and Independent Study (CHEM 695) students who conduct undergraduate research. However, we believe all instrumentation should be accessible to all students. The challenge stems from the lack of dedicated staff who can maintain the instruments and assist in curriculum implementation on an ongoing bases. This presents the opportunity to create a support staff position that can maintain the chemical instrumentation and coordinate the advance research laboratory programs. We continue to have the need for HPLC training of all the chemistry staff by a certified instructor. The opportunity to work with the Professional Development Director to coordinate that training as part of a Flex Day will be revisited. We will like to explore the opportunity to have a campus security officer to come to our classes on the first two weeks of each semester to explain the most current safety regulations, policies and procedures and emergency response protocols. The department is invested in the design of safer, environmentally friendlier and cost effective laboratory curriculum. This presents the opportunity to explore green chemistry resources, experiments using household materials and virtual labs as options. This will help to cut down the amount of hazardous materials used by students and the expense to properly dispose of them. The department will also continue efforts to improve retention and completion by working closely with the Counseling Department, the Learning Center and the STEM Center to identify ways to improve student support services. We plan to pilot a "just in time" intervention strategy in the form of weekly chemistry content specific workshops. Securing qualified tutors for chemistry classes has proven to be extremely difficult. Specifically for the Chemistry for Health Science, CHEM 410 and the Organic Chemistry sequence, CHEM 231 and CHEM 232. We are working with the STEM Center to identify strategies that would lead to hiring qualified tutors or to involve adjunct faculty in teaching relevant course content workshops. CHEM Jam, an intensive one-week program to prepare students for the first transferable college chemistry class has been offered the week before school starts since January of 2017. This program has not shown the expected outcome in terms of reaching a large group of students. We are working with the STEM Center, which currently supports this program, to find more successful alternatives to CHEM Jam. The Chemistry Department supports the Honors Transfer program by creating Honors contract opportunities for interested students. Additionally, Chemistry Faculty offers opportunities for laboratory based Independent Study Research via CHEM 695. We do so by utilizing the regular department's budget allocation. We would like to receive augmented allocation to support the scholarly work done to support students in the Honors program. The Chemistry Department is invested in equity and accessibility for all students. We will work to update the instructional content on Canvas following current accessibility guidelines. We will continue to work closely with the Disabled Students Center to provide the required accommodations to all qualified students. The Chemistry Department will start discussing our future CHEM 192 and CHEM 410 laboratory needs for when we occupy the second floor of building 18.

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: No curricular changes made in the period Spring 2017 to Fall 2018. 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, in the fall only; (5) Organic Chemistry II, CHEM 232, in the spring only; (6) Chemistry for Health Science, CHEM 410.

CHEM 192, CHEM 210, CHEM 231, CHEM 232 and CHEM 410 are active transferable courses.

Multiple sections of CHEM 210 are offered every semester, one of which is a double section. CHEM 220 and CHEM 410 are offered as a double section every semester. One section of CHEM 192 is offered every semester. CHEM 231 is offered in the Fall semester and CHEM 232 is offered in the Spring semester.

CHEM 192 is an optional preparatory course for the general chemistry sequence. It is a prerequisite for the Radiology Technology Program. It is also accepted as one of the Chemistry prerequisite at some Nursing schools.

CHEM 410 is a Chemistry prerequisite to transfer into Allied Health Programs.

The one year general chemistry sequence, CHEM 210 and CHEM 220 and the one year organic chemistry sequence are part of the core course preparation for the AS in Physical Sciences and Biological Sciences.

5A. Progress Report - IPC Feedback: Section 3. Community and Labor: Accreditation is current. No known impact on the program. We will establish a more efficient communication with appropriate college personnel to keep up to date on changes. Section 5A. Progress report: The list of recommendations is given along with the description of changes/responses.

Section 6A. Impact of Resource Application: Description of new resources' impact on the program is given in the corresponding section of this report.

Sections 7, 8A, 8B, Enrollment trends, access and completions, completion-success online: Possible changes that could be implemented are suggested.

Section 9A. SLO Assessment - Compliance: Evidence of planned assessment and timeline given in the corresponding section of this report.

Section 10. PLO Assessment -Plan; Description of assessment plan is given in the corresponding section of this report.

5B. Progress Report - Prior Action Plans: 1. Adopt and Design Greener Laboratory Curriculum - We increased the number of experiments that use common household materials or recycled materials as well as the use of virtual labs, when appropriate. Examples: (1) Calculation of the density of table sugar solutions in CHEM 192; (2) Analysis of the starch and glucose content of bananas in CHEM 410; (3) Analysis of the phosphorus content in Miracle-grow; (4) Titration of vinegar in CHEM 220; (5) Polarimetry analysis of glucose in CHEM 231; (6) Extraction of the flavoring agent in nutmeg in CHEM 232. In addition, CHEM 220 uses virtual labs for students to gain practice before conducting titration experiments. This reduces the amount of chemicals used in the laboratory and disposed as hazardous waste.

2. Certified Hazmat/ Emergency Response District Instructor Visit to Labs - A Certified Hazmat individual from the District paid a visit to the stockroom. We still need pursue having an instructor visiting all our chemistry classes.

3. CHEM Jam Development - Chem Jam (an intensive six-hour per day preparatory program held for 5-day the week before the start of each regular semester, 6 has been offered since January of 2017. Although the program has given very positive results in the chemistry preparation of the students who attend, it has been low enrolled. We identified scheduling issues as the main reason. We are planning to explore a different delivery of the program by spacing it through the semester in the form of weekly workshops as opposed to compressing it to one week prior to the semester. This gives the opportunity to cover general topics such as: time management, study and test taking skills.

4. Chemistry General Education Course - Chemistry is not the first choice for students to fulfill their general education science course with lab. They prefer astronomy, oceanography, biology or environmental science. Some students interested in chemistry take CHEM 192 or CHEM 410. Given this fact, and the higher priority of other efforts, such as identifying and implementing greener laboratory experiments, we decided to postpone this objective.

5. Chemistry tutoring improvement - In collaboration with the STEM Center, we were successful in securing an EPIC study group leader for one section of CHEM 210 and the Organic Chemistry sequence. These study session supplement office hours. Students have more opportunities to seek help outside of the classroom at times convenient to them and in a collaborative environment. EPIC study sessions has not only helped students academically but also has been the catalyst for discussions that promote deeper level of engagement and networking. We are exploring the opportunity to have one EPIC study leader for the general chemistry class as a whole as opposed to just for one section. This will increase the academic support for all students.

6. Equipment, technology and facilities request for Chemistry - The Chemistry Department is thankful for getting our 2016-17 equipment and technology requests approved. It has helped the program's effectiveness and efficiency. Students do not need to

wait in line to use the instrument. There is time for meaningful discussion with other students and the instructor. Students get increased hands-on training on analytical instrumentation they will find at their transfer institutions setting them up for increased success. See section 6A. for additional details on the impact of resource applications.

7. High Pressure Liquid Chromatography Training. Roslind Young made several unsuccessful attempts to have this training as part of one of the 2017 Flex Day activities for the science faculty. It might not be appropriate due to the possible low attendance. We communicated with the Perkin Elmer representative to get a quote for this service. If the price is reasonable and to make the investment cost effective, we will seek funding to have a workshop opened to the chemistry students and faculty.

8. Hire staff to support the Chemical Analytical Instrumentation Inventory and oversee the Honors Laboratory Research Program - This effort was not supported by the Dean of Science and Technology since there were other more pressing needs for the Division at the time. We plan to explore this opportunity again in the Fall of 2019, especially since we envision this position to help coordinate the relocation of CHEM 192 and CHEM 410 laboratories to the vacant laboratory spaces on the second floor of building 18 once the Biology and Radiology Technology departments move to the new science building.

9. Increase communication with the counseling department - ongoing effort. Although effective sporadic communication occurs on a per needed bases, we are aware of the need for a more formalized interaction. Having up-to-date information on curricular changes and program changes will help students be on track and transfer on time. Having students enrolled in the right classes helps instructors designed more advanced relevant experiences as opposed to spend time helping students catch up.

6A. Impact of Resource Applications: Equipment approved in the 2016-17 cycle:

1. Eight Melt-Temps melting point apparatus are impacting a maximum of 150 students in CHEM 210, 60 students in CHEM 410 and 30 students in CHEM 231 and 30 students in CHEM 232. per semester depending on enrollment. They provide a safer, more user friendly and cost effective way to take melting points.

2. Ten Spectronic 20+ are impacting a maximum of 150 students in CHEM 210 and 60 in CHEM 220 per semester depending on enrollment. These are robust instruments used to teach the fundamentals of light and matter interaction. This fundamental concept is used in other spectroscopic techniques in organic chemistry.

3. Four portable Gas Chromatography instruments (GC) are impacting 30 students in CHEM 231 and 30 students in CHEM 232. Students can determine the success of their reactions quickly at their own pace and at their bench tops. These portable GCs avoid the use of flammable/explosive gases.

4. Centrifuges are impacting 60 students enrolled in CHEM 410 per semester. They have increased the efficiency of the lab by three fold at least. In the glucose and starch content of bananas for example, students could only do the analysis of one sample in the lab period. After we received the centrifuges, students can perform the analysis of three banana samples in the same time period. Additionally, they do not have to share data making the results more reliable

Equipment approved in the 2017-2018 cycle

1. Water baths are impacting 60 students in CHEM 220 and 60 students in CHEM 410 per semester. They use these baths for temperature controlled equilibrium constant and thermodynamics analysis of borax; synthesis of aspirin and oil of winter green; and the study of the effect of temperature on the catalytic actions of enzymes. The chemistry program gets also impacted by providing the opportunity to develop more advanced lab curriculum.

2. Polarimeters are impacting 30 students enrolled in CHEM 231 and 30 students enrolled in CHEM 232. They can explore structural features of organic molecules that lead to changes in light rotation. They can also monitor the stereochemistry of chemical reactions. We could only do this by watching videos before.

3. pH electrodes for Vernier are impacting 60 students enrolled in CHEM 220 per semester. They use this equipment constantly during the semester. These new electrodes replaced sluggish old electrodes that gave inaccurate results and proved to be frustrating for students taking away from the intended instructional content of the experiments. It positively impacts the program since they reduce the amount of chemicals and hazardous waste needed to repeat the experiments with the old electrodes.

4. Single channel volume adjustable pipettors are impacting 150 students in CHEM 210 and 60 students in CHEM 220 per semester. These pipettors allow for accurate and reproducible liquid transfer required for titration experiments. Students are often given unknowns to analyze and evaluation is based on their identification of the unknowns. Inaccurate pipettors lead to

faulty results. These pipettors help instructors be sure they are assigning fair grades to students that are based on students' performance and not on equipment performance.

6B. Impact of Staffing Changes: Not applicable

Current State of the Program

7. Enrollment Trends: The Fall 2015 to Spring 2018 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 consistent Load higher than 500 and a fill rate of 90% and higher. 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 2015	501	90.3	475	82.4
Fall 2016	549	97.3	483	83.2
Fall 2017	526	92.7	475	83.2
Spring 16	539	92.0	484	83.1
Spring 17	564	102.9	474	80.8
Spring 18	585	99.6	466	80.4

Fall 2015 to Spring 2018 Chemistry Department Productivity (Load) per semester by course

Course	Fall 2015	Fall 2016	Fall 2017	Spring 2016	Spring 2017	Spring 2018
CHEM 192	474	485	400	629	433	433
CHEM 210	503	589	579	483	560	596
CHEM 220	525	536	568	579	686	696
CHEM 231	485	531	485	NA	NA	NA
CHEM 232	NA	NA	NA	485	537	467
CHEM 410	525	533	433	500	500	679

The Chemistry Department shows high productivity in classes that offer double lecture with split lab sections: CHEM 210, CHEM 220 and CHEM 410. All courses have a maximum laboratory limit enrollment of 30 students in compliance with OSHA regulations. This limitation has a significant impact on the productivity of CHEM 192, 231 and 232 which are taught as regular single section. CHEM 192, 231 and 232 do not show sufficient enrollment to justify a double section.

We are starting to explore online delivery options. Fully online CHEM 210 will be piloted in Spring of 2019.

8-A. Access & Completion: According to the 2017-2018 Equity Supplement Gap Analysis, Hispanic students are experiencing an equity gap in the Chemistry courses completion rate. Furthermore, the course completion gap for Hispanic males is 4.5 times greater than the course completion gap for Hispanic females. To address this gap, it is necessary to identify the cause of it. Possible causes are lack of English and/ or Math proficiency as well as lack of adequate study skills. To address these gaps, the Chemistry Department will pilot an intervention strategy in the spring of 2019. This program will be in the form of a weekly optional workshop conducted by Chemistry Faculty on a rotating bases to introduce time management, study strategies, test taking strategies, and discipline content. We will work on creating accessible content on Canvas to support all types of learners. We will make computers available to students in laboratory sections to complete online assignments and have the opportunity to receive technical support. The need for qualified staff, technology instructional support for faculty and computers for students was identified.

8-B. Completion - Success Online: We currently do not offer online courses. However, we will pilot a fully online General Chemistry I class (CHEM 210) in Spring of 2019.

9A. SLO Assessment - Compliance: Yes. A three-year SLO assessment plan was submitted to the SLO Coordinator, Jessica Kaven. 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. We agreed to assess the all SLOs for all our courses in Fall 2018.

9B. SLO Assessment - Impact: Conversations about SLO results pointed out the need to give students additional practice opportunities in certain laboratory techniques. A titration virtual lab is now performed before having students perform a live titration lab. Analysis of CHEM 192 SLO results indicated that students had a difficult time understanding the particulate nature of matter, a concept that is crucial to understand chemistry. A University of Colorado PHet Interactive animation about states of matter is now shown to students early in the semester. Students have shown a better understanding of chemical concepts. Analysis of CHEM 210 data indicated that students have 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. We worked with the STEM center to get dedicated student support by an EPIC study group leader for one of the

sections of that class. Conversations with the STEM center are undergoing to maximize the EPIC leader support in a more effective format. We are considering to have an all-sections EPIC leader. Students from any CHEM 210 section or teacher can attend the same study group sessions. Analysis of CHEM 410 data indicates that students have difficulty with nomenclature. Element and ion Bingo is being used to help understand this concept. Analysis of the CHEM 231 data showed students have difficulty drawing reaction mechanisms. An EPIC study group leader was assigned to this class. The instructor and the EPIC leader discuss the content to be covered per week. This has resulted in a positive impact on the performance of the students. Support to purchase additional Bingo sets and to expand the number of EPIC leaders to support of all the chemistry classes will impact approximately 300 students per semester. A particular area of need is tutoring for CHEM 410. Students who complete this course are not comfortable to be instructors or transfer. A more consistent and effective option could be to have an adjunct faculty hold dedicated CHEM 410 study session at the Learning Center.

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.

This project requires a great deal of preparation time and student support during the 2-3 weeks duration of the project. It also requires chemicals and supplies. We could use staff help and dedicated budget to support the capstone project.

Looking Ahead

11. Program Planning: Objective 1

To design the "Just in Time" workshop series. This will be a series of chemistry content specific and study strategies workshops aimed to support students successfully complete CHEM 210. CHEM 210 is a required course for all science majors. This series of workshops will be piloted with the support of the STEM Center and Federal grant money. This series of workshops is intended to replace CHEM Jam for a more continuous semester-long academic support. It will be open to all students and taught by adjunct faculty who teach CHEM 210 on a rotating bases. Students will have increased opportunity to interact with faculty and classmates in a more informal setting. Timeline: (1) Selection of workshop topics, set up workshop dates and hire adjunct faculty, start implementation phase in Fall 2018 - Spring 2019. (2) Assess performance and make recommendations for program improvement in May 2019. (3) Implement modifications and second program iteration in Fall 2019. (4) Program assessment in Spring 2020. Needed resources: (1) Compensation for adjunct faculty and student facilitators at hourly rate (covered by a STEM Federal grant during the exploratory face in 2019); (2) Physical location to hold the workshops. (3) STEM Center and Learning Center administrative and academic support.

Objective 2

To increase student retention and completion by creating accessible course content in Canvas. Jeanette Medina and Nick DeMello are currently enrolled in the Quality Online Learning and Teaching, QOLT, workgroup. We are learning strategies to effectively create course content to reach all types of learners. The Chemistry Department is particularly interesting in exploring the possibility of creating a series of laboratory safety and laboratory protocol safety closed captioned videos students can access at any time. Timeline: (1) Faculty and support staff training will be ongoing starting in Spring 2019. (2) Selection of video topics in Spring of 2019. (3) Create a safety video and one additional video per course in Spring 2019. (3) Use videos in classes in Fall 2019. (4) Evaluate the impact of using the videos on the courses and the program and make recommendation for improvement in Spring 2020. Needed resources: Faculty training and support from the College's Instructional Technologist; program effectiveness research support from PRIE.

Objective 3

To increase the program effectiveness by exploring distance education delivery methods, either hybrid or fully online. This will enable students, who have transportation challenges or other commitments that prevent them from coming to the College, complete required transferable courses. Timeline: (1) Exploratory phase - One section of CHEM 210 will be offered in Spring 2019 as a fully online course on exploratory terms. (2) Online CHEM 210 performance assessment at the end of Spring 2019 to determine the viability of the online delivery method for chemistry courses. (3) Develop online curriculum for either CHEM 192 or CHEM 410 pending the online CHEM 210 performance assessment and on a course needs assessment in Fall 2019. Needed resources: (1) Distance Education training and support from the College's DE coordinator; (2) Program effectiveness research support from PRIE; (3) potential support for faculty release time to design accessible and equitable distance education course content.

Objective 4

To standardize the CHEM 210 laboratory curriculum and create a process to submit, review and approve laboratory curriculum changes. This will help all sections of this class taught in any give semester by different instructors to be synchronized. Synchronized sections will facilitate the coordination of academic student support in the form of EPIC lead study group sessions

or faculty lead weekly workshops. It will also make it easier for students to get help from instructors when it is convenient for their schedules since they will all be working on the same course material at the same time. Therefore increasing accessibility and creating a collaborative group learning environment. Timeline: (1) planning and writing laboratories in Spring 2019; (2) Piloting the new laboratory experiment sequence in Fall 2019; (3) Assessment in Spring of 2020. Needed resources: (1) Faculty time off; (2) Compensation for adjunct faculty at hourly rate.

Objective 5

To update the laboratory curriculum across the Department by incorporating approved equipment from the submitted resource request. This will include CHEM 192, CHEM 210, CHEM 220, CHEM 231, CHEM 232, CHEM 410, CHEM 695 and Honors contracts. The timeline will be depend on the approved equipment and when we receive it. We are also planning to submit a request for a part-time Physical Sciences Technician who can maintain the analytical chemical instrumentation, assist in developing laboratory curriculum, coordinate the implementation of the laboratory curriculum and assist in the administration of the independent laboratory research component of CHEM 695 and Honors contracts. Needed resources: Budget allocation for new equipment and new position.

Program Review Narrative Status: Complete

Objective: To increase student retention and completion by creating accessible course content in Canvas.

We would like to purchase a set of 35 iPad Wi-Fi 32 GB including a charging cart and a 3-year AppleCare to help decrease the Department's identified Equity Gap. We believe that facilitating access to the technology to view content, such closed captioned videos, annotated power points, and interactive activities, as well as facilitating the submission of online assignments during class time, might eliminate barriers for students. Additionally, the instructors will be an immediate and constant source of technical support. This can have a significant impact in the retention and completion of Hispanic students. Moreover, having sufficient iPads to hand out to all students per class will facilitate the completion of faculty performance evaluations student questionnaires in a timely manner.

Objective Status: 1 - New (PR)

Objective Year: 2019-2020

Estimated Start Date: 08/14/2019

Estimated Completion Date:

Please select the college goals with which this objective 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 district goals with which this objective aligns.: District Goal #1 - Develop and Strengthen Educational Offerings, Interventions, and Support Programs that Increase Student Access & Success, District Goal #3 - Increase Program Delivery Options, Including the Expanded Use of Instructional Technology, to Support Student Learning and Success

Action Plans

2018-2019 - Hand out iPads to all students during laboratory sessions to access Canvas content relevant to complete the activity of the day.

Assist students in learning how to manipulate technology.

Assist students in accessing course content and using technology.

Facilitate completing assignments such as online quizzes.

Utilize the iPads to facilitate the completion of student questionnaires during the process of Faculty evaluations

(Active)

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

Estimated Completion Date: Open ended

Resource Requests

35 iPad Wi-Fi 32 GB - Space Gray, a Bretford PowerSync + Cart 40 for iPad, a 3-Year AppleCare package for 35 units, 35 JAMF PRO 1YR IOS 1K-2499 PERP. The quote was approved by the IT Department. - If the Hispanic students Equity gap observed in the Chemistry Department is reduced, lack of readily available technology at home might be one of the causes.

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Type of Resource: Information Technology
Cost: 18000

Objective: Update the laboratory curriculum across the Department

Allow students a greater opportunity to learn from individualized hands-on experiences by manipulating laboratory equipment as opposed to share data for lack of sufficient laboratory equipment. This will have a significant impact on personal success.

Objective Status: 1 - New (PR)

Objective Year: 2019-2020

Estimated Start Date: 08/14/2019

Estimated Completion Date:

Please select the college goals with which this objective 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 district goals with which this objective aligns.: District Goal #1 - Develop and Strengthen Educational Offerings, Interventions, and Support Programs that Increase Student Access & Success

Action Plans

2018-2019 - Introduce students to laboratory equipment and analytical instrumentation they will use at transfer schools and at places of employment.

Introduce state of the art portable analytical Gas Chromatography/ Mass Spectrometry instrumentation with applications in water monitoring, gas emissions, fuel formulations and a variety of other field applications.

Acquire new equipment to augment the current capability to allow students a greater opportunity for independent learning and personal growth.

Design new experiments for updated use of equipment across the chemistry curriculum, including independent research and Honors work.

(Active)

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

Estimated Completion Date: Open ended

Resource Requests

35 each (enough for one lab section) (1) 50 mL burets, (2) double vinylized buret clamp, (3) adjustable --prong clamps, (4) clamp ring set, (5) 18 mm clamp holder talon. - Each student will have the opportunity to conduct his/her own experiment. They will learn at their own pace and in their own learning style. Please note that the listed 5 items go together as a set.

Type of Resource: Equipment (Items Over \$5000)

Cost: 7800

35 each (enough for one laboratory section) (1) 60 mL separatory funnels and (2) 125 mL separatory funnels - These are common equipment found in typical organic chemistry, biology, biotechnology and pharmaceutical research laboratories. Students will be equipped with marketable laboratory skills that can be translated to employment.

Type of Resource: Equipment (Items Over \$5000)

Cost: 7000

KD Scientific Centrifan PE-T Small Volume Evaporator and rotor for 8 x 4 mL vials. - A rotatory evaporator is a common piece of equipment in any organic chemistry lab. Up to now, instruments of this kind had the disadvantage of needing circulating water, require large amounts of solvents that need to be disposed as hazardous waste and work under pressurized environment posing an elevated danger of exploding glass. These are several of the reasons we never requested one. Fortunately, the instrument we are requesting is a revolutionary design with a small foot print that does not require pressure, does not use recirculating water and only uses small amounts of solvent. This is an ideal instrument to have in a teaching environment, especially since it is designed for

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the microscale labs we have to reduce waste and environmental impact.

Type of Resource: Equipment (Items Over \$5000)

Cost: 8500

Sartorius SSECURA 21021S Topload Weighing Balance - Students get evaluated and assigned grades based on their determination of quantitative measures of unknowns. For example, determining the percent composition of a mixture of three components. This balance is reliable and sensitive. It will ensure an accurate sample preparation for a fair and equitable evaluation of all students.

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

Cost: 3000

Torion T-9 portable Gas Chromatograph/ Mass Spectrometer - Self contained instrument that will have the same capability of our large foot print instrument but will eliminate the need for storing large gas tanks in the laboratory, especially hydrogen.

Type of Resource: Equipment (Items Over \$5000)

Cost: 95000

Objective: Request for a part-time Physical Sciences Technician

We are planning to submit a request for a part-time Physical Sciences Technician who can maintain the analytical chemical instrumentation, assist in developing laboratory curriculum, coordinate the implementation of the laboratory curriculum and assist in the administration of the independent laboratory research component of CHEM 695 and Honors contracts.

Objective Status: 1 - New (PR)

Objective Year: 2019-2020

Estimated Start Date: 08/14/2019

Estimated Completion Date: 12/20/2019

Please select the college goals with which this objective 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 district goals with which this objective aligns.: District Goal #1 - Develop and Strengthen Educational Offerings, Interventions, and Support Programs that Increase Student Access & Success

Action Plans

2018-2019 - Submit a new position request for a part-time Physical Sciences Technician in Spring of 2019 (Active)

Who's Responsible for Completing this Action Plan?: Jeanette Medina

Estimated Completion Date: May 2019

Objective: Chemistry Department Budget adjustment

Chemistry Department expenditures continue to increase due to the increase of the price of common materials and supplies used for laboratory experiments. Additionally, we would like to implement our equipment replacement schedule and request a repair budget for instruments that can be fixed instead of replaced.

We estimate \$1,500 for repair /replacement

We request a 15% budget increase to our annual department budget to cover price increases, as well as to support the UC-Berkeley chemistry laboratory expenses.

Objective Status: 2 - Continuing (PR)

Objective Year: 2019-2020

Estimated Start Date: 08/14/2019

Estimated Completion Date:

Please select the college goals with which this objective aligns.: Organizational Development - Focus institutional resources on the structures, processes, and practices that invest in a diverse student population and prioritize and promote equitable, inclusive, and

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transformative learning.

Please select the district goals with which this objective aligns.: District Goal #4 - Ensure Necessary Resources Are Available To Implement This Strategic Plan Through Sound Fiscal Planning And Management Of Allocations. Protect Community-supported Status And Undertake The Development Of Innovative Sources Of Revenue That Support Educational Programs Beyond That Which Is Available From Community And State Allocations.

Action Plans

2018-2019 - Plan for price increases on common stock supplies to run laboratory experiments.
Establish an ongoing scheduled instrument replacement program.
Have a Departmental laboratory instrument repair budget.
(Active)

Who's Responsible for Completing this Action Plan?: Roslind Young
Jeanette Medina
Estimated Completion Date: ongoing

Resource Requests

Repair/ instrument replacement budget: \$ 1,500
15% increase Departmental budget: \$1,800

Type of Resource: Other
Cost: 2300