



Welcome to Program Review

College of Alameda - 2019

CHEM - Instruction

Program Review

Program Overview

Please verify the mission statement for your program. If your program has not created a mission statement, provide details on how your program supports and contributes to the College mission.

COA chemistry offers general chemistry (Chem 1A/1B) for science majors, introductory general chemistry (Chem 30A/30B) for allied-health career track students. COA chemistry is a small program with one full time and five part time instructors. One chemistry laboratory (with four chemical hoods) exists which can reasonably accommodate 25 students and is currently used for all chemistry courses offered at COA. The COA chemistry program had been neglected for many years prior to Fall 2005 resulting in a substandard classroom/laboratory environment, serious safety issues in the lab, and a tendency to attract unprepared students looking for an easy grade. Efforts to address such issues are ongoing but have historically been hindered by the high administrator turnover rate, union protection of chronically unqualified staff, and an unacceptably low FT/PT ratio. Demand for chemistry courses is high since these are prerequisite for almost any career in the sciences or health care industry.

Program Total Faculty and/or Staff

Full Time

Eric Peter Olds

Part Time

Chis Dudzik
Jacob Schlegel
Eileen Clifford
Alex Madonik
Dorota Sawicka
Jason Lau

The Program Goals below are from your most recent Program Review or APU. If none are listed, please add your most recent program goals. Then, indicate the status of this goal, and which College and District goal your program goal aligns to. If your goal has been completed, please answer the follow up question regarding how you measured the achievement of this goal.

Refurbish and bring up to satisfactory standards the abandoned D-109 main campus chemistry lab plus D-105 stockroom area. This includes reinstallation of hoods, laboratory furniture, and a complete plumbing upgrade. Similarly refurbish and bring up to satisfactory standards for demos the D-119 lecturn (gas and water) and D-119 chem demo prep area. 9-26-2017 four hoods and bench faucets have been reinstalled. Another hood is needed for the Chem/Demo prep area in addition to shelving and lab bench re- installation. Dry chemical storage area also needs earthquake-proof shelving replacement.

Status

In-Progress

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?

College Goal

Reduce loss of students prior to start of classes

District Goal

Advance Student Access, Equity, and Success

Integrate chemistry with a new earth sciences program that embraces chemistry of rocks and minerals.

Status

In-Progress

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?

College Goal

Advance CoA teaching and learning

District Goal

Build Programs of Distinction

Obtain an electron microscope with an EDS elemental analysis attachment for shared use between chemistry, physics, biology, and earth sciences. Hire a FT faculty member whose responsibilities include instruction on using and maintenance of this facility.

Status

In-Progress

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?

College Goal

Advance CoA teaching and learning

District Goal

Build Programs of Distinction

Coordinate with COA's CTE dean (and SEM manufacturer) to develop a SEM operator plus maintenance training program with this equipment.

Status

In-Progress

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?

College Goal

Advance CoA teaching and learning

District Goal

Build Programs of Distinction

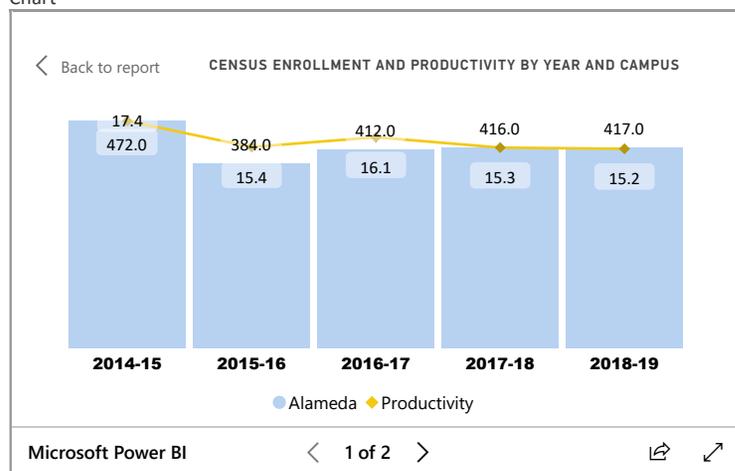
Describe your current utilization of facilities, including labs and other space

One chemistry laboratory, Room 150 at the Science annex, (with four chemical hoods) exists which can reasonably accommodate 25 students and is currently used for all chemistry courses offered at COA. Several Science Annex rooms including 110 and 160 are used for chemistry classes. Room D-119 on the main campus is also used for Chem 1A/1B lectures and chemistry demonstrations. The previously abandoned, but partially refurbished D-109 chemistry lab is still not practically functional.

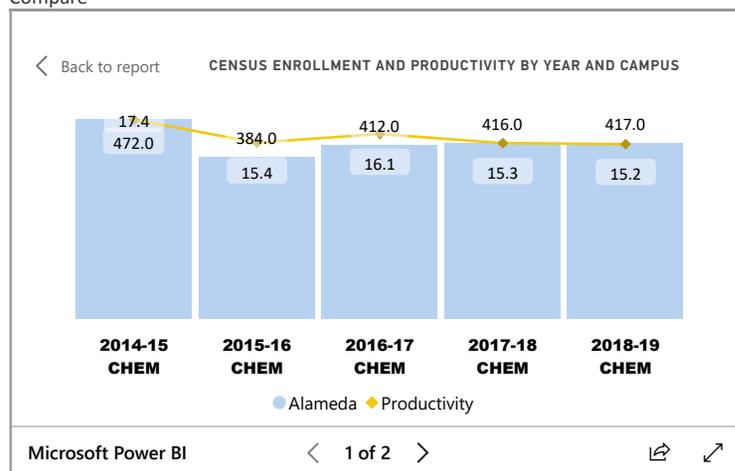
Enrollment Trends

College Level - Program and Department comparison

Chart



Compare



Using the Enrollment Trends dashboard filter to your college and subject area. Reflect on the enrollment trends over the past three years. How does the enrollment trend for your program compare to the overall college trend? What factors could be attributing to this trend?

Enrollment declined in 2015-16 and more recently in 2018-19. These declines mirror the trend in general chemistry Chem 1A/1B and in 2018-19 are accentuated by the repeated cancellation of introductory organic and biochemistry Chem 30B. It is to be noted that Chem 1A/1B and Chem 30B require the most sophisticated laboratory experiments. So, the most recent decline may be related to administrative banning of high-quality student employees from the lab during 2018-19. These students, when present, compensated for the historically chronic and egregious incompetence in chemistry laboratory management. It is to be reiterated that COA laboratories are still not compliant with regulatory code. For example there is no chemical hygiene officer, no compliant hazardous materials inventory system, and in general no chemical hygiene plan implementation. COA management and Peralta risk management are constantly reminded of these issues, but are exceedingly slow to affect their mitigation.

Describe effective and innovative teaching strategies used by faculty to increase student learning and engagement.

COA chemistry faculty are experts at delivering quality instruction in spite of the adversity characterized by chronic infrastructural issues and administrative instability. All chemistry classes are currently face-to-face, with face-to-face faculty office hours and face-to-face faculty laboratory supervision. COA chemistry students benefit from face-to-face faculty attention and low student/faculty ratios compared with large universities. Faculty also make use of CANVAS, email, and online homework platforms tailored to their courses, to monitor student progress in real-time.

How is technology used by the discipline, department?

COA chemistry laboratory infrastructure is substandard at best, with faculty doing their best to compensate. Timely "smart classroom" upgrades and maintenance would be much appreciated. Infrastructure quality and maintenance seems to be a chronic Peralta wide problem. That said, faculty make good use of CANVAS, online homework systems, and email to enhance student access. Additionally plans to offer online and hybrid components are in the pipeline (submitted to curriculum committee etc.).

How does the discipline, department, or program maintain the integrity and consistency of academic standards with all methods of delivery, including face to face, hybrid, and Distance Education courses?

All COA chemistry courses use the corresponding American Chemical Society standardized exams as final exams. These exams allow the success of our students to be compared statistically with students nation-wide. In addition, automated post-exam item analysis for these exams allows instructors to gauge student weaknesses, thus incrementally improving topic delivery.

That said, presently there are no hybrid or "Distance Education" chemistry offerings at COA. Course online-upgrade proposals are in the pipeline, and to maintain standards, in-class final exams for these courses will continue to be the ACS standardized exams.

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Choose your Action

Improvement Actions

Curriculum

Please review your course outlines of record to determine if they have been updated or deactivated in the past three years. Use the pull-down menus to identify courses that still need updating or deactivation and specify when your department will update each one, within the next three years.

Name	Last updated date	Semester and Year	To be updated on	To be deactivated on
CHEM 030A - Introductory General ...	April, 28 2016 14:09:49	Semester Select Year...	2/1/2020	
CHEM 030B - Introductory Organic ...	August, 29 2016 15:54:28	Semester Select Year...	2/1/2020	

CHEM 001A - General Chemistry	April, 05 2018 16:01:40	Semester	
		Select Year...	
CHEM 001B - General Chemistry	October, 10 2016 10:45:51	Semester	2/1/2020
		Select Year...	
CHEM 049 - Independent Study in C...	January, 11 2019 16:51:18		
		Select Year...	

Please summarize your plans for curriculum improvement/development, including details on specific courses or programs you plan to improve/develop.

Chem 30A/30B and Chem 1B course outlines will be updated during the Spring 2020 semester. Chem 1A/1B online and hybrid options are currently being considered by the curriculum committee.

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Actions

Instruction - Assessment

Student Learning Outcomes Assessment

List your Student Learning Outcomes. SLOs are specific, measurable statements of what students will know, be able to do, or be able to demonstrate when they complete a course. An SLO focuses on specific knowledge, attitudes, or behaviors that students will demonstrate or possess as a result of instruction.

Course	Student Learning Outcomes (SLO)	Last date Assessed	Planned Assessment Date	Attachments
CHEM 030A - Introductory General Chemistry	Students comprehend the importance of quantitative measures, analyze problems using algebraic skills, and interpret the results.			

CHEM 030A - Introductory General Chemistry	Students describe, explain and analyze chemical and physical processes using atomic scale models or descriptions. Students apply these concepts to natural or biological phenomena.
CHEM 030A - Introductory General Chemistry	Students solve quantitative chemistry problems using dimensional analysis, while demonstrating clear reasoning. Students evaluate results to insure that they are physically reasonable.
CHEM 030B - Introductory Organic and Biochemistry	Understanding and solving qualitative problems in organic and biochemistry, reviewing answers for consistency, and indicating the necessary reasoning in each case. Facility at the level required for nursing and related biomedical careers.
CHEM 030B - Introductory Organic and Biochemistry	Qualitatively describe and explain various physical trends within families of organic molecules (melting and boiling points, solubility in water and in non-polar solvents, relative acidity, etc.). Facility at the level required for advancement to training programs in biochemistry, medicine, pharmacy, toxicology and related careers.
CHEM 030B - Introductory Organic and Biochemistry	Learning to safely perform individual chemistry experiments while accurately recording observations and data in a laboratory notebook. Acceptable laboratory reports require a legible analysis of results, a discussion of possible sources of error, and suggestions for improvement.

CHEM 001A - General Chemistry

Solve quantitative chemistry problems demonstrating clear reasoning, integrating multiple ideas in the problem solving process, and checking results to make sure they are physically reasonable.

CHEM 001A - General Chemistry

Describe and explain chemical concepts plus trends qualitatively. Use molecular scale models/descriptions to qualitatively explain laboratory scale physical and chemical properties.

CHEM 001A - General Chemistry

Safely carry out chemistry experiments in the lab, accurately recording observations and data in a laboratory notebook. Clearly report interpretations, analysis of results, and conclusions in laboratory reports.

CHEM 001B - General Chemistry

Solve quantitative chemistry problems demonstrating clear reasoning, integrating multiple ideas in the problem solving process, and checking results to make sure they are physically reasonable.

CHEM 001B - General Chemistry

Describe and explain chemical concepts plus trends qualitatively. Use molecular scale models/descriptions to qualitatively explain laboratory scale physical and chemical properties.

CHEM 001B - General Chemistry

Safely carry out chemistry experiments in the lab, accurately recording observations and data in a laboratory notebook. Clearly report interpretations, analysis of results, and conclusions in laboratory reports.

CHEM 049 - Independent Study in Chemistry

To be determined for specific independent study topic(s).

How has your department worked together on assessment? Provide examples on collaboration, leadership, planning exercises, and data analysis. What aspects of assessment work went especially well in your department and what improvements are most needed?

The Standardized ACS Exam is given as a final exam in all COA chemistry courses, allowing for statistical nation-wide comparison. COA Chem 1A/1B students typically score well above the national average.

What were the most important things your department learned from assessment? If implementation of your action plans resulted in better student learning and/or changes in curriculum, detail the results

ACS Exam item analysis is used by instructors to monitor and determine what chemistry topics need improved delivery or more instructional time and attention.

Give us an update on your Program Learning Outcomes (PLOs). A complete program assessment means all PLOs have been assessed for that program. Attach any evidence, i.e. reports from Task Stream or Curricunet Meta.

At COA Chemistry all instructors use the American Chemical Society standardized exams appropriate to their particular course. This allows objective comparison of COA student performance with the rest of the nation in chemistry.

Does your department participate in the assessment of multidisciplinary programs?

No

If Yes, Describe your department's participation and what you learned from the assessment of the program that was applicable to your own discipline.

Does your department participate in your college's Institutional Learning Outcomes (ILOs) assessment?

If Yes, Please describe your departments participation in assessing Institutional Learning Outcomes.**What support does your department need from administrators, assessment coordinators and/or your campus assessment committee to continue to make progress in assessment of outcomes and implementation of action plans?**

The FT/PT ratio in chemistry is 1/5 (one FT and 5 PT chemistry faculty members). This presents a burden on students, who frequently are taught by inexperienced instructors due to high PT turnover. And this presents a burden to the single FT faculty member who is charged with continually hiring and evaluating new PT faculty members. And this is unfair to long-serving high quality PT faculty members who deserve a full time job and look for it elsewhere.

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Action

Improvement Actions

Improvement Action

Action Item	Description	To be completed By	Responsible Person
Instructional quality and stability	Fix ridiculously low FT/PT ratio (1/5) with more FT stability. Improve student laboratory safety and hands-on experience.	5/20/2020	Dean, VPI, President, Chancellor

Resource Request

Personnel	Description/Justification	Estimated Annual Salary Costs	Estimated Annual Benefits Costs
Full-time Faculty	Two full-time chemistry faculty to teach Chem 1A/1B and Chem 30A/30B. The majority of courses is taught by part-time faculty. Students and faculty both deserve stability and the benefit of faculty experience and job security.	200000	60000

Total Costs
260000

Resource Request

Personnel	Classified Staff
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% Time	Description/Justification	Estimated Annual Salary Costs	Estimated Annual Benefits Costs
100	One Chemistry/Physics laboratory technician.	60000	30000
	<p>Establish and maintain regulatory compliance including: hazardous materials inventory implementation and maintenance, chemical hygiene plan implementation, both of which are typical chemical hygiene officer responsibilities. Safe storage, use and disposal of hazardous chemicals. Set up experiments, maintain equipment, improve and expand laboratory facilities, purchase chemicals, equipment and supplies. All of the above in close collaboration with and supervised by chemistry faculty.</p>		

Total Costs
90000

Resource Request

Personnel		Classified Staff	
% Time	Description/Justification	Estimated Annual Salary Costs	Estimated Annual Benefits Costs
75	One Instructional Assistant for general chemistry.	40000	30000
	<p>The current FT chemistry faculty would like to teach at least one outstanding former student how to teach, including the implementation of chemistry demos, lecturing, lab supervision and grading, etc. The activities would be in support of general chemistry lecture and lab.</p>		

Total Costs
70000

Resource Request

Personnel	Student Worker		
% Time	Description/Justification	Estimated Annual Salary Costs	Estimated Annual Benefits Costs
30	3-to 5 Chemistry Student Workers to assist faculty by: -tutoring students one-on-one -helping students in the lab -helping lab tech with lab setup and cleanup -help students during review and problem solving sessions. -help faculty with driving and field trip logistics	50000	0

Total Costs
50000

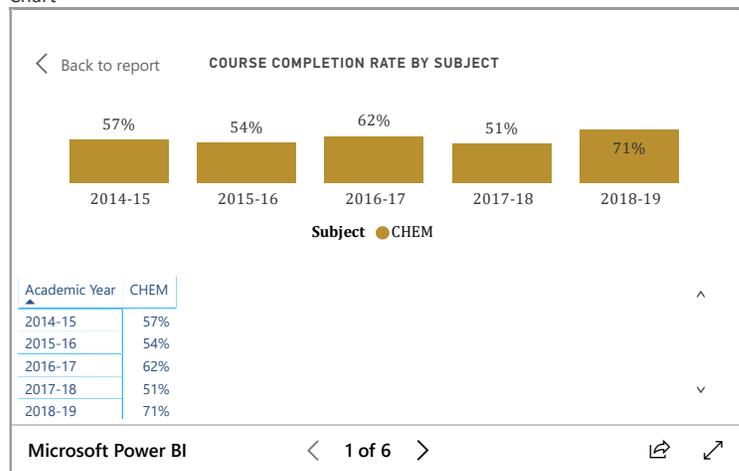
Resource Request

Facilities	Labs	
Description/Justification		Estimated Cost
Finish D-109 chem lab upgrade plus related space.		80000
COA is the only Peralta college with a single substandard chemistry lab.		

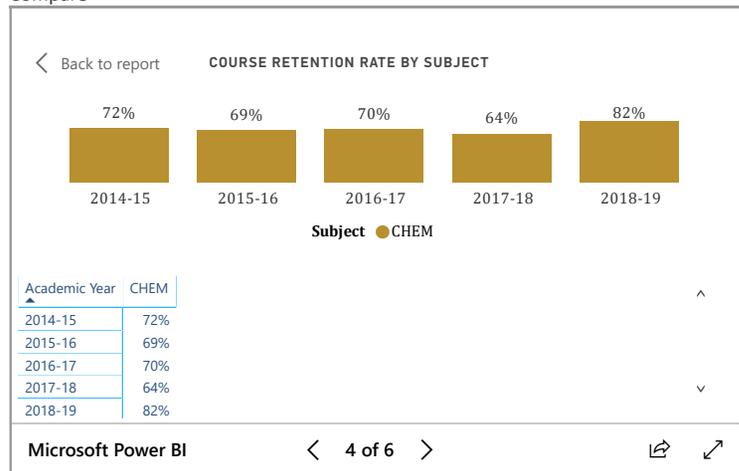
Course Completion

College Level - Program and Department comparison

Chart



Compare



Consider your course completion rates over the past three years (% of student who earned a grade of "C" or better).

Name	2016 - 17 Completion Rate (%)	2017 - 18 Completion Rate (%)	2018 - 19 Completion Rate (%)
CHEM 1A GENERAL CHEMISTRY	63	55	60
CHEM 1B GENERAL CHEMISTRY	65	52	76
CHEM 30A INTRO GENERAL CHEM	52	44	73

CHEM 30B INTRO ORGAN/BIOCHEM	77	90	
CHEM 49 I/S CHEMISTRY	100	100	100
CHEM 50 BEGINNING CHEMISTRY	62		

Use the filters on the top and right of the graphs to disaggregate your program or discipline data. When disaggregated, are there any groups whose course completion rate falls more than 3% points below the discipline average? If so, indicate yes and explain what your department is doing to address the disproportionate impact for the group.

Age Yes
 No

Ethnicity Yes
 No

American Indian and Black/African American are about 10% below average while Hispanic/Latino and Pacific Islander are 4% and 3% below average respectively.

Gender Yes
 No

Foster Youth Status Yes
 No

Disability Status Yes
 No

Low Income Status Yes
 No

Veteran Status Yes
 No

Consider your course completion rates over the past three years by mode of instruction. What do you observe?

How do the course completion rates for your program or discipline compare to your college's Institution-Set Standard for course completion?

Success rate for Chem 1A was 60% during Spring 2017, 58% in Fall 2017 and 44% in Spring 2018, roughly fluctuating around 60% for the past seven years. The Chem 1A success rate drop seen in Fall 2018 reflects a single course (statistics of small numbers) since the other Chem 1A was cancelled that semester. District-wide Chem 1A success rates have historically been around 50%, motivating implementation of the Chem 30A prerequisite in Fall 2018. Chem 1B success rate fluctuation may reflect ongoing prep/instruction issues with Chem 1B lab. The FT lab tech is incapable of prepping Chem 1B labs forcing us to repeatedly hire and train of students as part-time lab techs to carry out Chem 1B lab prep. This Spring 2019 semester, such a student has not been hired yet. Also, the high turnover rate for part time instructors adversely impacts the continuity of instruction, particularly in the lab which is, and has been, plagued with substandard management and infrastructure.

How do the department's Hybrid course completion rates compare to the college course completion standard?

N/A

Are there differences in course completion rates between face to face and Distance Education/hybrid courses? If so, how does the discipline, department or program deal with this situation? How do you assess the overall effectiveness of Distance Education/hybrid course?

N/A

Describe the course retention rates over the last three years. If your college has an Institution-Set Standard for course retention, how does your program or discipline course retention rates compare to the standard?

COA chemistry course completion rates fluctuate between about 50% (2017-18) and 70% (2018-19). This is significantly larger fluctuation than the other Peralta colleges which tend to have course completion rates steadily around 60%. The reason for COA's fluctuation could be related to the low FT/PT (1/5) ratio and resulting PT instructor instability. Popular and high-quality part-time instructors are frequently hired away to full time jobs at other colleges subsequent to being successfully trained at COA.

What has the discipline, department, or program done to improve course completion and retention rates?

Indeed, the primary reason for requesting quality full-time faculty and staff plus improved and expanded laboratory facilities (previous action items) is to improve student experience including completion and retention rates.

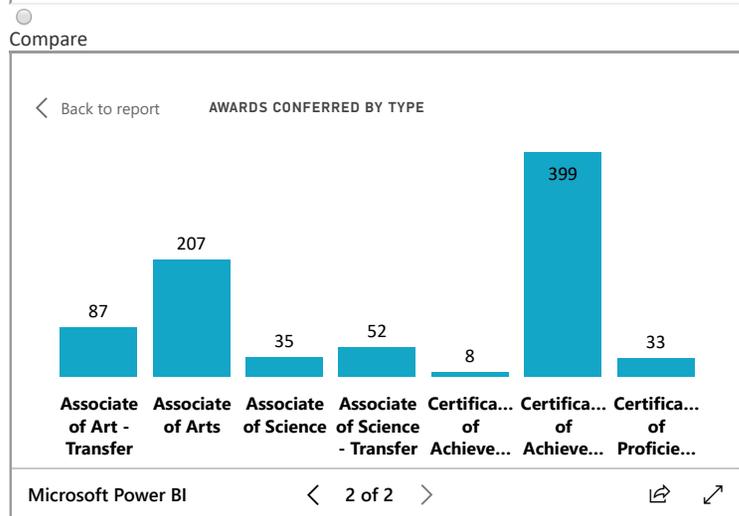
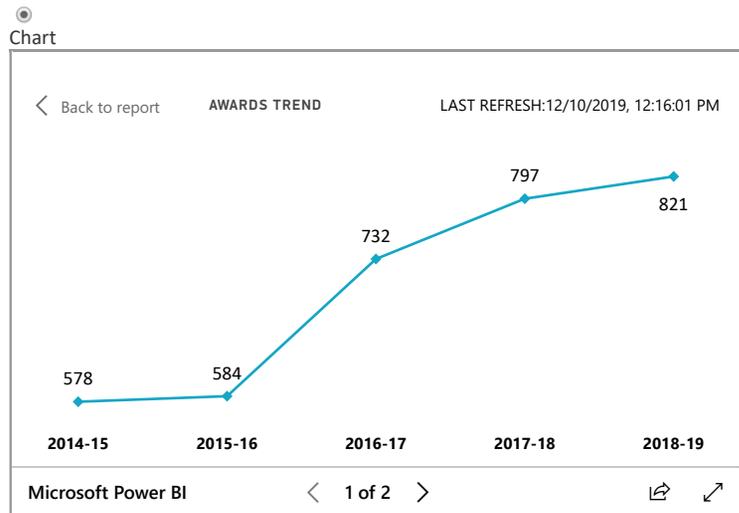
In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Actions

Choose your Action

Degrees and Certificates

College Level - Program and Department comparison



What has the discipline, department, or program done to improve the number of degrees and certificates awarded? Include the number of degrees and certificates awarded by year, for the past three years.

N/A As the only Peralta chemistry program that does not offer organic chemistry, i.e. the Chem12A/B sequence, we are not in a position to offer degrees.

Over the next 3 years, will you be focusing on increasing the number of degrees and certificates awarded?

No

What is planned for the next 3 years to increase the number of certificates and degrees awarded?

N/A see above.

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Actions

Choose your Action

Engagement

Discuss how faculty and staff have engaged in institutional efforts such as committees, presentations, and departmental activities. Please list the committees that full-time faculty participate in.

The full-time faculty member takes successful students into the field east of the Rocky Mountains every summer as field/research assistants. He also routinely presents his research at American Geophysical Union, Geological Society of America, Cuban Geological Society, and IGCP-649 conferences plus field trips in the US, Cuba, Australia, New Caledonia and Oman.

Committees include:

Three TRC committees, one of which he chairs.

Activities include:

Frequent communication with administrators and the Peralta risk manager regarding the ongoing lack of laboratory regulatory compliance (and general quality) at COA.

Discuss how faculty and staff have engaged in community activities, partnerships and/or collaborations.

The FT faculty member is collaborating with several Bay Area research institutions on his research including Stanford and UC Berkeley. He also collaborates with scientists internationally from Cuba, China and now possibly Oman.

Discuss how adjunct faculty members are included in departmental training, discussions, and decision-making.

New part time chemistry faculty are mentored by the full time faculty member who evaluates their lectures and labs, providing feedback for class improvement and adaptation to the COA situation. These evaluations frequently lead to and facilitate the hiring of part-time COA faculty by other institutions as full time faculty with proven teaching quality and experience.

Part time faculty are also an invaluable campus resource, serving on committees, acting as SLO facilitators, taking students on field trips, etc.

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Choose your Action

Improvement Actions

Sign and Submit

Please provide the list of members who participated in completing this program review.

Test
Peter Olds
Jacob Schlegel

Please enter the name of the person submitting this program review.

Peter Olds

Resource Request Summary

Total Cost: \$0
Total Resource Request: 0

- Instruction
 - Personnel
 - No Resources found for this category
- Professional Development
 - No Resources found for this category
- Technology and Equipment
 - No Resources found for this category
- Supplies
 - No Resources found for this category
- Facilities
 - No Resources found for this category
- Library
 - No Resources found for this category
- Other
 - No Resources found for this category
- Engagement
 - Personnel
 - No Resources found for this category
 - Professional Development
 - No Resources found for this category
 - Technology and Equipment
 - No Resources found for this category
 - Supplies

No Resources found for this category

Facilities

No Resources found for this category

Library

No Resources found for this category

Other

No Resources found for this category