Entry #: 89 - Mathematics, Science and Engineering **Status:** Submitted **Submitted:** 3/21/2024 8:31 PM

DRAFT

OVERVIEW OF PROGRAM REVIEW AND PLANNING FOR INSTRUCTIONAL PROGRAMS

Program Review and Planning is about evaluating and assessing programs and documenting plans for improving student success rates. Through review of and reflection on key program elements, Program Review and Planning identifies program strengths and strategies necessary to improve the academic discipline, program, and/or services to support student success.

The College also uses Program Review and Planning as the conduit to request resources (human, technology, facilities and funding) to further help improve and support programs.

ALL PROGRAMS WILL COMPLETE AN ANNUAL PROGRAM REVIEW FOR 2023-2024.

BASIC PROGRAM INFORMATION

Division Name
Mathematics, Science and Engineering

Department Name
Chemistry

Microsoft_List_ID

Discipline Name
Chemistry (CHEM)

Department Chair Name
Jennifer Zabzdyr

Department Chair email
jzabzdyr@palomar.edu

Please list the names and positions of everyone who helped to complete this document.
Jennifer Zabzdyr, Professor and Chair
Heriberto Rivera, Professor

Website address for your discipline
https://www.palomar.edu/chemistry/

Discipline Mission statement
The mission of the Palomar College Chemistry Department is to support student learning for success. Our primary goal is preparing our diverse student population for the pursuit of Bachelor degrees in Chemistry, as well as other Natural Science degrees with which they may enter the workplace. We provide students with the fundamental concepts, knowledge, and laboratory techniques in a healthy and safe environment.

(Click here for information on how to create a mission statement.)

Does your discipline have at least one degree or certificate associated with it?
Yes

Are any of your programs TOP coded as vocational (CTE/CE)?
No

List all degrees and certificates offered within this discipline.

AS Degree
Certificate of Achievement

BASIC PROGRAM NFORMATION: FACULTY AND STAFFING RESOURCES

In this section, you will identify how many faculty and staff support your discipline's programs. This information is considered when you request permanent staff and faculty hires. It is also useful as you evaluate your program and the human resources and talent you have to support our students.

To help you answer questions in this section, you will need the links shown in red.

Enter the number of permanent or full-time faculty support your discipline (program)?

8

For this past fall semester, what was your Full-time FTEF assigned to teach classes?

7.60

For this past fall semester, what was your Part-time FTEF assigned to teach classes? (Part-time FTEF = PT hourly and overload.)

6.73

List the classified and other permanent staff positions that support this discipline. If possible, include number of months and percentage workload.

3 ISA-IV, 12 months, 100%

List additional hourly staff that support this discipline and/or department. Include weekly hours.

3 student workers
One at 9 hours per week
One at 6 hours per week
One at 2 hours per week

COURSE INFORMATION

In this section, you will review how students perform in the courses you offer as part of your program. The Chancellor's Office Vision for Success goals focus on eliminating equity gaps and increasing timely completions. Examining, reflecting upon, and developing strategies to improve course success rates is one way to help the college meet its Vision for Success Goals and support our students in reaching theirs.

Data are provided to help you examine differences in course success rates (C or better) across student demographic categories (e.g., gender) and course type (e.g., face-to-face, online).

After you complete your review of course success data, you are asked to confirm that you have assessed each course SLO within the past three years.

Link: Course Data

COURSE SUCCESS AND RETENTION

Have your overall course success rates increased, decreased, or stayed the same over the last 5 years?

Increased

Was this expected? Please explain.

Yes. The lowest success rate was during fall 2020, the first semester of online learning during the covid lockdowns, at 60.2%. After students and faculty adapted to online learning and the eventual return to in-person learning, success rates increased to > 70%.

Have your overall course retention rates increased, decreased, or stayed the same over the last 5 years?

Stayed the same

Was this expected? Please explain.

Yes. With the exception of fall 2020, when the retention rates dropped to 73.8%, rates have generally been stable at > 90%. This trend is expected. Fall 2020 was the first semester of online learning during the covid lockdowns, and many students dropped.

Are there differences in success or retention rates in the following groups? (choose all that apply)

Gender Ethnicity

Gender: What did you find and why do you think gender differences exist? How can you close the gap?

Students identifying as non-binary had the lowest success (67%) and retention (83%) rates. All other genders had success and retention rates about 10% higher than that. To close the gap, we can work with PC3H and the mental health counselors to promote resources students may not be aware of. Also, perhaps we can promote/create a community for queers in science in the STEM center to maybe act as a learning community.

Ethnicity: What did you find and why do you think ethnicity differences exist? What do you need to help close the gap?

Students identifying as Asian have the highest success rates at 87%. Students identifying as Black or African American have the lowest success rates of 36%, followed by students identifying as Hispanic, with success rates of 68%. All other groups have success rates at around 78%.

Please share methods that your department is using to improve retention and success rates in your courses. If you are focusing on a specific group like online students or a demographic group please include that information in your answer.

Many faculty have prerecorded lectures despite not teaching a hybrid/online course. This allows students who are absent to keep up with the material. It also permits students to hear the information a second (or third) time. Some faculty offer extra lab time and office hours to accommodate student schedules. Most faculty have reduced or removed the need to buy texts. Labs are available for download in Canvas and we use free, online textbooks.

We help to keep the STEM Center, a space for students and building community, open. The chemistry faculty and staff are responsible for helping to oversee the continued operation of the STEM Center. Without many of use holding office hours in the STEM Center or helping to supervise, the hours would have been a lot more limited.

We also identify and recommend qualified students to be tutors, provide light snacks and food to ensure students have enough energy throughout their learning day, host review sessions or expand office hours, and use zoom for office hours in case students live far away or have transportation issues.

COURSE STUDENT LEARNING OUTCOMES (SLOs)

Excluding courses that haven't been offered in the last three years, do you confirm that all of your courses have been assessed since August 2020 (Result Summary Date)?

Yes

Upload a copy of your SLO report from Nuventive ("Report 0. Last Result Date and Action Date for All Active Course Outcomes")

0. Course SLO Report Last Result Date and Action Date for All Active Course Outcomes.xls
10 KB

PROGRAM INFORMATION

In this section, you are asked to consider and evaluate your programs, including the annual number of completions, and their program learning outcomes,

PROGRAM COMPLETIONS

Student success is at the core of what we do in assisting students in achieving their goals.

The Chancellor's Office Vision for Success stresses the importance of Program Completion as a major goal for our students. In addition, transfer and career readiness are key components of Palomar College's mission statement.

Link: Program Completions

Access the link above titled "Progam Completions" and copy and paste five years of completion data for each of your discipline's degrees and certificates.

2016-17 2 AS degrees and 2 certificates
2018-19 2 AS degrees and 2 certificates
2019-20 3 AS degrees and 2 certificates
2020-21 1 AS degrees and 3 certificates
2021-22 6 AS degrees and 5 certificates

PROGRAM LEARNING OUTCOMES

Do you confirm that all of your programs have been assessed since August 2020 (Result Summary Date)?

No

If you answered no, please explain.

We assess the program using the standardized American Chemical Society examination at the end of Chem 221. We collected exam data in spring 2023 and will be updating the program SLOs to reflect this.

Upload a copy of your SLO report from Nuventive ("Report 2. Last result, action, and follow-up date for each active program outcome").

2. Last result, action, and follow-up date for each active program outcome.xls
5 KB

Program Review Reflection and Summary

In this section you are asked to evaluate your programs by considering their program learning outcome assessments, the annual number of completions, and any other internal or external factors that had an impact on your program.

What factors have contributed to the success of your program(s)? Describe how they have contributed.

Faculty make themselves more available to students. Students have busy schedules (work, driving distance, heavy workloads, etc). By making ourselves available other than the prescribed office hours students can get the help they need to be successful. We build community and relationships between faculty and students through the Chemistry Club.

In an effort to improve success rates in CHEM100, we overhauled the labs to focus more on the analysis of things that hopefully have meaning to the students. For instance, students calculate the density of soy sauce, analyze dyes in sports beverages and titrate antacids. In addition, we incorporate a lot of active learning into our classes. Students work in groups (both in online and face-to-face classes) on practice quizzes. Also, we have increased the flexibility of make-up labs in order to improve success.

A large factor that has contributed to the success of our program is students applying (and obtaining) summer REU's and internships. Faculty are integral to this - developing mentor-mentee relationships with students and writing letters of recommendation.

We have also noticed improved success in Chem 110 after making Chem 100 a prerequisite for the course, rather than high school chemistry.

What factors have presented challenges for your program(s)? Describe the impact of these challenges.

Lack of funding for updating equipment. A lot of the local colleges have better equipment than we do because we lack the funds to update our equipment on a proper timescale. To give students a better and relevant (in respect to instrument usage/methods) education, we need better tools. Additionally, many hours are spent working on old instruments that take away from time we could be working with the students.

Lack of funds to travel to conferences to stay current in our fields.

Resources to hold outreach events and build relationships with our community, who feeds directly into our program. For years, the majority of the funding for events has come from the pockets of the faculty. It is unsustainable without proper funding.

Class sizes that are too large. It is difficult to incorporate active learning and to help students individually in a 60-person lecture class. That large class size is conducive only to traditional "lecturing". It is also challenging to have 30 students in a lab. One person having to help 30 people, all of whom need help "now", is not an efficient learning environment.

Lack of an ADA. The ADA is the face of the department for students. Without an ADA, and with most faculty in class for most of the day, there is no one available to help students.

CAREER AND LABOR MARKET DATA

The Chancellor's Office Vision for Success stresses the importance of increasing the percent of exiting students who report being employed in their field of study. It is important for us to consider how ***all*** of our programs connect to future careers.

Go to this website https://www.onetonline.org/ and enter your discipline in the bubble on the top right for ideas about potential occupations. Click on an example to see more detail.

The following websites are for CTE related data:

- Centers of Excellence (many other data resources besides supply and demand) Password: GetLMI
- LaunchBoard
- LaunchBoard Resource Library
- Chancellor's Office Data Mart
- Career Coach-San Diego Workforce Partnership
- EDD Labor Market Info
- Career One Stop

What kinds of careers are available for people who complete your programs (and/or transfer)? (Refer to O*net Link below) Are there any new or emerging careers? If so, how would the new or emerging careers impact your future planning?

Chemistry teachers, chemical technicians, chemists, professors, chemical engineers, biochemical engineers, soil/plant
scientists, chemical equipment operators, medical/clinical lab technologists/technicians, biochemists, biophysicists,
quality control/analysis. Careers with a bright outlook include medical/clinical lab technologists/technicians, biochemists,
biophysicists, and quality control analysts

What are the associated knowledge, skills, abilities (KSA's) needed for the occupations listed above? (click examples in the link above to get ideas)

Most require a minimum of a B.S. degree in chemistry or biochemistry. Some occupations require a graduate degree in
chemistry or biochemistry. Knowledge, skills, and abilities will vary, but will include:
KNOWLEDGE
Chemistry — Knowledge of the chemical composition, structure, and properties of substances and of the chemical
processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs,
production techniques, and disposal methods.
Mathematics — Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.
SKILLS
Science — Using scientific rules and methods to solve problems.
Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions,
conclusions or approaches to problems.
Reading Comprehension — Understanding written sentences and paragraphs in work related documents.
Active Listening — Giving full attention to what other people are saying, taking time to understand the points being
made, asking questions as appropriate, and not interrupting at inappropriate times.
Mathematics — Using mathematics to solve problems.
ABILITIES
Deductive Reasoning — The ability to apply general rules to specific problems to produce answers that make sense.
Inductive Reasoning — The ability to combine pieces of information to form general rules or conclusions (includes
finding a relationship among seemingly unrelated events).
Oral Comprehension — The ability to listen to and understand information and ideas presented through spoken words
and sentences.
Written Comprehension — The ability to read and understand information and ideas presented in writing.
Mathematical Reasoning — The ability to choose the right mathematical methods or formulas to solve a problem.

How does your program help students build these KSA's?

KNOWLEDGE: Our program teaches students the chemistry knowledge they will need in order to transfer and pursue a
more advanced degree in chemistry or biochemistry.
SKILLS: Critical thinking is a key component of all our courses and one of our program SLOs. Problem solving, using the
scientific method, is emphasized in all of our classes.
ABILITIES: Oral and written communication skills are learned in the lab, through the writing of lab reports and giving oral
presentations.

The following four questions are for CTE programs only. If you are not a CTE program, please go back to the BASIC INFORMATION tab and select "no" for "Are any of your programs TOP coded as vocational (CTE/CE)?"

PROGRAM GOALS

Progress on Prior PRP Goals

In the most recent PRP cycle, you identied a set of goals Provide an update to your most recent PRP goals.

Click here for previous PRPs with goal information.

Prior PRP Goals

Prior Year PRP Goal 1

Brief Description

To update technology (chemical instruments, computers, and software) in order to remain current with chemical education pedagogy.

Goal Status

Ongoing

Add any comments related to your work on prior goal (e.g., success, challenges, reasons for eliminating a goal). Describe Outcomes, if any.

Thanks to the support of our dean, were were able to purchase 2 new GCs and 30 new laptops for our general chemistry students to borrow during class. However, the challenge to this goal is always going to be funding. Our department budget does not allow us to repair existing instrumentation or purchase new instrumentation, so we are always at the mercy of the PRP allocations.

Prior Year PRP Goal 2

Brief Description

To increase our presence in the community through outreach.

Goal Status

Ongoing

Add any comments related to your work on prior goal (e.g., success, challenges, reasons for eliminating a goal). Describe Outcomes, if any.

Heri Rivera is planning on putting together an annual Chemistry Symposium/Chemistry Career event with the Chemistry Club. However, that requires money and other logistical hurdles. The biggest challenge for outreach events is the lack of support and funding from the administration.

Describe any changes to your goals or three-year plan as a result of this annual update.

No changes.

Do you have any new goals you would like to add?

No

RESOURCES

Congratulations! You are nearing completion. In this section, you will consider the resources you need to implement your three-year program review plan and/or address any findings from your assessment of your discipline.

The section is organized into the following five parts:

PART 1: Staffing Needs (Faculty and Additional Staff)

PART 2: Budget Review

PART 3: Technology Needs

PART 4: Facilities Needs

PART 5: One Time Request for Other Needs (NonTechnology Equipment, Supplies, Operating Expenses, Travel)

Reflect upon the three year plan you created above, your current operations, and any upcoming factors (retirements, changes in legislation, and changes in policies or procedures) that will impact your unit. How will you allocate resources to implement your plan? Describe additional resources needed to improve the effectiveness of your unit/program. All resource requests must be aligned with the College's Vision Plan 2035.

Summarize any reallocation/re-organization of resources you are making based upon your three-year plan, your current operations, and any other factors (e.g., legislation). Describe the impact of the reallocation of resources to your unit.

NOTE: All requests listed in the PRP will be reviewed by deans and supervisors, then forwarded to the appropriate review group for prioritization. A resource requests approved to move forward in the review process does NOT guarantee a position or funding.

PART 1: STAFFING NEEDS

Requests for faculty will follow the prioritization process currently in place in the Faculty Position Prioritization committee, which reports to the Education, Equity, and Student Success Council. Requests for new staff positions will be prioritized at the division level and reviewed at Exec.

Are you requesting additional full-time faculty?

No

REQUEST FOR ADDITIONAL FULL-TIME FACULTY

Are you requesting AA, CAST for Classified Staff?

No

PART 2: BUDGET REVIEW

Request that your ADA provide you with your *Available Budget Report* and complete this section.

Review your recent Budget/Expenditure reports and consider your three-year PRP plan.

Do you have any ongoing needs or needs to augment your regular budget?

Yes

What budget considerations would you like your dean/supervisor to be aware of or to consider? Describe the need and the amount of the adjustment.

We need a budget for maintenance and repair of existing instrumentation, including but not limited to NMR, analytical balances, and gas chromatographs (GCs). With proper maintenance, existing equipment can last longer, decreasing the need to replace expensive instruments. We would like $1500 per year to cover these costs.

PARTS 3, 4 and 5 – TECHNOLOGY, FACILITIES AND OTHER NEEDS

1. One-Time Fund Requests. Through the PRP process the college implements an approach for prioritizing ad allocating one-time needs/requests. Prioritization takes place through the appropriate groups, leadership, and the Budget Committee. The executive team and Resource Allocation Committee consider various sources for funding PRP requests. Resource requests also inform the larger planning process like Scheduled Maintenance Plans, Staffing Plans, and institutional strategic planning.

For more information about funding sources available, see IELM BLOCK GRANT, LOTTERY, PERKINS AND STRONG WORKFORCE GUIDELINES (on the left menu of the webpage).

If you are a CTE program and think you may qualify for CTE funds for your PRP request(s), you are STRONGLY encouraged to answer the call for Perkins/Strong Workforce grant applications in February. Contact the Dean of CTEE for additional information.

Consider submitting one-time requests only if you have verified that you cannot fund the request using your general discretionary funds or other funds.

1. Technology and Facilities Review. Requests for technology and facilities are assessed by the Deans and then, if appropriate forwarded to the proper institutional group (e.g., technology review committee, or facilities) for review and feedback.

PART 3: TECHNOLOGY NEEDS

Will you be requesting any technology (hardware/software) this upcoming year?

Yes

Technology Request

Technology Request 1

What are you requesting?

30 Dell Latitude 9440 2-in-1 Laptops

Is this a request to replace technology or is it a request for new technology?

New Technology

Provide a detailed description of the the request. Include in your response:

a. Description of the need? (e.g., SLO/SAO Assessment, PRP data analysis)

Our chemistry department continues to strive to make our labs "zero" cost courses for our students. We successfully converted our lab manual into a digital copy for students to download. Unfortunately, students without access to technology such as laptops and tablets will still have to pay for printing which can add up over time. The request to purchase 2-in-1 laptops will achieve a few objectives. 1) Reduce cost and achieve a "zero" cost lab course by ensuring all students can download the lab procedure, 2) The stylus feature will enable students to quickly report their data in real time without the need to fidget with formatting, which for some students struggle with and waste lab time, 2) Strive to create an equitable learning environment with respect to access to technology and , 3) A newer hardware will enable faculty to create new or better labs that can take advantage of the faster processing capabilities of the laptop. This will enrich the learning experience of students by allowing them to run programs current with some of the technology used in industry or research.

b. Who will be impacted by its implementation? (e.g., individual, groups, members of department)

Students and Faculty

c. What are the expected outcomes or impacts of implementation?

It would decrease the cost for printing to zero, enable students to learn and work with programs they may not have access to at home, and provide equitable learning experience in lab. Faculty can create new labs that requires specific programs to run and feel confident that the technology will not crash and ruin the learning experience for students.

d. Timeline of implementation

2024-2025 academic year

What is the anticipated cost for this request? If any, list ongoing costs for the technology (licenses, support, maintenance, etc.).

$68,671.40. This cost includes 30 2-in-1 laptops, a charging cart and adapters, shipping and taxes

Do you already have a budget for this request?

No

What PRP plan goal/objective does this request align with?

Goal 1: To update technology (chemical instruments, computers, and software) in order to remain current with chemical education pedagogy.

What Educational Vision Plan 2035 Goal:Objective does this request align with?

2:5 2:6

If you have multiple requests for technology and had to prioritize, what number would you give this? (1 = Highest)

1

What impacts will this request have on the facilities/institution (e.g.,water/electrical/ADA compliance, changes to a facility)?

None

Will you accept partial funding?

Yes

PART 4: FACILITIES REQUESTS

Do you have resource needs that require physical space or modification to physical space?

Yes

Facilities Requests

Facility Request 1

What are you requesting?

Removal of a non-working fume hood in NS-140 and installation of a full-size sliding white board and 2 full-size projector screens.

Provide a detailed description of the the request. Inlude in your response:

a. Description of the need? (e.g., SLO/SAO Assessment, PRP data analysis)

NS-140 is a lecture room and does not need a fume hood. The fume hood takes up wall space, so the room contains a very small white board, 1 full size projector screen, and 1 mini projector screen. The space would serve students and faculty better with a full-size white board and full-size screens.

b. Who will be impacted by its implementation? (e.g., individual, groups, members of department)

All students and faculty who use that room.

c. What are the expected outcomes or impacts of implementation?

Faculty would have better tools for lectures and students could better see the board/screen

d. Timeline of implementation

Unknown

What is the anticipated cost for this request? If any, list ongoing costs for the request (additional equipment, support, maintenance, etc.).

Unknown

Do you already have a budget for this request?

No

What PRP plan goal/objective does this request align with?

Goal 1: To update technology (chemical instruments, computers, and software) in order to remain current with chemical education pedagogy

What Educational Vision Plan 2035 Goal:Objective does this request align with?

2:4 2:5 2:6

If you have multiple requests for facilities and had to prioritize, what number would you give this? (1 = Highest)

1

What impacts will this request have on the facilities/institution (e.g.,water/electrical/ADA compliance, changes to a facility)?

Unknown

Will you accept partial funding?

Yes

PART 5: OTHER ONE-TIME NEEDS

For more information about funding sources available, see IELM BLOCK GRANT, LOTTERY, PERKINS AND STRONG WORKFORCE GUIDELINES. Please check with your department chair on the availability for this cycle.

Do you have one-time requests for other items (e.g., Non-technology equipment, supplies, operating expenses, travel) that your budget or other funding sources will NOT cover?

Yes

Requests

Item 1

What are you requesting?

14 Organic Chemistry Kits

Provide a detailed description of the the request. Inlude in your response:

a. Description of the need? (e.g., SLO/SAO Assessment, PRP data analysis)

They are needed for students to work in chem 220 and chem 221 labs. They are also needed for SLO assessment of chem 220 and chem 221 labs. These kits will replace the old kits that have missing and/or broken parts.

b. Who will be impacted by its implementation? (e.g., individual, groups, members of department)

All students who take chem 220 and chem 221.

c. What are the expected outcomes or impacts or implementation?

Students will be able to complete chem 220 and chem 221 with appropriate equipment.

d. Timeline of implementation

2024-2025 academic year

What is the anticipated cost for this request? If any, list ongoing costs for the request (additional equipment, support, maintenance, etc.).

$7648.10

Do you already have a budget for this request?

No

What PRP plan goal/objective does this request align with?

Goal 1: To update technology (chemical instruments, computers, and software) in order to remain current with chemical education pedagogy

What Educational Vision Plan 2035 Goal:Objective does this request align with?

2:5 2:6

If you have multiple requests for facilities and had to prioritize, what number would you give this? (1 = Highest)

2

What impacts will this request have on the facilities/institution (e.g.,water/electrical/ADA compliance, changes to a facility)?

None

Will you accept partial funding?

Yes

Budget Category

Non-technology Equipment (acct 600010 and per unit cost is >$500)

Please upload a copy of the quote, if available.

PALR240226 (1).pdf
27.8 KB

Item 2

What are you requesting?

2 ovens for the general chemistry labs

Provide a detailed description of the the request. Inlude in your response:

a. Description of the need? (e.g., SLO/SAO Assessment, PRP data analysis)

For students and staff of the general chemistry classes to use during lab and for lab preparation.

b. Who will be impacted by its implementation? (e.g., individual, groups, members of department)

Students and staff of the chemistry department

c. What are the expected outcomes or impacts or implementation?

Students will be able dry compounds during their lab. Staff will be able to dry compounds and glassware for use during chemistry labs.

d. Timeline of implementation

2024-2025 academic year

What is the anticipated cost for this request? If any, list ongoing costs for the request (additional equipment, support, maintenance, etc.).

$3163.99

Do you already have a budget for this request?

No

What PRP plan goal/objective does this request align with?

Goal 1: To update technology (chemical instruments, computers, and software) in order to remain current with chemical education pedagogy

What Educational Vision Plan 2035 Goal:Objective does this request align with?

2:5 2:6

If you have multiple requests for facilities and had to prioritize, what number would you give this? (1 = Highest)

4

What impacts will this request have on the facilities/institution (e.g.,water/electrical/ADA compliance, changes to a facility)?

None

Will you accept partial funding?

Yes

Budget Category

Non-technology Equipment (acct 600010 and per unit cost is >$500)

Please upload a copy of the quote, if available.

VWRQuotation_8032256101 (1).PDF
26.2 KB

Item 3

What are you requesting?

AB315 PH/MV METER STANDARD KIT (30 of them)

Provide a detailed description of the the request. Inlude in your response:

a. Description of the need? (e.g., SLO/SAO Assessment, PRP data analysis)

About 50% of Chem 115 Lab heavily rely on pH meters to which students will obtain their data from. It is imperative for students to obtain accurate values, so their results fall in line with theory and expected outcomes. Currently, the pH meters at Rancho Bernardo campus does not consistently provide the level of accuracy and precision that's expected. In addition, some students have difficulty with the calibration of the pH meters. At times, if the initial calibration fails, students and faculty will have to spend 5-15 min to diagnose and troubleshoot the issue, which most of the time is device related. This pushes students behind on their lab work creating an inequitable learning experience compared to peers who were lucky with their device. For faculty, the time spent troubleshooting the device can be spent on working with students to further their understanding of the experiment. Furthermore, the chemistry department utilizes lab practicals to assess learning outcomes. The use of pH meters is central to a couple of these lab practicals. Thus, if students are spending exam time to troubleshoot their pH device, it negatively impacts their grade and skews the results of the outcomes. Also, these new pH meters come with a stand which allows students to lower the pH meter at the appropriate depth in the solution with greater precision. Students with a physical disability will be able to perform these labs with greater ease since they will not need to hold the pH probe for an extended period of time. Lastly, the pH meters at San Marcos campus is updated, while the Rancho Bernardo campus is not. Being awarded funds to purchase new pH meters will create equity between lab sections offered in both of these campuses.

b. Who will be impacted by its implementation? (e.g., individual, groups, members of department)

Students and Faculty

c. What are the expected outcomes or impacts or implementation?

Students will have a better experience using these devices to collect their data individually, which is a department requirement. Also, Faculty will be able to collect more accurate results when it comes to SLO lab assessments.

d. Timeline of implementation

2024-2025 academic year

What is the anticipated cost for this request? If any, list ongoing costs for the request (additional equipment, support, maintenance, etc.).

$18,269.13
This includes 30 pH probes, 30 pH meters + stands, adapters, shipping and taxes

Do you already have a budget for this request?

No

What PRP plan goal/objective does this request align with?

Goal 1: To update technology (chemical instruments, computers, and software) in order to remain current with chemical education pedagogy.

What Educational Vision Plan 2035 Goal:Objective does this request align with?

2:5 2:6

If you have multiple requests for facilities and had to prioritize, what number would you give this? (1 = Highest)

1

What impacts will this request have on the facilities/institution (e.g.,water/electrical/ADA compliance, changes to a facility)?

None

Will you accept partial funding?

Yes

Budget Category

Non-technology Equipment (acct 600010 and per unit cost is >$500)

Please upload a copy of the quote, if available.

pH_Meter_quote_4053-3324-97.pdf
0.1 MB

Item 4

What are you requesting?

Vortex Mixers

Provide a detailed description of the the request. Inlude in your response:

a. Description of the need? (e.g., SLO/SAO Assessment, PRP data analysis)

Enrollment has exponentially increased at Rancho Bernardo for chem 115 lab this current academic year (going from 8-11 students to a full class of 30). The Rancho Bernardo campus currently has 2 vortex mixers for a group of 30 students. This creates a limit in the workflow of students since at times there is an extended wait time to use this device. It is important for our facilities to have the appropriate amount of equipment that meets the demands of current and future enrollment.

b. Who will be impacted by its implementation? (e.g., individual, groups, members of department)

Students

c. What are the expected outcomes or impacts or implementation?

Students will not have to wait an extended period of time to collect data and can complete the calculations in a timely manner.

d. Timeline of implementation

2024-2025 academic year

What is the anticipated cost for this request? If any, list ongoing costs for the request (additional equipment, support, maintenance, etc.).

$2049.41 (~$317 per unit)
This includes 6 vortex mixers, shipping and taxes

Do you already have a budget for this request?

No

What PRP plan goal/objective does this request align with?

Goal 1: To update technology (chemical instruments, computers, and software) in order to remain current with chemical education pedagogy.

What Educational Vision Plan 2035 Goal:Objective does this request align with?

2:5 2:6

If you have multiple requests for facilities and had to prioritize, what number would you give this? (1 = Highest)

3

What impacts will this request have on the facilities/institution (e.g.,water/electrical/ADA compliance, changes to a facility)?

None

Will you accept partial funding?

Yes

Budget Category

Supplies

Please upload a copy of the quote, if available.

Vortex Mixer Web Quote 4065359891.pdf
39.5 KB

I confirm that all full-time faculty in this discipline have reviewed the PRP. The form is complete and ready to be submitted.

Yes

Enter your email address to receive a copy of the PRP to keep for your records.

jzabzdyr@palomar.edu

Feedback and Review

Department Chair

I confirm that the PRP is complete.

Yes

Department Chair Name

Jennifer Zabzdyr

Date

4/2/2024