Program Review and Planning

OVERVIEW OF PROGRAM REVIEW AND PLANNING FOR INSTRUCTIONAL PROGRAMS

Program Review is about documenting the plans you have for improving student success in your program and sharing that information with the community. Through the review of and reflection on key program elements, program review and planning identifies program strengths as well as strategies necessary to improve the academic discipline, program, or service to support student success. With our new Guided Pathways plan, this review becomes even more crucial for the success of our students and college.

We are using the Strengths, Opportunities, Aspirations, Results (SOAR) strategic planning technique to help us focus on our current strengths and opportunities, create a vision of future aspirations, and consider the results of this approach.

BASIC PROGRAM INFORMATION

Academic Year
2018-2019

Are you completing a comprehensive or annual PRP?
Comprehensive

Department Name
Earth, Space, and Environmental Sciences

Discipline Name
Oceanography (OCN)

Department Chair Name
Wing Cheung

Division Name
Mathematics, Science and Engineering

Website address for your discipline
https://www2.palomar.edu/pages/oceanography/

Discipline Mission statement
The mission of the Oceanography Program at Palomar College is to fulfill the general education physical science requirement for degree or transfer. The Oceanography Program offers students the opportunity to study the dynamic processes and interconnections that affect Earth's marine systems including the study of geological, chemical, physical, and biological oceanography. Further, the Oceanography Program seeks to help students develop an understanding of the ocean's influence on humans as well as their impact on the ocean environment. Students who successfully complete the program will be able to make informed and responsible decisions regarding the oceans and its resources.

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

Does your discipline have at least one degree or certificate associated with it?
No

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

Please list the names and positions of everyone who helped to complete this document.
Al Trujillo, Professor ESES Department (was on sabbatical during Spring 2018 and load bank leave during Fall 2018)

Lisa Yon, Ph.D., Professor ESES Department

Full-time faculty (FTEF)
2.0

Part-time faculty (FTEF)
0.8

Classified & other staff positions that support this discipline
Academic Department Assistant (20%)
Department Technician (10%)

Additional hourly staff that support this discipline and/or department
None

PROGRAM INFORMATION

PROGRAM OUTCOMES

Begin this section by reviewing the Program Review reports for courses and programs in TracDat. All active course and program outcomes should be systematically assessed over a 3-year cycle.

- **Program** = Leads to a degree or certificate
- **Discipline** = A group of courses within a discipline

*Programs will be able to complete program completion and outcome questions.

Depending on the degree or transfer goals of our students, they have the choice of three different GE pathways:

- Associate Degree GE Requirements
- CSU GE Requirements
- IGETC Requirements

Palomar College has identified a set of General Education/Institutional Learning Outcomes, which represent the overall set of abilities and qualities a student graduating from Palomar should possess.Click here for a link to Palomar's GE/ILOs.

How do the courses in your discipline support General Education/ Institutional Learning Outcomes? In your response, please specify which GE/ILO(s) your discipline supports.
Oceanography courses at Palomar College (Ocean 100 Lecture, Ocean 100 Lab) support the designated General Education/Institutional Learning Outcomes in the following ways:
1) Communication: Students enrolled in oceanography courses at Palomar College are required to accurately communicate their knowledge of oceanographic content and thoughts about oceanographic topics in order to successfully pass the course. This may entail analysis of class topics, class discussions, class debates, completion of assignments, completion of assignments, and the writing one of more content papers.
2) Computation: Oceanography is a scientific discipline, so successful students must learn how to analyze scientific data that is involved with computation. This helps successful students achieve a certain level of familiarity with analysis of computational data, including understanding and analyzing graphs and charts. This is particularly true in the Ocean 100 Lab course.
3) Creative, Critical, and Analytical Thinking: As a science course, students are required to use critical thinking skills to successfully complete the course requirements. This involves analyzing scientific data using creative, critical, and analytical thinking. One example is the critical analysis of how the scientific

method is used to solve oceanographic problems.
4) Community, Multicultural/Global Consciousness and Responsibility: Successful students are required to develop an understanding of the ocean's influence on humans as well as humans' impact on the ocean environment. In essence, students should be aware that the oceans and humans are inextricably interconnected. In addition, students who successfully complete the program will be able to make informed and responsible decisions regarding the oceans and its resources.
5) Foundation Knowledge of Discipline: Successful students are required to demonstrate an understanding of oceanographic concepts, principles, and processes, which entails a foundational knowledge of the discipline. In essence, successful students must understand how the ocean behaves and the geological, chemical, physical, and biological factors that influence in those behaviors.
6) Integrative Learning (learning communities, service learning, engagement through the arts): Successful students are required to understand the interdisciplinary nature of oceanography in order to succeed in the courses. Not only does this include the various branches of science that are related to the study of oceanography, but also the social and political sciences. Students are also offered opportunities to engage in service learning activities, such as beach clean-ups, public lectures, and volunteering at public information gateways to oceanographic data (such as the Birch Aquarium at Scripps).

Summarize the major findings from your course outcomes assessments that are related to the General Education/Institutional Learning Outcomes that your discipline supports.
Students are meeting all Ocean 100 Lecture and Ocean 100 Lab course assessments with scores above 70% (and sometimes greatly exceeding 70%, which is the SLO standard that is being used by the Oceanography Program). This shows us that students are meeting the course assessments that support General Education/Institutional Learning Outcomes, for example:
Oceanography 100 Lecture:
SLO: Plate Tectonics (recent assessment: 76% of face-to-face students and 87% of online students achieved this SLO):
GE/Institutional Outcomes
ILO 2, Computation: B - Inquiry and analysis
ILO 3, Creative, Critical, and Analytical Thinking: A - Critical thinking
ILO 3, Creative, Critical, and Analytical Thinking: B - Information literacy
GE Foundational Knowledge of Discipline - This is a General Education Outcome. Applies to certificate and degree programs.

Oceanography 100 Lab (recent assessment: 86% of students achieved this SLO):
SLO: Human Impacts in Coastal Environments:
GE/Institutional Outcomes
ILO 2, Computation: B - Inquiry and analysis
ILO 3, Creative, Critical, and Analytical Thinking: A - Critical thinking
ILO 3, Creative, Critical, and Analytical Thinking: B - Information literacy
ILO 4, Community, Multicultural/Global Consciousness and Responsibility: C - Civic knowledge and engagement
GE Foundational Knowledge of Discipline - This is a General Education Outcome. Applies to certificate and degree programs.

ENROLLMENT TRENDS

Palomar College uses the WSCH/FTEF ratio as one indicator of overall efficiency in addition to the overall fill-rate for courses.

Although the college efficiency goal is 525 WSCH/FTEF and 85% fill-rate (minimal), there are many factors that affect efficiency (i.e. seat count / facilities / accreditation restrictions).

This information can be found by going to the "Program" page in the PRP Data Dashboard.

What was your efficiency trend over the last 5 years? Was it expected?
It is noted that a desirable target for WSCH/FTEF is 525. During the past 5 years of data, the Oceanography Program Fall WSCH/FTEF averaged 598.8, which greatly exceeds the 525 desired efficiency goal. It is also noted that during 2016-2017, the Oceanography Program WSCH/FTEF reached an all-time high for WSCH/FTEF of 714, which demonstrates the efficiency of the Oceanography Program. According to President Blake (personal communication, 3/8/2019), the Oceanography Program has one of the highest WSCH/FTEF numbers and is setting a excellent example for other programs on campus.

In terms of fill rate, during the past 5 years, average fill rate for the Oceanography Program was 92.8%, which is greatly above the college-wide standard of 85%. In fact, the fill rate for the Oceanography Program peaked at 98% during 2016-2017 and sometimes exceeds 100% during various semesters. The Oceanography Program face-to-face fill rate is 94.9%, and the Distance Education (DE) fill rate is 85.8%, which is higher than the average of DE courses campus-wide.

And yes, these high values are expected because the Oceanography Program offers efficient courses that are popular with students.

What factors have influenced your efficiency trends?
The high average Oceanography Program WSCH/FTEF of 598.8 is a result of teaching large lecture class sections that mostly fill to capacity. We also attribute this high value to the popularity and efficiency of courses within the Oceanography Program. It is also a result of increasing Oceanography 100 Online class size from 32 to 42 students (a 31% increase in class size during Spring 2016). This value will continue to increase if the proposed class size in Oceanography 100 Online is increased from 42 to 60 (a total increase from 32 to 60 students, which represents an 87.5% increase in class size). However, the increase will very likely adversely affect student success and retention rates.

During Fall 2014-2015, the data shows a significant drop-off of Oceanography Program WSCH/FTEF (514) and fill rate (85%), most likely due to the same reasons why similar college-wide values decreased and why enrollments for the college as a whole were lower. However, even in an off year, the Oceanography Program campus-wide target fill rate of 85% was still achieved by the Oceanography Program. Fortunately, both the Oceanography Program WSCH/FTEF and fill rate has rebounded to more typical values since then.

Due to its smaller class size mandated by the hands-on nature of Laboratory and field experiences, the Ocean 100 Lab course has had lower efficiency. In fact, in considering only Ocean 100 Lecture without Ocean 100 Lab, the efficiency values are even more impressive, with a 5-year average WSCH/FTEF of 685.6 (high of 795) and a fill rate of 93.4%.

Are there particular courses or programs that are not getting sufficient enrollment, are regularly cancelled due to low enrollment, or are not scheduled at this time? What is contributing to this issue? Does this level of efficiency meet the needs of the program and the district?
The only course that falls into this category is the single section of Ocean 100 Lecture that is offered at the South Education Center (Rancho Bernardo). This is not surprising given that the South Education Center is a new facility and the Oceanography offering is very limited at that facility, so it is conceivable that many students may not even know that we are offering the Ocean 100 Lecture there. However, this course does meet the needs of students who live in the vicinity of the South Education Center. Interestingly, the associated Ocean 100 Lab course that is also offered at the South Education Center has experienced satisfactory enrollments. We have been trying to inform students of the Ocean class offerings at the South Education Center, and will continue to do so in subsequent semesters.

The Chancellor's Office Vision for Success stresses the importance of reducing equity gaps through faster improvements of underrepresented groups.

ACCJC also requires that colleges establish institutional and program level standards in the area of success rates. These standards represent the lowest success rate deemed acceptable by the College. In other words, if you were to notice a drop below the rate, you would seek further information to examine why the drop occurred and strategies to address the rate.

Click on this link to review the course success rates (A, B, C, or Credit) for your discipline.

In this section we will identify a course success rate standards and a stretch goal (what you would like to move toward) for programs.

Course Success Rates by gender, age, ethnicity, special population, location, and modality (You can access the Student Equity Plan on the SSEC website https://www2.palomar.edu/pages/ssec/)

COURSE INFORMATION

COURSE SUCCESS AND RETENTION

What is your program's standard for Discipline COURSE Success Rate?
68.0%

Why did you choose this standard?
Students perceive that science courses are more difficult than other classes. From what our students tell us, the most common reasons are that science courses are "hard" and they have a lot of vocabulary. Over the past 5 years of data, the Oceanography Program success rate has varied from a low of 67% (Fall 2013-2014, Fall 2014-2015) to a high of 73% (Fall 2016-2017) and averages 69.8%, which exceeds the Discipline Course Success Rate of 68% and is just slightly below the college's institutional standard of 70%.

Has your overall course SUCCESS rates increased, decreased, or stayed the same over the last 5 years?
Increased

Was this expected?
Yes, in part because the instructors who teach oceanography provide appropriate help to students as needed. We have a very talented pool of oceanography instructors who really care about student success. Plus living in a coastal region there is generally a lot of student interest in what's happening from an oceanography standpoint along our coasts and in the coastal ocean.

What is your Stretch goal for COURSE success rates?
71.0%

How did you decide upon the goal?
According to Palomar's ACCREDITATION MIDTERM REPORT (MARCH 2019), the campus-wide Stretch Goal for the college is 71%. Although the college has not yet achieved that goal, the Oceanography Program has met the success rate Stretch Goal of 71% twice (Fall 2015-2016 and Fall 2017-2018) and has even exceeded that value once (73%, Fall 2016-2017), so it seems to be an achievable goal for the Oceanography Program.

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, it is nice that this value has stayed the same. We attribute this to the fact that we offer a quality program (and one of the largest along the entire West Coast of the United States) with instructors who really care about helping students retain their classes.

Are there differences in success or retention rates in the following groups? (choose all that apply)
When or where (time of day, term, location)
Ethnicity
Gender
Age
Special Pop. (Veteran, foster youth, etc.)

When or Where: Why do you think differences based on when or where the course is offered exists? What do you need to help close the gap?
Oceanography 100 Lecture is offered on the Main Campus in prime-time morning time blocks, which are some of the most popular classes for students. Evening courses just don't fill to capacity as do the classes offered in prime-time morning time blocks. Oceanography 100 Lecture is also offered online, which meets students' needs, but it is standard knowledge that online courses typically have lower success and retention rates (this is true for campus-wide online courses as a whole). One suggestion is to make students more aware of the rigors and time commitment involved in an online course before being able to enroll in an online course. Otherwise we are unsure what help is needed on how to close this gap.

Gender: Why do you think gender differences exist? What do you need to help close the gap?
Based on data analysis, if one filters the data carefully enough, shortcoming could be found in both success and retention rates for various ethnicities in both Oceanography 100 Lecture and Oceanography 100 Lab. For example, In terms of Ocean 100 Lecture success rate, the data show that younger students who are Black, Hispanic, or Multi-Ethnicity, who are female, and who are part-time students and/or are non-Veteran and/or Foster Youth seem to be struggling the most. For Ocean 100 Lab success rate, the data show that older students who are Multi-Ethnicity, Pacific Islander, or Asian, who are male, and who are part time students and/or are Veteran and/or Foster Youth seem to be struggling the most. It is believed that the data is untrustworthy because it is self-reported. As a result, it is unclear whether this is really what is happening based on such small sample sizes. Without coming across as gender-biased or using stereotypes, it is unknown what help is needed on how to effectively close this gap.

Age: Why do you think age differences exist? What do you need to help close the gap?
Based on data analysis, if one filters the data carefully enough, shortcoming could be found in both success and retention rates for various ethnicities in both Oceanography 100 Lecture and Oceanography 100 Lab. For example, In terms of Ocean 100 Lecture success rate, the data show that younger students who are Black, Hispanic, or Multi-Ethnicity, who are female, and who are part-time students and/or are non-Veteran and/or Foster Youth seem to be struggling the most. For Ocean 100 Lab success rate, the data show that older students who are Multi-Ethnicity, Pacific Islander, or Asian, who are male, and who are part time students and/or are Veteran and/or Foster Youth seem to be struggling the most. It is believed that the data is untrustworthy because it is self-reported. As a result, it is unclear whether this is really what is happening based on such small sample sizes. Without coming across as age-biased or using stereotypes, it is unknown what help is needed on how to effectively close this gap.

Ethnicity: Why do you think ethnicity differences exist? What do you need to help close the gap?
Based on data analysis, if one filters the data carefully enough, shortcoming could be found in both success and retention rates for various ethnicities in both Oceanography 100 Lecture and Oceanography 100 Lab. For example, In terms of Ocean 100 Lecture success rate, the data show that younger students

who are Black, Hispanic, or Multi-Ethnicity, who are female, and who are part-time students and/or are non-Veteran and/or Foster Youth seem to be struggling the most. For Ocean 100 Lab success rate, the data show that older students who are Multi-Ethnicity, Pacific Islander, or Asian, who are male, and who are part time students and/or are Veteran and/or Foster Youth seem to be struggling the most. It is believed that the data is untrustworthy because it is self-reported. As a result, it is unclear whether this is really what is happening based on such small sample sizes. Without coming across as ethnicity-biased or using stereotypes, it is unknown what help is needed on how to effectively close this gap.

Special Populations: Why do you think special population differences exist? What do you need to help close the gap?
Based on data analysis, if one filters the data carefully enough, shortcoming could be found in both success and retention rates for various ethnicities in both Oceanography 100 Lecture and Oceanography 100 Lab. For example, In terms of Ocean 100 Lecture success rate, the data show that younger students who are Black, Hispanic, or Multi-Ethnicity, who are female, and who are part-time students and/or are non-Veteran and/or Foster Youth seem to be struggling the most. For Ocean 100 Lab success rate, the data show that older students who are Multi-Ethnicity, Pacific Islander, or Asian, who are male, and who are part time students and/or are Veteran and/or Foster Youth seem to be struggling the most. It is believed that the data is untrustworthy because it is self-reported. As a result, it is unclear whether this is really what is happening based on such small sample sizes. Without coming across as special population-biased or using stereotypes, it is unknown what help is needed on how to effectively close this gap.

Are there differences in success/retention between on-campus and online courses?
Yes

Do you have any best practice methods you use for online courses to share with the community?
Yes, Trujillo believes that it is important to make students aware of the rigors and time commitment involved in an online course before being able to enroll in an online course. Trujillo also believes that to ensure student success in online course, one of the known best practices is that an instructor must build community. See examples below.

Please explain.
Trujillo will share two ideas for online classes:

(1) One way to help students understand what is required of them in an online course is to establish guidelines. These guidelines are listed at my Website (https://www2.palomar.edu/pages/atrujillo/instructions-to-online-students/), which students must view before they access the course Canvas site via password:

Online classes can be an exciting way to learn. Their convenience and flexibility appeals to many students, but online courses are not for everyone. Generally, students drop-out of online classes at a higher rate than face-to-face classes. This is often because they do not have the proper equipment or, more importantly, the habits and organizational skills of successful online students.

Based on my previous experience, I would recommend taking Ocean 100 Online (or any college-level online class) only if you meet the following conditions:
--You have a college GPA of at least 3.25
--You have been taking college-level courses for more than one year
--You are not a first-generation college student (e.g., others in your family have attended college in the past)
--You can easily and clearly express yourself in written English form
--You can work independently and achieve due dates without constant reminders
--You have proficiency solving computer-related issues

Also, see the information contained here:
Are You Ready to Be an Online Student? (https://www2.palomar.edu/pages/areyouready/ opens in new window; from Palomar College's Academic Technology group)

Lastly, here's a former student's advice about what it takes to succeed in Oceanography 100 Online:
"In order to succeed in this course you need to first know if an online course is the best fit for you. Online courses take responsibility, great time management skills, and also the ability to be a good reader. You must know how to use proper e-mail etiquette for communicating with your instructor. Take the time to find a perfect place for studying and test taking where there will be no distractions because the exams are timed. You should have access to a reliable computer, know how to navigate the Internet, have a backup plan in case your computer fails, and take advantage of all of the resources posted online. This course covers so much more than you would think it does. Definitely use all of the Mastering practice quizzes, online student study area, and take notes on the powerpoints. A lot of the same questions pop up on the exams so it is really good to make sure you have at least given everything a look first. Last, do not forget about making your posts on the Discussion Boards."

(2) One of the ways Trujillo builds community in his online Ocean 100 Online courses is to use the Discussion feature in Canvas to discuss appropriate oceanographic topics. One example is an icebreaker exercise as part of the first week of classes. The details of this Discussion assignment on Canvas are as follows:

Week 1 Discussion (Introduction): Who Are You?
Since we'll be taking this class together, I'd like everyone in the class to know a little bit about you. To introduce yourself to the class, create a post in this Discussion by clicking in the "Reply" area below and post a short answer to the following questions:
--What is your name and your educational background?
--What is your major or goal as a student at Palomar?
--Where are you from/where do you live?
--What experiences do you have in the ocean/what are some of your favorite hobbies?
Also, please include a photo of yourself (if your photo shows multiple people, please identify yourself). You can include a photo by clicking on the "Embed Image" icon on the toolbar and then select the photo from your computer. Note that you can also import a video (the "Record/Upload Media" button), add Flikr photos, or add a YouTube or Vimeo video (by clicking on the "More External Tools" button)...so the sky is the limit! You can see what the buttons do by the description that pops up when you mouse-over a button.

This is just one suggestion, but student comments about Trujillo's online course include, "I know more people in this online class than I've ever met in any of my face-to-face classes!"

COURSE OUTCOMES

How is course assessment coordinated across sections and over time?
The full-time oceanography professors at Palomar conduct regular course assessments (Trujillo for Ocean 100 Lecture, Yon for Ocean 100 Lab), which ensure that the assessments are coordinated across sections and over time. Our program assessments are essential to driving our program forward and maintaining the highest educational standards for our course offerings.

How have you improved course-level assessment methods since the last PRP?
The course assessment methods have been deemed valid have high participation rates from all oceanography instructors. The results show that students are meeting the assessment goals, so there wasn't any consideration about improving the assessment methods.

Summarize the major findings of your course outcomes assessments.
Students are able to successfully pass the course assessments with success rates varying from 70% to a

high of 96%, where the minimum assessment pass rate is equal to 70% This means that for both Ocean 100 Lecture and Ocean 100 Lab, the assessments are being met. After the assessment results have been compiled, the Oceanography 100 Lecture instructors meet to brainstorm best practices, share proven strategies for retention and engagement, and consider program-wide changes about pedagogy as a result of this reflection. By sharing the ways in which various instructors teach each SLO content area, there is an effort to ensure quality and consistency of instruction. In fact, some of these successful teaching techniques have been adopted by other instructors. In this way, the SLO assessments have improved our courses and program.

Regarding the assessment scores for Ocean 100 Lecture, the likely reason for the high assessment score for the third SLO assessment on middle latitude marine productivity is due to the fact that it was the most recent topic covered of the three SLO topics, all of which were assessed during the final exam in the course. In all three SLO assessments, slightly different content covered by various instructors may have resulted in the range of scores on the assessment. For example, some of our new adjunct faculty had very low assessment scores, which will likely improve as these new instructors gain experience in teaching this subject matter. It is also noted that online sections had some of the highest assessment scores overall, but this is likely to change as Oceanography 100 Online class sizes are increased from 32 to 42.

Reflecting on the major findings you summarized, what are some questions you still have about students' learning in your courses that you have not yet been able to address with your outcomes assessments?
Do students struggle more when they take Ocean 100 Lab at a substantially later date than when the took Ocean 100 Lecture (the prerequisite) as compared to students who take both during the same semester? If so, how can we help students succeed when there is a substantial time lag between when a student takes the two courses?

Does student performance in Ocean 100 Lab vary based on whether they took Ocean 100 Lecture face-to-face, hybrid, or online? If so, how can we close the achievement gap?

What are some improvements in your courses that have been, or can be, pursued based on the key findings from your course learning outcomes assessments?
We meet regularly with our adjunct instructors and share some best practices in teaching oceanography so that all of our instructors have tools to help students succeed. One thing we encourage our adjunct instructors to seek out is professional development opportunities that will make them more effective teachers in the classroom.

PROGRAM CURRICULUM ALIGNMENT, MAPPING, SCHEDULING, & PLANNING

The Chancellor's Office Vision for Success stresses the importance of decreasing the average number of units accumulated by CCC students earning degrees.

Palomar College's Guided Pathways plan includes clarifying paths for students by sequencing course offerings so that they support scaffolding and timely completion. Our goal is to ensure learning through:

- The mapping and assessment of clear program outcomes that are also aligned to employer and/or transfer institution expectations.
- Engaging and applied learning experiences.
- Effective instructional practices to support students in achieving success.

How do your course outcomes help your students achieve their program outcomes?
The primary mission of the Oceanography Program at Palomar College is to fulfill the general education physical science requirement (GE Area B, Natural Science) for degree or transfer. While the Oceanography Program does not have a degree or certificate that students can seek, we strive to offer both lecture and lab courses that are convenient to students and that help them achieve their program outcomes.

What is your departmental strategy on how you schedule your courses including the time of day you offer courses? Do you use fast track or block scheduling (putting required classes near each other) to organize required classes (Particularly to meet the needs of disproportionately impacted students)?
We use block scheduling and most of the Oceanography 100 Lecture courses are offered on the Main Campus in prime-time morning time blocks, which are some of the most popular classes for students. We have a dedicated classrooms for both Ocean 100 Lecture and Ocean 100 Lab where we receive priority scheduling. Oceanography 100 Lecture is also offered online, which meets students' needs. We also offer Ocean 100 Lab during mid-morning or late afternoon blocks.

How do you work with other departments that require your course(s) for program completion?
We try to schedule Ocean 100 Lecture classes in typical block scheduling format so that it coordinates with other departments.

Does your discipline offer cross-listed courses?
No

Are there curriculum concerns that need to be resolved in your department? What are they?
To increase enrollments and offer students non-traditional course offerings, a new section of Oceanography 100 Lecture Hybrid was offered during Fall 2017 (CPPEN-S, FT1). This course was very popular and filled to capacity with a waitlist, both of which have not been experienced before for an Ocean 100 Lecture class at CPPEN. This course was very successful and we should consider offering more hybrid courses at various off-campus locations in the future.

In Spring 2016, the class size of Oceanography 100 Online was increased from 32 to 42 students (a 31% increase in class size). The district is proposing to increase Oceanography 100 Online class size from 42 to 60 (a total increase from 32 to 60 students, which represents an 87.5% increase in class size). If online class size is increased to 60, it will kill quality teaching in the sciences at Palomar. In addition, the increase from 32 to 42 students has already negatively affected the number of online course sections in the sciences. Limiting the number of online class offerings in the sciences is not good for our students, who will likely seek other colleges to enroll in these classes. And it’s not good for Palomar, especially in a time when the college is trying to achieve enrollment stability.

There is abundant evidence from educational studies that show that smaller class sizes facilitate student interaction (see references below). Since online classes require specific pedagogy to increase student-to-student and student-to-instructor interaction, it’s a mistake to enforce the same large class sizes as face-to-face classes. Anyone who has taught both face-to-face and online knows how different the two types of classes are.

Increasing online class size to 60 is pedagogically unsound. It’s counter to the principles of small class sizes in community colleges. It’s not good for our students, instructors, or Palomar College class offerings. Trujillo asks for administrative support to help keep his carefully-designed Oceanography 100 Online classes that emphasize active learning and student interaction from turning into the equivalent of a massive online course.

References:

Bettinger, Eric, et al., 2014. The Effects of Class Size in Online College Courses: Experimental Evidence, Center for Economic Studies CESifo Area Conference Program Munich Germany at: http://www.cesifo-group.de/ifoHome/events/Archive/ conferences/2014/09/2014-09-12-ee14-Hanushek/Programme.html
Key statements: "… interactions substantially change in an online setting [in large classes] where discussion boards are the primary forum where peers interact." and "While online courses may present an opportunity to reduce higher education costs, any adverse impact of class size could lead to a deterioration in the overall quality of college courses."

Orellana, Anymir, 2006. Class size and interaction in online courses. The Quarterly Review of Distance Education, Volume 7(3), pp. 229–248 at:
http://wps.prenhall.com/wps/media/objects/4512/4621309/Survey_Online_Class_Size.pdf
Key statement: "… [an online] class size of 18.9 was perceived as optimal to better achieve the course's actual level of interaction, and [an online] class size of 15.9 was perceived as optimal to achieve the highest level of interaction."

Worthen, Helena, 2013. What Do We Know about Teaching Online? American Association of University Professors Report of Survey Findings at: https://www.aaup.org/article/what-do-we-know-about-teaching-online#.WKMlOX8zWUl
Key statement: "The typical [online] class size for our respondents, regardless of sector, was twenty to forty."

How is the potential need for program/course deactivation addressed by the department?
We are in the process of deactivating two courses: (1) OCN 197 - Oceanography Topics and (2) OCN 295 - Directed Study in Oceanography. We note that these two courses haven't been used in over 10 years.

Is your department pursuing non credit or not-for credit options at this time?
No

Are there areas you would like to expand?
To increase enrollments and offer students non-traditional course offerings, a new section of Oceanography 100 Lecture Hybrid was offered during Fall 2017 (CPPEN-S, FT1). This course was very popular and filled to capacity with a waitlist, both of which have not been experienced before for an Ocean 100 Lecture class at CPPEN. This was true again during its second offering in Fall 2018. This course was very successful and we should consider offering more hybrid courses in all disciplines within the Earth, Space, and Environmental Sciences Department at various locations in the future. In fact, this may be a desirable offering for Oceanography at the South Education Center in Rancho Bernardo, where an offering of a traditional Ocean 100 Lecture course has experienced low enrollment.

In addition, It would be good to re-examine offering an advanced oceanography class for oceanography majors before they transfer, even though the success of this course has been limited in the past.

Click here for information about Noncredit and Community Education

Is your department offering online classes?
Yes

How do you consider student needs when determining which classes and how many classes should be offered online versus face-to-face?
The Oceanography Program at Palomar College has a large and vibrant offering of online courses that meet student needs. For example, we offer Ocean 100 Online Lecture during both fall and spring semesters, and also during the 4-week intersession and summer. It is noted that online sections of Ocean 100 Lecture have a significantly higher fill rate (since 2012: 94.3%) as compared to face-to-face courses (84.4%). It is felt that the Oceanography Program is offering a good mix of online and face-to-face sections

of Ocean 100 Lecture.

As noted, the prior stellar success and retention rates for Ocean 100 Online have decreased recently with the mandated increase in class size from 32 to 42 students.

Describe other data and/or information that you have considered as part of the evaluation of your program
We try to coordinate with the requirements of 4-year transfer schools to keep Ocean 100 Lecture and Ocean 100 Lab transferrable for our 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.

What kinds of careers are available for people who complete your programs (and/or transfer)? (Refer to link above) Are there any new or emerging careers and if so how would the new or emerging careers impact your future planning?
25-1051.00 Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary
19-2021.00 Atmospheric and Space Scientists
19-2042.00 Geoscientists, Except Hydrologists and Geographers
19-4099.00 Life, Physical, and Social Science Technicians, All Other
19-4041.02 Geological Sample Test Technicians

New or emerging careers: One potential area of employment is with aquaria and other public outreach organizations that explain oceanography to the general public.

What are the associated knowledge, skills, abilities (KSA's) needed for the occupations listed above? (click examples in the link above to get ideas)
In essence, the KSAs needed for employment in any of the above fields are basic oceanographic knowledge (e.g. the geological, chemical, physical, and biological elements that control the oceans), as well as general scientific skills and abilities. Further, an advanced degree (M.Sc. or Ph.D) are required for most jobs involving oceanography.

More specifically, knowledge needed include:
Education and Training
English Language
Mathematics
Computers and Electronics
Physics
Chemistry
Geology
Biology

Skills needed include:
Speaking
Reading Comprehension
Instructing
Problem Solving Using Scientific Principles

Active Listening

Abilities needed include:
Oral Expression
Speech Clarity
Oral Comprehension
Written Comprehension
Deductive Reasoning

How does your program help students build these KSA's?
By completing courses in oceanography at Palomar College, successful students have a basic background in science and fundamental oceanographic concepts to enable them to continue their education at other 4-year institutions. Many of these KSAs are fundamental items (English Language, Speech Clarity, Reading Comprehension) that a student learns in a variety of classes while obtaining a college degree.

Have you incorporated work based learning (work experience, internships, and/or service learning) into your program?
No

Do you want more information about or need assistance integrating work-based learning into your program?
No

How do you engage with the community to keep them apprised of opportunities in your program?
Through various outreach opportunities, such as the STEM Conference at Palomar, Earth Science Week, and other off-campus events such as talks at the Birch Aquarium at Scripps.

Program Goals

In the previous sections, you identified opportunities for improvement. Using these opportunities, develop 3-year SMART goals for your department. Goals should be Specific, Measurable, Attainable, Relevant, Time-Specific. Ensure your goals align with the mission of your department and/or the College's strategic plan.

Please list all discipline goals for this three-year planning cycle. Click here for previous PRPs and goal information.

Goals

Goal 1

Brief Description
Reduce Ocean 100 Online class size from 42 to 32 students and resist district efforts to increase Ocean 100 Online class size to 60 students

Is this a new or existing goal?
Existing

Goal Status
Ongoing

How will you complete this goal?
This is a working condition issue, so Trujillo is working with the union to fight the district's attempt to increase Oceanography 100 Online class size to 60 students. Increasing Oceanography 100 Online class size from 32 to 42 has already negatively affected the success and retention rates of Oceanography 100

Online; these trends need to be reversed.

Outcome(s) expected (qualitative/quantitative)
The union is currently in negotiation with the district about this issue to establish fair working conditions for all instructors across all disciplines on campus. If negotiations go as planned, this issue should be resolved in the next contract for Fall 2019.

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?
To maintain quality online instruction and fulfill the mission of the Oceanography Program, the class size for Oceanography 100 Online should be reduced to 32. In fact, increasing Oceanography 100 Online class size from 32 to 42 has already negatively affected its success and retention rates.

Expected Goal Completion Date
8/30/2019

Goal 2

Brief Description
Hire a new full-time interdisciplinary oceanography/geology instructor to replace Patty Deen, who retired in December 2018

Is this a new or existing goal?
Existing

Goal Status
Ongoing

How will you complete this goal?
Assess status of program and complete Staffing and Resources section of this PRP.

Outcome(s) expected (qualitative/quantitative)
The hiring of a replacement interdisciplinary oceanography/geology instructor will ensure consistency and quality of instruction within the Oceanography and Geology Programs at Palomar College.

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?
The Oceanography Program at Palomar alone offers enough classes to support 3 full-time oceanography instructors, and we are down to 2 (one of which also teaches other Earth Science disciplines). We need to hire an additional full-time interdisciplinary oceanography/geology instructor to replace Patty Deen, who retired in December, 2018. We also need to be compliant with state law, which specifies a full time to adjunct instructor ratio of 75/25% for classes taught in our discipline.

Expected Goal Completion Date
8/21/2020

Goal 3

Brief Description
Work with administration to initiate an official registration waitlist for Oceanography 100 Lab

Is this a new or existing goal?
Existing

Goal Status
Ongoing

How will you complete this goal?
Administration has told us that because Ocean 100 Lab has a prerequisite of enrollment in Ocean 100

Lecture, which must be verified by registration software, a waitlist cannot be generated. As sections fill before the beginning of the semester, potential students are not given the opportunity to be added to a waitlist, which gives students the false impression that the class in unavailable for them. Seats are only opened up as students drop in the pre-semester registration period. Only students who happen to check at the right time are able to register for the class. Students have complained about this and the college is no doubt losing student enrollments to what appears to be a simple, fixable software issue.

Outcome(s) expected (qualitative/quantitative)
If the registration software can be fixed, it will allow students to be on a waitlist for Ocean 100 Lab when the class fills; this will potentially increase enrollments in the lab class.

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?
If we are interested in helping students graduate on time by getting the classes they need, then it seems strategically important to allow students to register for a waitlist when an Ocean 100 Lab class is full. This aligns with the department mission statement, the college strategic plan, and Guided Pathways.

Expected Goal Completion Date
12/16/2019

STAFFING AND RESOURCE NEEDS

Instructions

1. Refer to Strategic Plan.
2. See Data.
3. See career info (In PRP)

Are you requesting additional full-time faculty?
Yes

Are you requesting additional Staff, CAST or AA?
No

In the last ten years, what is the net change in number of FT Faculty in the department? (FT faculty loss vs. gain)
-1

% of FTEF for on-going reassigned time (department chair, program director, coordinator, etc.)

2016-2017 % FTEF (on-going reassigned time)
0%

2017-2018 % FTEF (on-going reassigned time)
0%

2018-2019 % FTEF (on-going reassigned time)
0%

% of FTEF for temporary reassigned time (grant activity, sabbaticals, leaves, other reasons)

2016-2017 % FTEF (temporary reassigned time)
Fall 2016, Patty Deen Load Bank Leave, 100%

2017-2018 % FTEF (temporary reassigned time)
Spring 2018, Al Trujillo, Sabbatical, 100%

2018-2019 % FTEF (temporary reassigned time)
Fall 2018, Al Trujillo, Load Bank Leave, 100%

REQUEST FOR ADDITIONAL FULL-TIME FACULTY

Faculty Request 1

Title of Full-Time Faculty position you are requesting
Interdisciplinary Oceanography/Geology Instructor

How will this faculty position help meet district (Guided Pathways, Strategic Enrollment Management etc.), department and/or discipline goals?
The success of district goals such as Guided Pathways and Strategic Enrollment Management (SEM) rely on disciplines being able to provide excellence in learning opportunities (consistent standards/quality of instruction as well as curriculum development) which, in turn, leads to enhanced student retention and success. This, of course completely overlaps with discipline and department goals.

With the retirement of Patty Deen in December 2018, the Oceanography Program currently has two full-time faculty members (Al Trujillo and Lisa Yon), but only Al Trujillo teaches a full load in oceanography. Lisa Yon has 40% of her teaching load in oceanography and is responsible for coordinating OCN Lab schedules/activities and curriculum updates, including the update of the latest edition of the OCN 100 lab manual. However, Dr. Yon also oversees the Earth Science Program and has 60% of her teaching load in that discipline including being responsible for ES curriculum updates. As a result, almost 60% of the courses offered in oceanography are taught by part-time faculty. Thus in order to maintain consistent standards/quality of instruction, considerable time is invested in the hiring, training, and evaluation part-time faculty who often go on to other jobs thus necessitating an on-going cycle of hiring, training, and evaluation. This is not an efficient way to maintain consistent standards/quality of instruction nor does it lend itself to maintaining acceptable levels of student support, retention, and success.

District goals also include increasing student access to educational opportunities through increased offerings at satellite campuses. Beginning Fall 2018, offerings at the Rancho Bernardo Center included both an OCN lecture and lab. As there is no designated instructional support assistant at this satellite campus, the logistics of setting up labs and equipment fell to the discipline faculty. During the Fall 2018 semester, Lisa Yon spent over 20 hours setting up equipment/supplies at the Rancho Bernardo campus and meeting regularly with the part-time faculty teaching at the new campus to ensure a smooth transition. SEM goals important at the RB Center include recruitment/marketing (making students aware of the opportunities) and providing a positive classroom experience (via well-qualified faculty) with the goal of retention and success for enrolled students. A committed full-time faculty member would greatly assist in achieving this goal.

Is there a scarcity of qualified Part-Time Faculty (for example: Specialized degree/experience, emerging/rapidly changing technology, high demand)
Although our current part-time faculty are talented instructors and show a dedication to the program, they are not a replacement for a full-time faculty member. Finding qualified part-time faculty who can teach according to designated course offerings is challenging; Lisa Yon has spent considerable time this past year reviewing applicant credentials for the part-time teaching pool in both Oceanography and Earth Science. We have also tried reaching out to four year universities (UCSD, UC Irvine) as well as other local community college districts to secure additional part-time faculty, only to find very limited success. Should an applicant be qualified, we still face challenges in scheduling due to the fact that part-time faculty fall into two categories:

- They teach for us in addition to holding a full-time job elsewhere and thus can only teach evening classes.
- They are part-time instructors at several regional colleges and thus we compete with other colleges for their hourly availability.

Currently two regional community colleges are in the process of hiring full-time replacements for their Oceanography faculty who retired within the last year. Three of our current part-time faculty have applied

for these positions and we may be losing their talents as a result. A separate part-time faculty member has already informed us that they have accepted a full-time position elsewhere and will not be returning for any future teaching assignments.

Are you requesting this position for accreditation, regulatory, legislative, health and safety requirements? Please explain.
The passing of California AB 1725 set the goal of a 75:25 ratio requiring full-time faculty teach 75% of a college's offerings. In Oceanography, due to the nature of expanded teaching assignments in Earth Science and Geology, we have struggled to meet this goal. With the retirement of Patty Deen, we will be looking at an average of less than 40% of Oceanography courses being taught by full-time faculty. Considering the academic role that Patty Deen served in Geology as well, the data provided by the College speaks volumes. Currently the average Full-time Equivalent Faculty in Oceanography (3.13 over six years) and Geology (1.40 over six years) indicates that typical course offerings require the equivalent of 4.5 full-time faculty members. We are clearly understaffed with only 3 full-time faculty members across both Oceanography and Geology disciplines and as the text of AB 1725 states "the quality, quantity and composition of full-time faculty have the most immediate and direct impact on the quality of instruction."

In addition to the legislative aspect, Oceanography and Geology disciplines have regularly collaborated in Regional Field Studies courses (GEOL 195), such as GEOL195B- Southern California Coast. Field courses are an essential part of any Geology Program, and at Palomar College the Geology Program offers both an A.S. and A.S.-T in Geology. The field courses are required for the A.S. degree. The nature of these field courses is such that they require two faculty members for logistical and safety reasons.

Logistics and safety also play a role in staffing of OCN 100 lab sections. With the retirement of Patty Deen, 60% of the lab offerings are now being taught by part-time faculty. Spring 2019 offerings necessitated the hiring of two new part-time faculty to teach OCN 100 lab sections. Considerable training time must be spent with these faculty to ensure proper set-up of labs (safety is a priority with labs such as Seawater Chemistry) and the logistics of field trips. About 25% of the lab meetings are field trips to regional coastal settings where students directly engage in observation of coastal processes, collect data for analysis, or learn about important topics such as mariculture or desalination. As part-time faculty members move on to new jobs, this again necessitates an on-going cycle of hiring, training, and evaluation. If the majority of teaching staff are associated with this "revolving door" scenario, the situation also places unreasonable demands on the program to maintain quality of instruction and to develop innovations in curriculum.

Please summarize the discipline productivity, efficiency, and any regional career education needs for this discipline.
The Oceanography discipline has consisted of three full-time faculty since Fall 1997. Over time, however, the duties of the faculty have shifted in response to student demand for specific courses within the department. Both Dr. Lisa Yon and Professor Patty Deen shifted 40-60% of their teaching load from Oceanography to Earth Science (e.g. ES 100) as well as to additional Geology courses (e.g. GEOL 110) including field courses (e.g. GEOL 195B, GEOL 195D, GEOL 195F). With the retirement of Professor Deen in December 2018, there is a crucial need for a replacement full-time faculty member who can teach across Earth Science including Oceanography and Geology. Currently the average Full-time Equivalent Faculty in Oceanography (3.13 over six years) and Geology (1.40 over six years) indicates that typical course offerings require the equivalent of 4.5 full-time faculty members. Thus, we are understaffed with only 3 full-time faculty members across both Oceanography and Geology disciplines.

Clearly hiring a full-time faculty member to support the goals across the Oceanography and Geology disciplines will enhance productivity in areas such as curriculum management including evaluation of both course and program learning outcomes. In addition, full-time faculty will be more involved in student, department, and institutional activities thus promoting not only productivity and shared governance, but also the efficiency of our academic programs and course offerings. Full-time faculty members provide

essential stability for program planning and curriculum development. They also provide levels of availability that students need outside of the classroom, such as involvement in course advisement, community outreach, and extracurricular activities (Geoscience Connection club, Earth Science Week activities, STEM Conference). In addition, effectively expanding the program (Oceanography/Geology/Earth Science) to satellite campuses such as Rancho Bernardo requires the attention of full-time faculty. If College/District plans include this goal, then support and allocation of resources must be provided for the hiring of a full-time faculty member as a replacement for a retired full-time faculty member.