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
Physics and Engineering

Discipline Name
Engineering (ENGR)

Department Chair Name
Daniel Finkenthal

Division Name
Mathematics, Science and Engineering

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

Discipline Mission statement
The Department has not developed an agreed on mission statement for this discipline. This will be a goal for the coming year after we have hired several new faculty. A suitable stand-in is presented here:

Engineering includes the application of science, mathematics, and empirical evidence to create technologies that improve the world we live in. Our mission is to provide students with an outstanding learning experience in which they develop strong analytical, quantitative, and problem solving skills to prepare them for a career in one or more of the various fields engineering. We strive to provide an engaging teaching and learning environment for students of diverse origins, experiences, needs, abilities, and goals. We support and encourage students who intend to transfer as well as students pursuing a technical certificate. We seek educational empowerment in all we do. We provide students with rigorous and comprehensive courses that allow them to perform at a high level while also fostering creativity and excitement about applied science and engineering.

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

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

Are any of your programs vocational (CTE/CE)?

Yes No

List all degrees and certificates offered within this discipline.
AS

Please list the names and positions of everyone who helped to complete this document.
Daniel Finkenthal, Department Chair

Full-time faculty (FTEF)	**Part-time faculty (FTEF)**
0.5	1.5

Classified & other staff positions that support this discipline
ADA (20%), ISA-IV(50%) for PHYSENGR Department
(Shared across the Physics, Engineering, and Physical Sciences)

Additional hourly staff that support this discipline and/or department

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.

How well do your program's learning outcomes communicate the scope and depth of the degree/certificate offered and align with employer and transfer expectations?
Poorly at this time. We had some difficulty articulating some of our classes with SDSU this semester, but prommissed we would improve.

Describe your program's plan for assessing program learning outcomes.
In the last year we have conducted SLO assessments on all our courses since none had been done before. We are now on a three-year assessment cycle plan in which the evaluation, assessment, and review of our courses will be staggered. We communicate regularly with faculty and transfer staff at other colleges and universities. We maintain contact with many of our students after they transfer.

Summarize the major findings of your program outcomes assessments.
Students met the outcomes to our satisfaction. The outcomes themselves are in need of update.

Reflecting on the major findings you summarized, what are some questions you still have about students' learning in your program that you have not yet been able to address with your outcomes assessments?
There is concern that because SLOs have limited scope that students may not learn the full breadth of material required for success at transfer colleges.

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.
A number of courses in the Physics discipline support the following General Education/Institutional Learning
Outcomes:
-Quantitative Literacy
-Inquiry and Analysis
-Critical Thinking
-Information Literacy
-Teamwork and Problem Solving
-Ethical Reasoning

Summarize the major findings from your course outcomes assessments that are related to the General Education/Institutional Learning Outcomes that your discipline supports.
Our ENGR-100 class (Introduction to Engineering) is a great opportunity to foster:
-Intercultural Knowledge
-Ethical Reasoning
-Civic Knowledge and Engagement
We hope to expand on these learning objectives by providing service learning opportunities for students pursing engineering careers.

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. This year, our funding formula has also changed reflecting this emphasis, providing additional funding as a function of the number of completions.

In this section we will identify a program standard and a stretch goal (what you would like to move toward) for program completions.

The standards represent the lowest number of program completions deemed acceptable by the College. In other words, if you were to notice a drop below the set standard, you would seek further information to examine why this occurred and strategies to increase completions.

In this section we will identify a program standard and a stretch goal (what you would like to move toward) for programs.

List the number of completions for each degree/certificate for the previous year.

3 AA Degrees

Have your program completions Increased, decreased, or stayed the same over the last 5 years?
Stayed the same

What factors have influenced your completion trends?
Since we have been primarily focused on having student transfer successfully we have ignored an opportunity for awarding AS degrees. Most of our ENGR transfer students meet all the requirements for the AS!

Are the courses in your discipline required for the completion of other degrees/certificates?
No

Do you have programs with 7 or fewer completions in the last 5 years?
Yes

What steps are you taking to address these completions?
None at this time, but we will surely start promoting the AA degree since most of our ENGR transfer students meet all the requirements.

What is your program standard for program completion?
20.0%

Why did you choose this standard?
Given my experience and discussions with students about transfer intentions I believe we could readily have at least 20 be awarded AS degrees each year.

What is your Stretch goal for program completion?
30.0%

How did you decide upon your stretch goal?
Given my experience and discussions with students about transfer intentions and knowledge of community needs I believe we should be able to have 30 be awarded AS degrees each year.

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?
Our enrollments have been flat at about 106 students
Our WSCH/FTEF has been relatively flat at about 420
Our fill rates are excellent, mid-90%

Enrollment	120	102	106	113	106
WSCH Per FTEF	410	385	384	469	419
Fill Rate	88%	86%	94%	99%	93%

What factors have influenced your efficiency trends?
Engineering classes are small. Room availability has limited us to 36.
I know we have been more efficient over this last year as we have over-enrolled many of our lecture sections by adding additional labs to serve them.

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?
No

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?
70.0%

Why did you choose this standard?
We chose the College standard coupled with the level of difficulty of the curriculum.

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

Was this expected?
yes

What is your Stretch goal for COURSE success rates?
75.0%

How did you decide upon the goal?
It is important to make careers in engineering available to the community we serve, especially to groups that have been under-represented in the various engineering fields.
We believe that the current enthusiasm for promoting STEM and the continued student support services being offered by the College (STEM center, MATH center, etc.) should allow us to meet this target.

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.
90% retention is good. Our classes are small and instructors have close personal interactions with students.

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

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

Do you have any best practice methods you use for online courses to share with the community?
Not at this time.

COURSE OUTCOMES

How is course assessment coordinated across sections and over time?
We typically only have a single section of each class but this now changing. We assess our course student learning outcomes on a 3-year cycle by reviewing student performance on embedded questions on exams. Results are entered into TracDat.

How have you improved course-level assessment methods since the last PRP?
Last year we completed SLO assessment for ALL our courses.

Summarize the major findings of your course outcomes assessments.
Students are able to successfully pass the course assessments with success rates above 71%. However, the CORs and the SLOs are out of date and need to be revised immediately.

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?
The lab classes are wanting as there are no standard lessons, each instructor just does what she/he can with the equipment and materials we have on hand, which is not much to begin with.

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 need to update the curriculum as well as the CORs. We need to establish routine and acceptable laboratory curriculum and procure modern equipment. The Material Science is especially wanting. The electronics labs are doing better.

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?
Since primary outcome is transfer, the course outcomes are geared for meeting transfer requirements.

How do your degree maps and scheduling strategy ensure scaffolding (how all parts build on each other in a progressive, intentional way)? How do you share the maps with students?
They don't currently line up well. Since engineering is partly a skills based program, the courses should be set up in a way that courses and classes are introduced in a progressive intentional way to ensure skill and knowledge
progression throughout the curriculum.

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 don't have a strategy in place. We will work on this in the coming year.

How do you work with other departments that require your course(s) for program completion?
N/A

Does your discipline offer cross-listed courses?
Yes

How do you work with the other department(s) to ensure consistent curriculum per the COR and minimum qualifications? How do you coordinate course scheduling?
There are some classes cross-listed with the Drafting Technology department. There may be concerns since this is a CTE program and we need to insure that the classes for engineering meet ABET standards. This will be done in the coming year.

Are there curriculum concerns that need to be resolved in your department? What are they?
Yes. The CORs are out of date and need to be revised. SDSU has indicated they will stop articulating our classes unless we update within the next year.

Are there courses that should be added or removed from your program - please explain?
We should add a course in scientific computing such as Matlab or Python programming. We need a digital electronics course in order to meet the needs of transfer students.
It might be best to eliminate the laboratory portion of the Material Science class since we don't currently have the facilities to do it properly. Furthermore, the class does not appear to be needed for articulation; students that transfer to SDSU are required to take their lab. Most CC's that offer this course don't have a lab associated.

How is the potential need for program/course deactivation addressed by the department?
I have spoken with our articulation officer and interim Dean about the difficulties we have and they have offered some constructive advice.

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

Are there areas you would like to expand?
Yes. I would like to build a succesful Electrical and Computer Engineering program that includes AS degree. I think there is great potential and community need for this.

Click here for information about Noncredit and Community Education

Is your department offering online classes?
No

How do you consider student needs when determining which classes and how many classes should be offered online versus face-to-face?
N/A

Describe other data and/or information that you have considered as part of the evaluation of your program
I have been discussing our needs with colleagues at other colleges, industry contacts and potential partners, and our articulation officer.

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?
Folks that achieve engineering degrees are likely to find employment in a field of engineering. This includes:
Mechanical Engineering
Electrical Engineering
Civil Engineering
Chemical Engineering
Materials Engineering
Aerospace Engineering
Nuclear Engineering

What are the associated knowledge, skills, abilities (KSA's) needed for the occupations listed above? (click examples in the link above to get ideas)
KNOWLEDGE
-Physics
-Engineering
-Scientific Computing
-Technology
-Computer and Electronics
-Production and Processing
-Mathematics

-Design
-Fabrication
SKILLS
-Reading Comprehension
-Critical Thinking
-Troubleshooting
-Writing
-Complex Problem Solving
-Active Listening
-Active Learning
-Speaking
-Judgement and Decision Making
-Monitoring
-Coordination
-Repairing
-Equipment Maintenance
ABILITIES
-Inductive Reasoning
-Near Vision
-Oral Comprehension
-Deductive Reasoning
-Written Comprehension
-Information Ordering
-Problem Sensitivity

How does your program help students build these KSA's?
Through a combination of lecture, lab exercises, reading assignments, projects, and internships. We believe that our courses and programs encourage students to acquire and/or enhance the KSA's listed above. For example, our lab courses students to work as a team on labs and semester projects. These projects reinforce the students' knowledge in engineering, physics, mathematics,computing, technology, design, and fabrication.

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?
Yes

Please list any questions and describe what you need to integrate work-based learning.
How do we get started!!

How do you engage with the community to keep them apprised of opportunities in your program?
We are weak on this. We do participate in public service events and showcase our student projects. We give physics demonstrations at local middle schools and reach out to high-school teachers to recruit for the Promise program.

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
Hire a full-time faculty lead

Is this a new or existing goal?
New
Existing

Goal Status
Ongoing

How will you complete this goal?
We are now in the process

Outcome(s) expected (qualitative/quantitative)
Successful hire

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?
This is required to achieve our mission.

Expected Goal Completion Date
6/30/2019

Goal 2

Brief Description
Revise Curriculum

Is this a new or existing goal?
New

How will you complete this goal?
By allotting time and resources

Outcome(s) expected (qualitative/quantitative)
Revised curriculum and COR that articulates across the state and country.

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?
This is an essential requirement to satisfy our mission.

Expected Goal Completion Date
5/31/2020

Goal 3

Brief Description
Create Engineering Technician Certificate

Is this a new or existing goal?
Existing

Goal Status
Ongoing

How will you complete this goal?
It's all laid out. We need to get it through the curriculum committee

Outcome(s) expected (qualitative/quantitative)
We will be able to offer certificate

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?
This provides opportunities for careers in STEM and serves community needs.

Expected Goal Completion Date

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?
No

Are you requesting additional Staff, CAST or AA?
Yes

In the last ten years, what is the net change in number of Staff in the department? (loss vs. gain)

REQUEST FOR ADDITIONAL STAFF, CAST, AA

Staff, CAST, AA request 1

Title of Staff position you are requesting
Instructional Support Assistant IV

How will this Staff position help meet district (Guided Pathways, Strategic Enrollment Management etc.), department and/or discipline goals?
We need the full attention of a dedicated Lab Technician (ISA). Labs are currently set up and maintained by full-time faculty, impacting their time and ability to engage in more constructive activities. ISA is needed in order to expand the program to south center and grow the program at San Marcos campus.

Is there a scarcity of qualified Part-Time Staff (for example: Specialized degree/experience, emerging/rapidly changing technology, high demand)
Yes

Are you requesting this position for accreditation, regulatory, legislative, health and safety requirements? Please explain.
ISA is needed to maintain equipment and facilities. Labs have hazards that need qualified personnel to manage and supervise.