

Status: **Reviewed**

Entry #: 240

Date Submitted: 9/14/2020 1:29 PM

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

2020-2021

Are you completing a comprehensive or annual PRP?

Annual

Department Name

Earth, Space, and Environmental Sciences

Discipline Name

Earth Sciences (ES)

Department Chair Name

Sean Figg

Division Name

Mathematics, Science and Engineering

Website address for your discipline<https://www2.palomar.edu/pages/earthscience/>**Discipline Mission statement**

The Earth Science Program at Palomar College functions as a multiple mission program. Through our ES 100 and ES 115

courses, we promote earth science literacy and fulfill the general education natural and physical science requirements for degree or transfer. Specifically, the ES 100 course is an approved course for transfer into the CSU San Marcos Liberal Studies Elementary Subject Matter (ESM) option. Producing well-educated science students who pursue teaching careers will ultimately improve K-12 science instruction. Additionally, the ES 100 lecture and lab courses may also be used to satisfy course requirements for the A.A. in Anthropology for Transfer (A.A.-T).

The Earth Science curriculum is designed to provide the fundamental knowledge and skills to students interested in increasing their understanding of the complex interactions among Earth's geosphere, hydrosphere, atmosphere, and biosphere. The curriculum also includes the connection of humans to Earth for natural resources and the impact of Earth processes (such as earthquakes, volcanic activity, and other natural hazards) on the distribution and development of human populations. The influence of human activities on Earth's surface processes is also addressed. The overall mission of the program is to develop an Earth-science-literate community that is aware of current and accurate scientific understanding of our planet. Such a population is critical to the promotion of Earth stewardship, sound public policy, and expanded international cooperation.

[\(click here for information on how to create a mission statement\)](#)

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

No

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

No

Please list the names and positions of everyone who helped to complete this document.

Dr. Lisa Yon, Professor, ESES Dept.

Use the link to provided to help answer the staffing questions below. This form requires a login and password to access. Please use your Palomar email and password to log in.

Link: [Permanent Employees Staff Count](#)

Full-time Faculty (total number of FT faculty in your discipline)

1

Full-time Faculty (FTEF)

0.6

Part-time faculty (FTEF)

0.0

Classified and other permanent staff positions that support this discipline

Abigail Corona, ADA, 10%

Tony Kopec, Instructional Support Assistant IV, 10%

Additional hourly staff that support this discipline and/or department

None

PROGRAM INFORMATION

In this section you are asked to consider your programs, their learning outcomes, the annual number of completions, goals for completions and enrollment and efficiency trends.

PROGRAM LEARNING OUTCOMES

Begin this section by reviewing the Program Review reports for programs and courses in Nuventive Improve (TracDat). All active course and program learning outcomes should be systematically assessed over a 3-year cycle. First, look at program learning outcomes.

- **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 do they align with employer and transfer expectations?

Earth Science is a single course (ES 100 lecture) discipline. Although ES 100 lab exists on the books, we have not been able to offer the course due to College-wide reductions in course offerings.

ES 115 (Natural Disasters and Environmental Hazards) is offered on occasion but is cross-listed as GEOG 115 and all learning assessments occur within that discipline.

The ES 100 course supports General Education/Institutional Learning Outcomes in four primary areas: written communication, inquiry & analysis, creative/critical/analytical thinking, and civic knowledge & engagement.

ES 100 satisfies CSU-General Education transfer requirements in Area B1, Scientific Inquiry and Quantitative Reasoning in Physical Science and the IGETC transfer requirements for UC in Area 5A, Physical Sciences.

Program Information Summary

Consider your program outcome assessments, completions, and enrollment/efficiency trends, as well as other internal and external factors.

How have these factors contributed to the success of your program(s)?

The ES 100 course is a popular course for students to complete their General Education requirements; as a "survey" course, it provides a taste of each of the other disciplines within the ESES Department. From the past five years of data, the ES discipline Fall WSCH/FTEF averages 664, well above the desired College efficiency goal of 525.

How have these factors presented challenges for your program(s)?

The ES 100 lecture courses regularly fill and usually generate a Wait List as well. The ES 100 Lab course is not currently being offered due to restrictions imposed by the College related to reduction of course offerings. Without the lab component, students cannot use the ES 100 lecture/lab pair to satisfy GE requirements or science requirements for AA-T Anthropology or Liberal Studies. The College reduction in course offerings has also resulted in reduction of lecture section offerings from 3 sections to 2 sections beginning Spring 2021.

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 consider 70% to be an appropriate standard for discipline course success rate, which is consistent with SLO rates. This is also consistent with the College's institutional standard of 70% (March 2020 Accreditation Report).

What is your stretch goal for course success rates?

71.0%

How did you decide upon the goal?

According to Palomar's Accreditation Report (MARCH 2020), the campus-wide Stretch Goal for the college is 71%. Since ES 100 has achieved this goal several times over the past five years, we consider it to be an achievable goal. It is also important to note that the average retention rate over the past five years is 91%..students are "sticking" with the course and the motivation appears to be present to "do well" in the course. We believe that part of the barrier to increasing success rates may lie in student ability to invest appropriate time in course engagement. A trend has been noticed over the past two years where retention rates between full-time and part-time are 93% and 85% respectively; not a large difference. However, success rates between the two groups are significant with 75% for full-time students and 59% for part-time students. Clearly, if students are being challenged by time commitments outside of the classroom, they do not have sufficient time to invest in course engagement.

Gender: Why do you think gender differences exist? What do you need to help close the gap?

Gender is a difficult group to evaluate since the data is self-reported and students may identify outside of their birth gender. That being said, there appears to be some differences that have developed. Previously it has been noted that there is no real difference in retention rates between females at 93% and males at 92% averaged over several years of data. However, if we look at just the past two years, there is a distinct change in that 94% of identified females remain in the class but for males it is now 86%.

For students who stay in the class, success rates have stayed about the same over the past five years, but there is a distinct difference with females showing an average success rate of 71% as opposed to the average success rate for males being only 63%.

One could speculate that females are more focused, show more attention to detail, are better organized, etc. which is very much an "old-school" and outdated style of thinking. Without knowing for sure what affected these students and their performance, there is no clear path to closing the gap other than making sure that all students (regardless of gender identification) recognize the rigors associated with a college education and are prepared to make that commitment.

Age: Why do you think age differences exist? What do you need to help close the gap?

As students must report their actual birthday, data related to age can be considered reliable and not surprising. Over a five year period, retention across the three age categories presented is very similar: 93% in the 25 to 49 age group, 91% in the 20 to 24 age group, and 90% in the 19 and under age group.

What is truly not surprising is the success rates: 19 and under at 63%, ages 20-24 at 67%, but 81% for ages 25 to 49. Typically an older student has developed better study habits, better life skills and time management skills, and often has a better understanding of the value of their education. One could suggest that young, first-time college students need to be better educated on the rigors of college and the importance of time management. Younger students are more familiar with the high school model of education where the majority of work is completed during a seven-hour school day in which classes meet daily. They are often unprepared for the college setting where the majority of the work occurs outside of the scheduled class time and the motivation to complete the assigned work must come from the student themselves. Typical college-level science courses require a commitment of at least nine hours of work per week outside of the classroom, but many students appear unready to make that kind of time investment.

Ethnicity: Why do you think ethnicity differences exist? What do you need to help close the gap?

Ethnicity is another factor which could be misleading as the data is self-reported. However, in looking at the data, two primary groups are reported: Hispanic and White. Retention rates between the two groups is very similar: 90% and 94%, respectively. That being said, I can see from the data and from my own contact with students in the classroom that some students typically fall below the norm of 70%. In this case, success rates for Hispanic students averages 62% compared to 77% for students who identify as White.

There are many factors that could be at work here. If one were to speculate, in an attempt to provide guidance to improve performance, some factors could relate to adequate preparation for some students such as the language and critical thinking skills required for college-level sciences classes. Current limited access to data does not allow us to evaluate English Language Learners (ELL) students as we have done in the past, but prior data has suggested that ELL students have lower success rates. Students considering enrollment in college-level science courses need to be properly advised that college-level English and Math skills provide the best preparation for success in these courses.

COURSE LEARNING OUTCOMES**How have you improved course-level assessment methods since the last PRP?**

Results from assessments show that overall students are meeting the assessment goals. There are no plans at this time to change assessment methods. However, an interesting trend has been noted related to SLO assessments. Prior to exams/SLO assessment, several activities both in class and online are given to students to complete as part of the discussion of the topic and to enhance their understanding of the topic. Students who fully and successfully completed these activities score well above 70% on the assessment. In contrast, students who failed to participate in and complete these activities also fail to pass the SLO assessment. Obviously students who participate in the learning activities do much better on assessments, which is certainly not surprising. The question becomes, however, how does one enforce the full participation of all students in the completion of these activities? Students make the choice of whether or not to fully participate in a course and thus their grade will be a reflection their level of participation.

Summarize the major findings of your course outcomes assessments.

Although students meet course assessment goals, this is a simple snapshot of just a few of the topics covered within the course. Even overall course success at an average of 70% is misleading since this does not reflect a typical bell curve distribution. More and more we are seeing a trend toward a bimodal distribution of with almost equal amounts of A/B grades compared to D/F and a lesser number of students in the C range.

This section is intentionally blank for annual PRPs. Please click "Next" to continue.

This section is intentionally blank for annual PRPs. Please click "Next" to continue.

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 Teacher, Postsecondary
 19-2042.00 Geoscientists, Except Hydrologists and Geographers
 25-1043.00 Forestry and Conservation Science Teachers, Postsecondary
 25-1053.00 Environmental Science Teachers, Postsecondary
 19-3092.00 Geographers
 25-2022.00 Middle School Teachers, Except Special and Career/Technical Education
 19-4099.00 Life, Physical, and Social Science Technicians, All Other
 19-4091.00 Environmental Science and Protection Technicians, including Health
 19-4092.00 Forensic Science Technicians
 19-4041.02 Geological Sample Test Technicians

New or emerging careers: One potential area of employment is with public outreach organizations such as museum education departments. These facilities are tasked with explaining scientific concepts 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)

The KSAs needed for employment in any of the above fields are basic Earth Science knowledge as well as general scientific skills and abilities. Postsecondary teaching jobs would require a minimum of a Master's degree.

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 the ES 100 lecture, successful students have a basic background in science and fundamental Earth Science 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.

Work Based Learning

Applied and work-based learning (WBL) allows students to apply classroom content in professional settings while gaining real-world experience. WBL exists on a continuum that reflects the progress of experiences from awareness-building to training. Students often cycle back through the continuum many times throughout college and throughout their career. Faculty play a critical role in ensuring these experiences are embedded into curriculum and support learning.

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?

We engage with the community through various outreach opportunities, such as the Palomar STEM Conference and Earth Science Week. Dr. Yon also participates in outreach by being available to groups as a speaker and has presented at homeowner groups and organizations such as the Daughters of the American Revolution.

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

Expansion of Earth Science offerings to include ES 100 Lab

Is this a new or existing goal?

Existing

Goal Status

Ongoing

How will you complete this goal?

We are awaiting approval from the College to be able to expand offerings to include the already approved ES 100 lab. We propose that offering the Earth Science lecture/lab at the Rancho Bernardo campus provides a viable option.

Outcome(s) expected (qualitative/quantitative)

With the offering of the ES 100 lab course, students pursuing majors in Liberal Studies (Elementary Subject Matter credential) and those students in the Anthropology A.A.-T degree program will be able to satisfy their course requirements by completing the ES 100 lecture/lab combination.

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?

The overall mission of the Earth Science discipline is to promote earth science literacy while providing students the opportunity to fulfill the general education physical or natural science requirements for degree or transfer. The ES 100 lecture/lab combo specifically satisfies course requirements for the A.A.-T in Anthropology and transfer into the CSU San Marcos Liberal Studies Elementary Subject Matter (ESM) option. This is also in alignment with the College mission statement wherein the College specifically states that it supports and encourages students who are pursuing transfer-readiness.

Expected Goal Completion Date

2/1/2022

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 four parts:

PART 1: Staffing Needs (Faculty and Additional Staff)

PART 2: Budget Review

PART 3: Technology and Facilities Needs

PART 4: One Time Request for Other Needs (NonTechnology Equipment, Supplies, Operating Expenses, Travel)

PART 1: STAFFING NEEDS

Requests for faculty will follow the prioritization process currently in place in IPC, and the IPC SubCommittee. Requests for new staff positions will be prioritized at the division level and reviewed at Exec.

Are you requesting additional full-time faculty?

No

NOTE: If you are requesting full-time faculty, you must go back to the Labor Market section of the form to complete that section. It is required when requesting additional faculty positions.

Are you requesting new Classified, CAST or AA positions?

No

PART 2: BUDGET REVIEW

Review your Budget/Expenditure reports for 2018, 2019, 2020. Consider your three-year PRP plan.

Click on the link below to access directions to the *Available Budget Report* to complete this section.

[How to Request the Available Budget Report](#)

Reflecting on your three-year PRP plan, are there any budget considerations you would like your dean/supervisor to be aware of for the upcoming year?

No

NOTE: PARTS 3 and 4 – TECHNOLOGY, FACILITIES AND OTHER NEEDS

This year the College is implementing two new processes related to resource needs coming from the PRP process.

1. One-Time Fund Requests. The college is implementing a process for prioritizing and allocating funds for one-time needs/requests tied to Program Review and Planning. Prioritization will take place through participatory governance in planning councils and the Budget Committee. Then, a recommendation will be made to Exec for funding of request utilizing various funding sources.

For more information about funding sources available, see [IELM BLOCK GRANT, LOTTERY, PERKINS AND STRONG WORKFORCE GUIDELINES](#).

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

2. Technology and Facilities Review. From now on, ALL requests for technology will go through an institutional review process. If you request technology here, you will see a description of the process below.

PART 3: TECHNOLOGY AND FACILITIES NEEDS

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

No

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

No

PART 4: 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?

No

I confirm that the Program Review is complete and ready to be submitted.

Yes

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

Lyon@palomar.edu

Review

Chair Review

Chair Comments

Chair Name

Sean Figg

Chair Sign Date

10/21/2020

Dean Review

Strengths and successes of the discipline as evidenced by the data and analysis:

The program has strong retention rates and a high WSCH/FTEF ratio. Curriculum and outcomes align well with the program mission statement.

Areas of Concern, if any:

Data that is self reported by students is evaluated to a lesser degree than other data.

Recommendations for improvement:

Data that is self reported can often be very informative and I would recommend that the program further identify ways of working with existing data to support the clear desire and commitment of faculty to increase success rates.

Dean Name

Patricia Menchaca

Dean Sign Date

11/4/2020

IPC Review

Strengths and successes of the discipline as evidenced by the data and analysis:**Areas of Concern, if any:****Recommendations for improvement:****IPC Reviewer(s)****IPC Review Date**

Vice President Review

Strengths and successes of the discipline as evidenced by the data and analysis:

solid efficiency rates; work being done towards availability of lab for program completion in other areas

Areas of Concern, if any:

1. how can we effect grade distribution towards overall positive without letting go of standards? how do SLOs figure into this?
2. no WBL

Recommendations for improvement:

1. Meet with dean and Nichol Roe to discuss WBL and Career Continuum; opportunities such as internships or employer connections might provide the relevance needed for students to engage more completely with course requirements?
2. meet with dean and Tom Medel to discuss offering ES 100L at RBEC (or online?)

Vice President Name

Shayla Sivert

Vice President Sign Date

1/3/2021