

BASIC PROGRAM INFORMATION

Program Review is a self-study of your discipline. It is about documenting the plans you have for improving student success in your program and sharing that information with the college 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 that in mind, please answer the following questions:

Discipline Name: Earth Science

Department Name: Earth, Space, and Aviation Sciences (ESAS)

Division Name: Math and the Natural and Health Sciences (MNHS)

Please list all participants in this Program Review :

Name	Position
Lisa Yon	Professor, ESAS Dept.
Patty Deen	Professor, ESAS Dept.

Number of Full Time Faculty: 2

Number of Part Time Faculty: 1

Please list the Classified positions (and their FTE) that support this discipline:

Brenda Morris, ADA, 20%; Tony Kopec, Instructional Support Assistant IV, 10%

What additional hourly staff support this discipline and/or department:

none

Discipline mission statement: [Link to "How to Build a 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 physical science requirement for degree or transfer. Additionally, 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. As of Fall 2016, 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, 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.

List any new degrees and certificates offered within this discipline since your last comprehensive review:

none

Discipline Level Data: <https://sharepoint2.palomar.edu/sites/IRPA/SitePages/PRP%20Summary%20Source.aspx>

SECTION 1: PROGRAM REFLECTION

1A. Program Analysis: Reflect upon and provide an analysis of your summary data.

Enrollment in Earth Science courses remains strong. For Fall semesters 2011, and 2012, three sections of ES courses were offered, producing an average Census Load Percent of 104%. Responding to the demand for ES, in Fall 2013, the offerings were increased by one section, and the Census Load Percent remained high at 98%. For Fall 2014, we reached our peak offerings of five sections, and Census Load Percent remained strong at 92%, well above the all College average of 82%. In Fall 2015, due to scheduling concerns (full-time faculty on Load Bank Leave), course offerings were lowered to four sections, but Census Load Percent remained strong at 92%.

Most sections of ES 100 continue to be taught by full-time faculty Patty Deen and Dr. Lisa Yon, who also both teach Oceanography and/or Geology. ES 115 has typically been taught by full-time Geography faculty member Doug Key, who retired June 2015. Total FTEF over the past five years has varied between 1.0 to 0.6 due to sabbaticals and leaves. WSCH/FTEF over the past five years has averaged 642, one of the highest values in the ESAS Department (averaging 551) and significantly above the College average of 463.

Retention rates for ES courses average 93%, which is very similar to other programs within the ESAS Department as well as the college-wide average. Success rates for ES courses over the past five years have averaged 65%, which is similar to other programs within the ESAS Department. This value is slightly higher than the MNHS Division average of 62% and slightly lower than the college-wide average of 72% for the same time period. Lower success rates in the sciences in general may reflect lack of adequate preparation for some students such as the language and critical thinking skills required for college-level science 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 do show lower success rates.

1B. Standards: ACCJC requires that colleges establish institutional and program level standards in the area of course success rates. These standards represent the lowest success rate (% A, B, C, or Credit) 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.

Discipline Level Course Success Rate:

- The College's institutional standard for course success rate is **70%**.
- Review your discipline's course success rates over the past five years.
- Identify the minimum acceptable course success rate for your discipline. When setting this rate, consider the level of curriculum (e.g., basic skills, AA, Transfer) and other factors that influence success rates within your area. If you set your discipline standard below the College's standard, please explain why.

Standard for Discipline Course Success Rate: 70

Why?

We consider 70% to be an appropriate standard for discipline course success rate.

1C. Program Update: Describe your proudest moments or achievements related to student success and outcome.

We formulated an extensive survey to gauge students' perceptions and use of the McGraw-Hill LearnSmart activities. Feedback from the survey revealed very positive responses to the new learning program. A corresponding increase in student success rates in Fall 2015 of approximately 10% over the prior three years suggests that the incorporation of the learning program has definitely had a measurable positive effect on student success.

1D. Program Improvement: What areas or activities are you working on this year to improve your program? Please respond to new data as well as feedback from last year's program review.

In an effort to aid students in developing better language and study skills, the ES 100 lecture classes have partnered with McGraw-Hill Publishers to utilize their LearnSmart program with the required textbook for the course. LearnSmart is an online interactive study tool that adaptively assesses students' skill and knowledge levels. For each student, the program tracks which topics the student has mastered and which require further instruction and practice. LearnSmart is a required component of the course in that students earn points for successful completion of the reading and exercises. Results from the Fall 2015 semester suggest the program is having a positive impact on student success; Success averaged 63% for 2013-2014, but jumped to 71% for 2015. We are looking forward to evaluating the results from Fall 2016 when they become available.

1E. Unanticipated Factors: Have there been any unanticipated factors that have affected the progress of your previous plan?

The implementation of the compressed schedule has had an unanticipated impact on our ability to offer sections of ES 100 during prime times and to find an appropriate time to offer the ES 100 lab. Students, however, continue to express an interest in completing the ES 100 lab so we will explore the option of offering a lecture/lab combination at the South Center when it opens.

1F. SLOACs: Describe your course and program SLO activities this past year. How have you used the results of your assessments to improve your courses and programs? [Refer to the SLO/PRP report – https://outcomes.palomar.edu:8443/tracdat/](https://outcomes.palomar.edu:8443/tracdat/)

Since results suggest that embedded questions within a larger format exam may not be the best way to assess student understanding of this concept, the next assessment of SLOs will be given in a different format. As an example, students will be asked to complete a worksheet in order to provide an overview of their understanding of the concept of Earth's seasons. The worksheet will include both diagrams and written responses as a way for students to demonstrate their comprehension of the subject matter.

SECTION 2: PROGRAM GOALS

2A. Progress on Previous Year's Goals: Please list discipline goals from the previous year's reviews and provide an update by checking the appropriate status box .

Goal	Completed	Ongoing	No Longer a Goal
Goal #1 involved the development of an ES 100 Lab course. The cou	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Goal #2 involved expansion of Earth Science offerings (both lecture	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Goal #3 focused on the retirement of full-time faculty member Doug	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2B. New Discipline Goals: Please list all discipline goals for this three-year planning cycle (including those continued from previous planning cycle):

GOAL #1	
Program or discipline goal	With the retirement of full-time faculty member Doug Key in June 2015, ES 115 has only been offered once over the past four semesters. Although Professor Key's primary teaching responsibilities were within the Geography discipline, he was the lead instructor for ES 115, which was dually listed as Geog 115. The minimum qualifications for both the Earth Science and Geography disciplines are very similar and thus it is hoped that the replacement hired to fill the Geography position vacated by Professor Key will also be able to continue to teach ES 115, thus ensuring the consistency and quality of instruction within the ES discipline. Filling this position becomes time-sensitive when one considers that Patty Deen expects to retire in June 2018 and Lisa Yon is also considering retirement in the next 3-4 years. The rationale form for a Geography faculty member was submitted for the third time in March 2017.
Strategies for implementation	The College needs to move forward on plans to hire a replacement Geography faculty member.
Timeline for Implementation	Hiring of a retirement replacement should occur as part of the next hiring cycle.
Outcome(s) expected (qualitative/quantitative)	Ensuring the consistency and quality of instruction within the ES (as well as Geography) discipline. We are currently finishing a second year without a full-time faculty member to teach specific courses.
GOAL #2	
Program or discipline goal	The ES 100 Lab course has been developed, has passed review for C-ID, and has been approved by the Curriculum Committee. One section of the course was offered to students for the first time during the Spring 2016 semester, but unfortunately it failed to fill and was cancelled. Although there is firm student interest, and the course is now part of the Anthropology A.A.-T program, finding a time to offer the course to maximize student enrollment is an issue. The compressed schedule has made this task more difficult as lab times either overlap with primetime lecture classes or are offered later in the day when many students depart campus for jobs.

ANNUAL INSTRUCTIONAL PROGRAM REVIEW TEMPLATE for 2016-2017

Strategies for implementation	The best option for enrollment success for the ES 100 lab course is to offer the course in conjunction with the lecture, such as a twilight lecture followed by an evening lab (lecture twice per week, lab once per week) or perhaps two evening offerings (Tuesday lecture, Thursday lab).
Timeline for Implementation	We are considering implementation to coincide with the opening of the SEC.
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.
GOAL #3	
Program or discipline goal	The South Education Center (SEC) is currently scheduled to open during Summer 2018. Our initial goal to offer both ES 100 lecture and lab classes at SEC remains a possibility, however changes to the classroom/storeroom plans now raise the question of sufficient resources at SEC to offer the lab component. Thus, plans for offering ES courses at the SEC are dependent upon the goals and support of the College at the time that the Center opens.
Strategies for implementation	In order to provide quality instruction for our lab classes, sufficient resources need to be made available. This means not only physical supplies, but also sufficient space to store supplies on site at the SEC as well as sufficient space in which to prep lab activities prior to class time.
Timeline for Implementation	Supplies and storage would be expected to be available with the first offering of the classes, which could be as early as Summer or Fall 2018.
Outcome(s) expected (qualitative/quantitative)	Provide an opportunity for students to satisfy their degree requirements for Liberal Students (Elementary Subject Matter) and Anthropology A.A.-T degree.

**Department Chair/
Designee Signature:** _____

Date: _____

Division Dean Signature: _____

Date: _____

Vice President Signature: _____

Date: _____